“Medical students can only be prepared for patient care when practising by hospital beds; Not only the teachers explaining diseases will teach them then, but diseases themselves... Let theory be combined with practice as it is in real life, and make students visit sickhouses once they are studying to be medical doctors; also have them take care of patients with all the knowledge that is expected from doctors.”

Lajos Markusovszky (1815-1893)
Anniversary Edition to Mark the 250th Year of the Foundation of Semmelweis University
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Detailed history of Semmelweis University

I. The history of the Medical Faculty (1769-1951)

The Nagyszombat (now Trnava) university founded in 1635 by PÁZMÁNY Péter archbishop of Esztergom and the former Jesuit order institution was given a royal rank during Maria Theresa’s reign and turned from a truncated university to a real one with the addition of the missing fourth faculty, the Medical Faculty. All of the above formed an integral part of the comprehensive, imperial level reform process with the recognition in the background that health care is a key interest of the state and requires a high level of public intervention. The plans of the Medical Faculty in Nagyszombat was elaborated by the royal physician of the queen, the Dutchman Gerard van Swieten, based on the Medical Faculty in Vienna reformed by him as well. Organisation started with the decree of Maria Theresa dated on 7 November 1769. Before this, the whole university had received a royal rank with a royal charter on 17 July that year. To host the new faculty, a separate building was constructed according to the plans of Franz Anton Hillebrandt, which was completed in May 1772. Education was able to start in 1770, first with five faculties: Physiology and Pharmacology (PRANDT Ádám Ignác), Anatomy (TRNKA Vencel), Surgery (PLENCK József Jakab), Botany and Chemistry (WINTERL Jakab József) and General Pathology (SHORETITS Mi-hály), i.e. the actual clinics. Due to the lack of an own clinics, the education of general pathology faced severe difficulties, and the lack of the corpses and the botanical garden was also a great problem. By moving the university to Buda in 1777, these problems seemed to be solved.

The Ratio Educationis I issued simultaneously with the transfer to Buda modified the management of the University. The consistory considered as the representative of the state, which had been heading the university since 1767, was replaced by the university council (senate), however, practically with the same members. The magistratus academicus re-elected every year, which administered mostly the ritual issues, remained on. To lead the whole institution, a president and a director general and to lead the faculties, faculty directors (faculty presidents) were elected. A bit later (in 1786), Joseph II deleted this position (except the Medical Faculty) and their scope of authority was taken away by the previously marginalised deans. This time, the method of appointment of the tutors was also regulated. Based on the opinion of the faculty, the senate submitted a proposal to the king who decided on the appointment through the Royal Council of Governors.

It was on 25 March 1780 when Maria Theresa issued the Diploma Inaugurale, called as the “Magna Charta” of the university, in which she set among other general regulations the legal status of the university and the financial basis of the maintenance thereof. The successor of the
Queen, Joseph II was also dealing with the fate of the University. During his personal visits he decided on the translocation of the institution to Pest, which took place in 1784. The Medical Faculty found a home in a former Jesuits’ monastery at the corner of Hatvani (now Kossuth Lajos) and Újvilág (now Semmelweis) streets. The frequent relocations held back educational activity, since the majority of resources was directed to the establishment of the conditions. The rapidly developing Pest provided a larger and more diverse patient population than before and the number of clinical beds also increased up to 16. The reconstructed building of the monastery proved to be small for the growing number of departments (Theoretical Medicine, Natural History in 1784; Veterinary in 1787; Public Medicine and Special Medical Studies in 1793; Theoretical Surgery in 1808; Obstetrics in 1812 and Ophthalmology in 1817) and the increasing number of students. Practical Training was strongly held back by that contrary to the international practice, the clinics were located not in the city hospital, but in the building of the faculty, therefore, there was no possibility to regularly change the patient population necessary for education. Although there were many attempts by the faculty to involve the Saint Roch Hospital to expand the institutions of the faculty, they were systematically rejected due to the resistance of the city magistrate. Contrary to this, from the 20’s, the clinical trend emphasising practical education was established, the main representative of which was BENE Ferenc, the introducer of vaccinations against pox.

Initially, based on the idea of van Swieden, the duration of the medical training was not regulated. First, a decree in 1774 determined the training period of physicians to be 5 years and according to the study regulation in 1786, it became 4 years. After tightening the examinations, the mutual recognition of medical diplomas had been valid since the reign of Joseph II (the principle of the so-called conformetur), at least as regards Vienna-Prague-Cracow-Pest. In 1804, Vienna left this agreement and obtained a privilege against the others. The surgeon master and civil surgeon training were 2 years long, while the pharmacist training was of 1 year. Midwives were trained in short courses started each semester. In 1787, the Veterinary course joined as well.

The end of the century, showing a vivid university life was replaced by the retrograde mentality of the era of Francis I. This is reflected by the Ratio Educationis II in 1806, created in the spirit of centralisation and the deprivation of the freedom of education, which was dealing with the Medical Faculty in a much deeper level than the previous one. It stipulated in details the teaching material and the obligations of the professors, it updated the order of the education and comprehensive exam and increased the length of education to 5 years. The president (praeses universitatis) executing the intent of the government and his deputy and the vice president (vice-praeses) who was at the same time the chancellor of the university played a key role in the management of the university. The university magistrate consisting of rectors, deans and seniors had only limited power. At the end of the 1810’s, even the faculty director position was reset, however, the professional supervision of the Medical Faculty was exercised by the national chief medical officer.

As in terms of the French revolutionary ideas feared by the government, medical training was a neutral area, at the beginning of the 19th Century, this was the only faculty able to perform considerable scientific activity and more significant developments. Contrary to the efforts, the substantial conditions of education became worse and worse due to overcrowding and the increasing demands. The devastation of the icy flood in 1838 increased on the problems in an extent that even the parliament was dealing with the situation of the Medical Faculty.

Under these narrow circumstances, the tutors of the faculty tried to keep up with the pace of international medical science which started to develop and specialise that time. In the light of the above should one consider that overtaking Vienna, Pest was one of the first cities to found an individual faculty of veterinary in 1793, which included the contracted forensic medicine and public health as well. Vaccination against pox has been applied in Hungary since 1799 and in 1824, headed by GEBHARDT Ferenc, a Central Vaccination Institute was established within the Medical Faculty. One of the most significant scientist of his era, KITAIBEL Pál was also among the tutors of this faculty. The Institute of Pathology founded in 1844 by ARÁNYI Lajos was one of the oldest similar institution in the world. At the beginning of 1847, only few months after the first experiment in the Massachusetts Hospital, Bálassa tried anaesthesia with ether. The first anaesthetic surgery was performed few days later by SCHOEPF-MEREI Ágost. The faculty was continuously playing key role in the fight against the great Hungarian epidemics (typhus, yellow fever, pox and the cholera leading to riots in 1831 and 1848-49).
The medical and surgical training courses were taught in Latin from the beginning. Education in Hungarian was first dealt with at the end of the 18th Century. RÁCZ Sámuel, who was the fifth professor of the medical faculty in 1793/94 to hold the position of rector, issued the first Hungarian physiology book in 1789 with the title “A physiologia rövid sommája” (Short summary of physiology), which was considered as the first Hungarian university textbook as well. In 1830, law allowed the use of Hungarian language and 3 years later, the first doctorate was written in Hungarian by FLÓR Ferenc and in 1844, Hungarian became the official language. Contrary to the national partiality of the tutors, the education in Hungarian was accepted by the Medical Faculty with reservations, since many of the students – and even some of the tutors – did not speak Hungarian and the Hungarian medical language was practically missing. Finally, the Hungarian as the language of education was introduced in 1848. The lower degree courses (surgeon master, midwife, veterinarian) had been held in the national languages since the beginnings, i.e. in Hungarian, German and Slovakian.

In the legal code of April 1848, a separate article (Art. XIX, 1848) was dealing with the university and promulgated the independence of the university and the principle of liberal freedom of education. The majority of the tutors and students actively took part in the freedom fight. Therefore, the reprisal after the surrender severely affected the tutors of the university. Many were forced to go to prison (BALASSA János), to hide (BUGÁT Pál) or to emigrate (e.g. SCHÖEPF-MEREI who later founded a children’s hospital in Manchester). Certification procedures were performed, the tutors might hold their position depending on their loyalty and authority harassments were permanent. Tutors loyal to the emperor, but often of secondary level were employed by the faculty. At the time of the absolutism, the language of education and administration became the German instead of the Hungarian. Instead of the educational order of 1848, in the spirit of the “conformetur” principle, the Vienna order of 1833 was introduced. At the same time, there were modernisations as well. In this way, the secondary school maturity became obligatory and the faculty director position was deleted. Although experts were trained still in 9 faculties, the surgeon master course slowly faded and based on the pattern in Lemberg, Olmütz and Salzburg, this training was suspended also in Pest. In 1872, the guilds were also dissolved. As regards the language issue, a shift occurred only after the large foreign policy defeat of the royal court. In 1859, a delegation of students went to Vienna to restore the Hungarian language. In 1860, the right of autonomous rector and dean election was extended also to the university of Pest. As a result of the October Diploma, the main subjects were taught in Hungarian and the others in German, Slovakian or Latin depending on the demands. Finally, it was the Article XLIV of 1868 after the Austro-Hungarian Compromise to reinstate the Hungarian language. This time, many tutors not speaking Hungarian left the university, e.g. the outstanding physiologist, Jan Nepomuk Czermák resigned as well contrary to the efforts of his Hungarian colleagues to make him stay.

The harmonised medical training was introduced in 1872, thus, since 1878, only one medical diploma has been existed with the name “doctor of the universal medical sciences”. The new university decree in 1875 determined the order of the new and universal medical doctor comprehensive exam in addition to the provision of the freedom of education and the autonomy. In 1881, the duration of the academic year also changed. Earlier it had been between November and August and since that time, it has been between September and June. Due to the poor facilities, the main problem of the medical faculty was the lack of space. Although in 1848, the clinics were transferred from the Újvilág utca building, it proved to be only temporary, since after the suppression of the freedom fight, they returned there. The Saint Roch Hospital refused on to host the clinics and the capital failed to provide a site for the constructions for a long time. The acquisition of the Kunewalder house (located that time in the Országút, today in the Múzeum körút) in 1858 was a temporary relief that time, which was originally bought for the Institute of Veterinary. The surgery (Balassa), the zoology, the physiology and the obstetrics headed by Semmelweis that time were able to move here. The administration of the faculty and the library got temporary home in buildings nearby. A real solution was brought only by the large-scale constructions started in 1873 with a cost of 25 million krones, which were finished only in 1911. This time, the Úllői út considered that time as a rather outer belt area became the axis of the Medical Faculty, where the clinics, the institutions and the administration were located in two sites. Simultaneously, new, often parallel departments sufficiently equipped in the level of the era were established one after the other. The number of such departments almost
quadrupled until the 1880’s. In these still unique developments, EÖTVÖS József and TREFORT Ágoston ministers of the Ministry of Religion and Public Education, BERZEVICZY Albert state secretary, MARKUSOVSZKY Lajos councillor and on behalf of the Medical Faculty BALASSA János, KORÁNYI Frigyes and the later secretary of state, TÓTH Lajos played key role.

With the rapid development of the clinics, the catch-up of the lagging behind was successful. Parallely to the constructions, the “medical school of Budapest” became clear around Balassa having launched a medical weekly “Orvosi Hetilap” and Markusovszky. As an effect of Semmelweis, this was the place where the deliberate prevention of surgical infections was started. Public health was among the first to get a department in Budapest, headed by the outstanding bacteriologist, FODOR József. By continuing the work of Schoepf-Merei and Sauer, KORÁNYI Frigyes was the one to begin the establishment of a Hungarian internal medicine school on a state-of-the-art foundation. His work was carried on by his son, Sándor. JENDRASSIK Ernő, named also as the Hungarian Charcot was one of the founders of neurology, DOLLINGER Gyula was that of orthopaedics and TAUFFER Vilmos was that of the surgical obstetrics and gynaecology. LUMNICZER Sándor, the founder of modern surgery was the first to use the Lister’s system of antisepsis. Owing to the work of SCHULEK Vilmos, GRÓSZ Emil and IMRE József, Hungarian ophthalmology became this time famous throughout Europe. As regards paediatrics, the Bókays and KOPITS Jenő, the international expert of hip dislocation deserve mention. The first director of the Hungarian Pasteur Institution, HÖGYES Endre set the foundations of the later Nobel prize winner invention of BÁRÁNY Róbert. With the research of the fine structure of the nervous system, the anatomist LENHOSSÉK Mihály achieved the recognition of his Nobel prize winner colleague, Santiago Ramón y Cajal who considered him as his fellow during the creation of neuron studies. In stomatology, the work of ÁRKÖVI József, while in pharmacology, that of BALOGH Kálmán were outstanding. In 1907, the Radiology got a separate institute headed by the founder of radiology in Hungary, ALEXANDER Béla. Physiology became a modern science in the Medical Faculty owing to the outstanding Czermak of Czech origin. He was followed by JENDRASSIK Jenő whose aim was the foundation of the modern Hungarian physiology school.

The number of students drastically increased. In the 1860’s, their number was between 400-500, while in the 1880’s, it exceeded 1000. In the 1860’s, the first student associations were established. In 1862, aid society and 5 years later, a self-education association was founded. The end of the century was the first time when the issue of the admission of women arose. The medical faculty had generally a rejecting opinion thereabout. The first Hungarian female physician, countess HUGONNAY Vilma succeeded to achieve the recognition of her diploma obtained in 1879 only after 17 years of administrative struggling. In 1895, a decree made it possible for women to participate in trainings and practices in humanities, medical studies and pharmacology. The first female physician graduated in Budapest, STEINBERGER Sarolta was inaugurated on 3 November 1900. A real change in the training of female physicians was brought only by the world war.

During the World War I, the majority of the students and the tutors joined the army and the half of the beds the number of which increased to 2000 were maintained for the injured. The change to war industry and the economic exhaustion of the Monarchy drastically decreased the financial supply of education and also of the university. The war almost eliminated the students, however, after their disarmament, there was a dumping. Compared to the last year in peace, more than twice as many (6526) medical students wanted to continue their interrupted studies.

The revolution and the dictatorship of the proletariat triggered further chaos in 1918-19. The university was made subject to stringent central administration and there were significant transformations. There were changes in the personnel and the tutors considered as right wing were deprived of their positions. During the short existence of the Council Government, its measures could not be long-lasting. By rising to power of the counterrevolution, the faculty council qualified the events after 31 October 1919 as “ex lex” and further changes in personnel and certification procedures were started. Tutors were removed from the faculty, among others HEVESY György, one of the founders of nuclear medicine who later won the Nobel prize abroad or the outstanding ophthalmologist, GRÓSZ Emil, but his removal was only temporary.

From the annexed areas, a smaller migration started to the remaining “Mutilated Hungary” and especially to Budapest. Mostly the state-employed intellectuals (public officers, physicians, teachers etc.) were forced to migrate, partly as their
job was linked to the language and partly as they could have been hardly employed by a newly settling foreign state. The largest overcapacity was experienced in the field of physicians, mostly in Budapest, therefore, the fight for making a living was quite harsh. In addition to the too large number of students and the experience from the revolutions, this was also a reason of the issue of the Act XXV of 1920 also known as “numerus clausus”, the initiation of which just started from the Medical Faculty of Budapest. The point of this act was to tighten the conditions of the admission to university, with which on the one hand, they tried to decrease the number of students in further education and on the other they tried to exclude anyone who had taken part in the revolution and to limit the number of Jewish students. This latter affected especially the Medical Faculty, since as it was a course of open access, many Jewish youngsters have selected the medical profession since the beginning. On the other hand, this act was beneficial for the spread of protectionism. At the same time, the faculty tried to block the admission of women as well. On 14 April 1921, the university in Budapest took the name of its founder, PÁZMÁNY Péter and had this name until 1950.

The economic crisis aggravated on by the mutilation of the country led to a financial crisis for the university it had never experienced before. The situation had just begun to normalise when the crisis in 1929 resulted again the decrease in the financial resources spent on education and health care. Unemployment appeared among the physicians as well, the workforce reduction in the university exceeded 10%, the investments stopped and the quarter of the beds had to be left empty due to financial reasons. The number of students sharply decreased as well (in 1925-26 there were 1729, in 1930-31 only 1234 students), contrary to the international trends.

The reform of the medical training which had been on agenda for a long time was introduced in 1922. As a main principle, the researcher and practising physician trainings were in focus. The duration of the education increased to 6 years instead of 5, the comprehensive exams were separated in four cycles and the number of the courses announced was also increased. Later, the system of comprehensive exams was modified on, but it was entered into force only in 1943. In 1936, the classification of the diplomas changed. This was the time when the qualifications used even today, i.e. the rite, the cum laude and the summa cum laude were introduced. After a long time, also the pharmacist education was renewed by increasing the duration of the education from 2 years to 4 and by decreasing the practice from two years to one. Thereafter, the start of the pharmaceutical studies was not linked to a prior practice in a pharmacy, but after the maturity exam, one could immediately enrol.

Between the two world wars, internationally acknowledged schools were operating in the Medical Faculty, such as the school of KORÁNYI Sándor who developed on the school founded by his father. Among his results, the elaboration of the functional examination methods of kidney and the reduction of tuberculosis are outstanding. Many of his students became academicians and heads of department, such as RUSZNYÁK István, HETÉNYI Géza and HAYNAL Imre. The research on cancer made by KROMPECHER Ödön who described the basocellular cancer, that on nucleins, complementaries and enzymes by LIEBERMANN Leó or that on morphology by SCHAFFER Károly were significant. As regards pathoanatomy, BUDAY Kálmán clarified the pathogenesis of necrotic stomatitis and mellitis. In microbiology PREISZ Hugó, in biochemistry HÁRI Pál, in physiology FARKAS Géza and in biology HUZELLA Tivadar can be mentioned. In the fields of clinical medicine, the paediatrician HEIM Pál, BÓKAY János and BÁLINT Rezső, the surgeon VEREBÉLY Tibor and the ophthalmologists GRÓSZ Emil and BLASKOVICS László were the outstanding experts of their fields.

Apart from the military duty affecting the tutors as well and the care of the injured, the World War II had not trigger any special disturbance in the life of the Medical Faculty until 1944. With the approach of the front, the majority of the tutors were deployed. The rise to power of the Arrow Cross Party on 15 October 1944 posed new threats on the university and thus, the Medical Faculty as well. Contrary to the categorical order of the government, the university denied to move to Germany. Afterwards, there were plans to transfer the clinics and laboratories to Buda, however, they were mostly thwarted partly due to the repeat resistance of the faculty and partly due to the difficulties in transportation. Before the closure of the shell of fortress lines, the engineering, medicine, pharmacy and veterinary senior students were carried to Germany with a military call-up, i.e. the representatives of every programme considered as important regarding the continuation of the war. In this way, about 600 medical and
pharmacist students from the Medical Faculty Budapest were settled partly to Halle and partly to Austria with some of the education staff. They succeeded to return only after the war among huge difficulties and with the mediation of the university, with American passport.

Together with the city, the faculty was also heavily hit by the siege of Budapest. The damage in the buildings were enormous (four clinics were severely hit) and the majority of the equipment was also destroyed. The total damage was around 13 million golden pengő (at 1938). The largest devastation affected the Internal Medicine II, the Gynaecology I, the Dermatology, the Surgery II and the Paediatric Clinics, but several other buildings were damaged as well. This was aggravated by the freezing of the drainage system and the plundering affecting the whole city. Contrary to all these, the clinics were operating even in case of the siege, often under impossible circumstances. Even the Institute of Physiology and the Pathoanatomy department started to perform the care of the injured.

After the war, the tutors were significantly changed according to the taste of the new political forces having the power. The main tool of this was the certification procedure. It describes the ratios well that against 15 out of the 27 regular tutors of the medical faculty, procedures were launched or they were dismissed with various sanctions. In addition to this, in January 1945, IMRE József professor died which led the Ophthalmology Clinic to get empty. In addition to them, 6 honorary extraordinary tutors, 17 private professors and 11 physicians were dismissed. Out of the physicians above, 44 were still in Germany with the students carried there.

From June 1945 until his emigration, the Nobel Prize winner professor SZENT-GYÖRGYI Albert was among the tutors of the faculty, who was that time the head of the Department of Physiology and Medical Chemistry. From 1945, there was a sharp increase in the number of the students, which exceeded multiple times the capacity of the faculty, therefore, from 1947/48 onwards, they were forced to introduce admission examination. After the rising of the Communist Party to power, one of the most important factors became the origin of the candidate, therefore, the social composition of the students significantly changed. Soon, almost 25% was the ratio of the students from worker or pawn origin. The National Association of Peoples’ Colleges was founded and from the academic year 1951/52, the Scientific Students’ Association movement was introduced based on Soviet pattern. In 1948, education was reformed again. The examinations were tightened, education turned more pragmatic and the medical chemistry and physics were included into the curriculum, in addition to the biology in 1950. Due to political reasons, the Marxism and Leninism, the Russian language and the national defence knowledge were also added.

In this period, multiple hospitals were attached to universities by forming clinics. Therefore, the number of beds increased to 3167 in 1955 from the 1178 in 1946. In parallel, specialisation was going on within the disciplines, which led to further separations in the clinics as well. Areas with larger and larger costs entered into research, therefore, fallback behind the rich countries was evident. This was worsened on by the isolation policy in the 1950’s when there was Soviet influence also in science.

II. History of the separate Medical University: BOTE, SOTE (1951-2000)

After 1949, the Hungarian higher education underwent consecutive reforms. Due to the fight against churches, the name of the university was modified, therefore, instead of its founder, PÁZMÁNY Péter, the university got the name of one of its most prominent scientist tutors, EÖTVÖS Loránd on 1 September 1950. At the end of 1950, the Council of Ministers discontinued the former practice and traditions and decided the creation of specialist universities subject to the sectoral ministries. They wanted to reach it partly by founding new institutions and partly by the division of the currently existing ones. During the reorganisation, the Soviet higher education system of the 1930’s was taken as example, disregarding that since that time, this had been significantly modified also in the Soviet Union by resetting the unified management of higher education. The deadline of the completion of the action was planned to be on 1 February 1951. Within the framework of
this, the medical faculties of the universities were separated and transformed into separate specialist universities. In a parallel way, the new medical universities were subordinated not to the Ministry of Religion and Public Education, but the newly formed Ministry of Health. Therefore, from 1 February 1951, the Faculty of Medicine of the Eötvös Loránd University continued its operation as a separate Medical University of Budapest.

In 1955, the organisational transformations went on. Within the University, 3 faculties were formed (with their former names: Faculty of General Medicine, Faculty of Dentistry and Faculty of Pharmacy). On 1 September 1955, the rectorate was established. The pharmacist training was transferred permanently to the medical university from the Eötvös Loránd University back in 1951 and in 1952, the dentist training of new system was started. Finally, on 7 November 1969, for the 200th Anniversary of the Faculty of Medicine, the university took the name of SEMMELWEIS Ignác.

Separation had, however, some disadvantages as well. From certain aspects, the distance from the humanities and the Faculty of Sciences led to drawbacks for the medical profession. The everyday life of the new university was made more difficult by that it had only the narrowest professional institutes and the conditions for the cultural and sports life or the rooms suitable for hosting large events were missing. They were able to be terminated only by the large investments of the 1970’s. After the separation of the university, the separation from the BEAC university sports club also took place to form the Orvosegyetem Sport Club (OSC, Medical University Sports Club). The fencers and waterpolo players of the OSC have been the regular and successful participants of the Olympic Games and world championships.

The prints of the war had not even disappeared when as a protest against the communist power, the revolution broke out on 23 October 1956. In the student movements, the students of the medical university also took place and after the breaking out of the armed fight, the role of our university aimed mostly at the care of the injured, since our institutions were in the centre of the war in Budapest. The staff of the affected clinics and institutions exhibited superhuman and heroic withstand multiple times. Further buildings were damaged and the most severely hit building was the Dermatology clinic. The reprisal after the communist restoration did not avoid our university either. The victim of this reprisal was the innocently slandered and executed TÓTH Ilona senior physician student who is considered today as the martyr of our university.

After consolidation, the emerging external relations from the 1960’s facilitated us to keep up with the scientific international profession. In the following decades, serious developments were performed as well. The most important of them were the reconstruction of the Dermatology clinics demolished in 1956, the huge theoretical building finished in 1978, the Ophthalmology clinic I and the delivery of the Transplantation and Surgery Clinics in the beginning of the 1990’s. In the clinics, healing and education took place this time with more than 3100 beds.

The increase of the ratio of the international students has started to grow since the 1970’s. This time, they arrived mostly from the developing countries and mostly from the so-called democratic countries. Education in German language started in 1983 and after an experiment in 1987, the regular education in English language started in 1989.

The Act LXXX of 1993 on Higher Education made it the task of the universities to prepare for scientific degree and to award the PhD degree, based on which the Semmelweis University got its Doctoral School accredited in the same year and until 2018, it started 47 programmes.
III. The history of Semmelweis University (2000–)

At the end of the 1990’s, the transformation of the Hungarian higher education network was put on agenda with the aim of institutional integration. The final stage of this process was determined by the Act LII of 1999 on the Transformation of the Higher Education Institutional Network. Accordingly, even in July that year, three universities (the Semmelweis University of Medicine, the Haynal Imre University of Health Sciences and the University of Physical Education) elaborated the plan of the organisational, operational and financial policy of the university to be created, together with the call for application for the rector and the director general. After the preparatory work, on 1 January 2000, Semmelweis University was established by the merger of the Semmelweis University of Medicine, the Haynal Imre University of Health Sciences and the University of Physical Education, which consisted of the following faculties: Faculty of General Medicine, Faculty of Health Sciences, College Faculty of Health, Faculty of Dentistry, Faculty of Pharmacy and Faculty of Physical Education and Sport Sciences. From this group, the Faculty of Health Sciences of the Haynal Imre University of Health Sciences was removed and based on a governmental decree, it ceased to exist. (The successor of the Haynal Imre University of Health Sciences was the new organisation, the National Medical Centre formed from it, which was known as Szabolcs utca Hospital until its closure in 2007.) The College Faculty of Health of the Haynal Imre University of Health Sciences remained on the part of the university, which continued its operation from the end of 2001 with 5 faculties: Faculty of General Medicine, College Faculty of Health (from 2007 with the name of Faculty of Health Sciences), Faculty of Dentistry, Faculty of Pharmacy and Faculty of Physical Education and Sport Sciences. In its decision no 62/2008 on 29 May 2008, the Senate of Semmelweis University decided to found its sixth faculty, the Faculty of Health and Public Services with the participation of three institutions working in the border of natural sciences and social sciences, i.e. the Health Services Management Training Centre, the Institute of Mental Health and the Institute of Health Informatics, Development and Further Training. The faculty started its activity in January 2010 and the inaugural meeting of the Faculty Council was held on 21 April 2010. The new faculty has mostly social science orientation, however, it integrated interdisciplinary trainings at the border of sciences. With its programmes, it covers the whole educational spectrum including the basic training, the master training, the doctoral training and the postgraduate specialist training courses in the field of healthcare management, mental and community health and health informatics.

In addition to the structural reorganisation, the new millennium brought significant developments as well. In 2003, the College Faculty of Health succeeded to move to a new site instead of its earlier fragmentation (Óbuda, Újpest, Józsefváros), to the Vas utca close to the centre of the university, into the fastidiously renovated building of the former Pajar sanatorium and later Balassa János Hospital. The Educational Centre of the Faculty of Dentistry was built between 2006-2007 in the site of the Pátria printing house, in the Szentkirályi utca. Almost all of the clinics and departments of the faculty moved to this state-of-the-art building. In September 2008, the plan of a long-standing desire of a second theoretical building, back from the 1960’s came true in the form of the Theoretical Medical Centre in the Tűzoltó utca, which won several architectural professional prizes. In the gross 27,000 m² of the building, there are research laboratories, study rooms, student laboratories, lecture rooms, a modern animal house and seven seminar rooms. The two latter investment was performed in the so-called PPP construction. Among the renovations of buildings, the multistage project of the Central Management Building (Üllői út 26) started in 2008 has to be mentioned, the first stage of which, the renovation, was finished in 2009 and the project was completed by the formation of the loft in 2012. The Ophthalmology Clinic in the Mária utca and the 1st Department of Pathology and Experimental Cancer Research were renovated in 2013. In the summer of 2012, the large-scale development of the Outer Clinical Site, the Korányi project was started, which is one of the most significant investment of the previous century of the university.

Between 2008 and 2010, Semmelweis University started three off-site trainings abroad. The first was the Asklepios Campus Hamburg, within the framework of which the stu-
Dentistry in terms of staff and floor area and in addition to the continuous patient care, it takes part in the education, specialist physician training and further education tasks as well. In 2014, the Thoracic Surgery Department was established, which is operating on the basis of the National Institute of Oncology. In December 2015, the first successful lung transplantation in Hungary was performed here.

On 1 September 2014, the Faculty of Physical Education and Sport Sciences spun off Semmelweis University and it continued its operation separately again, with the name of University of Physical Education.

In the end of 2014, similarly to many Hungarian institutes of higher education, with the introduction of the chancellor position, the management system of Semmelweis University was changed. Education, research and patient care are managed by the rector, while the tasks regarding the operation and the management of the university were transferred to the chancellor. From 2015, the management of the Clinical Centre of the university was taken by the vice-rector for clinical affairs from the rector. In 2016, as a separate patient care institution of the university, the Centre of Oncology was formed after its spin-off from the Department of Radiology and Oncotherapy. On 1 August 2017, the Pető András College and its part, the Institute of Conductive Education joined the University, which has been operating as the Pető András Faculty. In this way, the number of faculties increased to six again.

In 2018, the university celebrated the 200th anniversary of the birth of Semmelweis Ignác after whom the university got its name and with the solemn opening ceremony of the academic year 2019/2020, the jubilee year of the university starts, with which we pay tribute to the 250th anniversary of the foundation of the university.

Compiled by

dr. MOLNÁR László – SÁGI Zenina – DOBOZI Pálma
BENE Ferenc, tutor of internal medicine 1775-1858

BÓKAI János, tutor of paediatrics 1822-1884

BALASSA János, tutor of surgery, the director of the Medical Faculty in 1848/49 1814-1868

ARÁNYI Lajos, the first tutor of pathology 1812-1887

SEMMELEweis Ignác, painted by THAN Mór 1818-1865

WAGNER János, tutor of internal medicine 1811-1889
JENDRASSIK Jenő,
tutor of physiology
1824-1891

LENHOSSÉK József from 1864,
tutor of anatomy
1818-1888

GENERSICH Antal,
tutor of pathology
1842-1918

LUMNICZER Sándor,
tutor of surgery
1821-1892

MIHALKOVICS Géza,
tutor of anatomy
1844-1899

HÖGYES Endre,
tutor of general medicine
1847-1906
FODOR József,  
the first tutor of the independent  
public health  
1843-1901

TAUFFER Vilmos,  
tutor of obstetrics and gynaecology  
1851-1934

KORÁNYI Sándor,  
tutor of internal medicine  
1866-1944

NÉKÁM Lajos,  
tutor of dermatology  
1868-1957

KROMPECHER Ödön,  
tutor of pathology  
1870-1926

HUZELLA Tivadar,  
the director of the Institute of Histology  
and Embryology  
1886-1950
BALOGH Károly, the first dean of the Faculty of Dentistry
1895-1973

HAYNAL Imre, the director of the Department of Internal Medicine II
1892-1979

MOZSONYI Sándor, the first dean of the Faculty of Pharmacy
1889-1976

SZENT-GYÖRGYI Albert, Nobel Prize winner, tutor of biochemistry
1893-1986

BALÓ József, tutor of pathology
1895-1979

SZENTÁGOTHAI János, neuroscientist, tutor of anatomy
1912-1994
## HONORARY DOCTORS OF THE MEDICAL FACULTY OF BUDAPEST DURING THE UNIVERSITY’S SCIENCE ERA

<table>
<thead>
<tr>
<th>Year</th>
<th>Name and Details</th>
</tr>
</thead>
</table>
| 1895/96 | Tivadar Károly, royal prince from Bavaria  
John Shaw Billings, professor from Philadelphia  
Rudolf Virchow, professor from Berlin  
Joseph Lister, professor from London  
Adolf Anders Retzius, professor from Stockholm  
Guido Bacelli, professor from Rome  
Pierre-Paul-Émile Roux, professor from Paris  
Károly Than, professor of Budapest |
| 1899/1900 | Tivadar Duka, chief doctor Col. Emeritus of the royal Bengal army of England, on the occasion of his 50th anniversary of operation |
| 1909/10 | Albert Apponyi, Minister of Culture, on the occasion of the XVI. International Medical Congress held in Budapest |
| 1911/12 | Heinrich Wilhelm Waldeyer, professor from Berlin, on occasion of his 50th jubilee as a doctor |
| 1914/15 | Otto Karl Schjerning, professor of Berlin |
| 1928/29 | Friedrich Schmidt-Ott, Minister of State of Prussia |
| 1930/31 | Harvey Williams Cushing, professor of Harvard University in Cambridge |
| 1934/35 | Jenő Sipőcz, Lord Mayor of Budapest |
| 1935/36 | Ferdinand-Jean Darier, Chairman of the French Society of Dermatology  
Anton Freiherr von Eiselsberg, professor from Vienna  
Karl Albert Ludwig Aschoff, professor from Freiburg  
August Krogh, professor from Copenhagen  
Granville Harrison Ross, professor at Yale University  
Charles Scott Sherrington, professor from Oxford  
Frederick Gowland Hopkins, professor from Cambridge  
Gustave Roussy, professor from Paris |
| 1942/43 | Károly Szendy, Mayor of Budapest |

## LIST OF PERSONS AWARDED WITH THE „DOCTOR HONORIS CAUSA” TITLE AT THE BUDAPEST/SEMMELEweis UNIVERSITY OF MEDICAL SCIENCES

<table>
<thead>
<tr>
<th>Year</th>
<th>Name and Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1967</td>
<td>Boris Vasilyevich Petrovsky (Soviet Union)</td>
</tr>
</tbody>
</table>
| 1969    | Pyotr Kuzmich Anohin (Soviet Union)  
Assen Hadyolov (Bulgaria)  
György Békéssy (USA)  
Vasily Vasilyevich Parin (Soviet Union)  
Daniel Bovet (Italy)  
Stefan Milcu (Romania)  
Karl Fellinger (Austria)  
Samuel Rapaport (Germany)  
Jules François (Belgium)  
Pyotr Grigoryevich Sergiyev (Soviet Union) |
| 1972    | Marcelino G. Candau (Switzerland) |
| 1976    | Britton Chance (USA)  
Leonid Semyonovich Persyanilov (Soviet Union)  
Tadeusz Krwawicz (Poland)  
Vasyl Vasilyevich Zakusov (Soviet Union) |
| 1978    | Uktam Aripov (Soviet Union) |
| 1980    | Nikolai Nikolaevich Blohin (Soviet Union) |
| 1982    | George Weder (USA) |
| 1983    | Philip Gerald Mechanick (USA)  
Viking Olov Björk (Sweden) |
<table>
<thead>
<tr>
<th>Year</th>
<th>Recipients</th>
</tr>
</thead>
</table>
| 1984 | Walter Birkmayer (Austria)  
Arje Scheinen (Finland)  
Jens J. Pintborg (Denmark)  
Armand Hammer (USA)  
Hans Altmann (Austria)  
F. Gotthard Schettler (Germany) |  
Mitropan Studenikin (Soviet Union)  
John Gergely (USA)  
Halldan I. Mahler (Denmark)  
Shogo Sasaki (Japan)  
Ludwig Mecklinger (Germany)  
George B. Udvarhelyi (USA) |  
Halfdan I. Mahler (Denmark)  
John Gergely (USA)  
Jens J. Pintborg (Denmark)  
Armand Hammer (USA)  
Hans Altmann (Austria)
Mitropan Studenikin (Soviet Union) |  
John Gergely (USA) |  
1988 | László Ernster (Sweden)  
Jan Solich (Czechoslovakia)  
Dieter Schleger (Germany)  
Emeric Szilágyi (USA)  
Thomas P. Singer (USA)  
George B. Udvarhelyi (USA) |  
Douwe D. Breimer (Netherlands)  
Yoshinori Nozawa (Japan)  
Herbert Oelshcläger (Germany)  
Jerzy Maj (Poland)  
Martin Reivich (USA) |  
Friedrich Wilhelm Ahnfeld (Germany)  
László Róbert (France)  
Endre A. Balázs (USA)  
Benno Runnebaum (Germany)  
Herbert Braunsteiner (Austria)  
Heitaroh Iwata (Japan) |  
Merton Sandler (England)  
Hans Weidinger (Germany)  
György Ács (USA)  
László Iffy (USA) |  
Ursula Lachnit-Fixon (Germany)  
Milan Chalabala (Slovakia)  
Felix Unger (Austria)  
Ulrich Joos (Germany)  
Isaac van der Wald (Netherlands)  
Sergio Ferri (Italy) |  
1989 |  
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1998 |  
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<table>
<thead>
<tr>
<th>Year</th>
<th>Names</th>
</tr>
</thead>
</table>
| 2000 | Allen Cowley (USA)  
      Péter Illés (Germany)  
      Iván Kiss (Germany)  
      Ryszard Jerzy Gryglewski (Poland)  
      Emmanuel van Praagh (France)  
      Claes B. Wollheim (Switzerland)  
      Gottfried O. H. Naumann (Germany)  
      Gabriel P. Haas (USA)  
      Gerd Schmitz (Germany)  
      Elemér Zsigmond (USA) |
| 2001 | Pekka Juhani Saukko (Finland)  
      Leo M. Sreebny (USA)  
      N. Joan Abbott (England)  
      Christopher Squier (USA)  
      Ádám Tegzess (Netherlands)  
      Gottfried Heinisch (Austria)  
      Herbert Rübben (Germany)  
      Han C. G. Kemper (Netherlands) |
| 2002 | Jacques Rogge (Belgium, Switzerland)  
      Sataro Goto (Japan)  
      Matthias Brandis (Germany)  
      John Holloszy (USA)  
      János Alpár (USA)  
      Denys Wheatley (England)  
      Angelo Benedetti (Italy)  
      Ferenc Jolesz (USA)  
      Tatsuo Nagai (Japan) |
| 2003 | Thomas E. Andreoli (USA)  
      Michael Georgieff (Germany)  
      László Víg (Hungary)  
      György Gosztonyi (Germany)  
      Martin Black (England)  
      Helmut Hahn (Germany)  
      Thomas Detre (USA)  
      Carl Hermann Lücking (Germany)  
      David B. Ferguson (England)  
      Marteen J. H. Slooff (Netherlands) |
| 2004 | Stephen Katz (USA)  
      Sebastian G. B. Amyes (England)  
      Sir George Radda (England)  
      Michael Marberger (Austria)  
      István Seri (USA)  
      Peter Gängler (Germany)  
      Osmo Hänninen (Finland)  
      Albert William Taylor (USA)  
      Barry D. Kahan (USA) |
| 2005 | Vilmos Vécsei (Ausztria)  
      Louis Ignarro (USA)  
      Gyöngyi Szabó (USA)  
      Heinrich Schmidt-Gayk (Germany)  
      Jos Hendrik Willem Hoogmartens (Belgium)  
      Cynthia K. Larive (USA)  
      Tibor Hortobágyi (USA)  
      Vladimir Brusic (Australia) |
| 2006 | Uwe Wilhelm Joseph Heemann (Germany)  
      Philippe Morel (Switzerland)  
      Rolf Christian Gaillard (Switzerland)  
      Mátéyás Sándor (USA)  
      Hideki Ohno (Japan) |
| 2007 | John Raymond Garrett (England)  
      Michael Landthaler (Germany)  
      Kamal K. Midha (Canada)  
      Gertrud Pfister (Denmark)  
      Roberto Romero (USA)  
      Heinz Schilcher (Germany)  
      Jörg Schubert (Germany)  
      Clemens Sorg (Austria) |
| 2008 | Olaf Bodamer (Austria)  
      Péter Pál Bucsky (Germany)  
      Kelvin Davies (USA)  
      Gabor Kaley (USA)  
      Anton Sculean (Netherlands) |
2009
Maynard R. Case (England)
Christopher R. Chapple (England)
László Endrényi (Canada)
Zsuzsanna Fábry (Hungary – USA)
Bruno Grandi (Italy)
Jerzy Kosiewicz (Poland)
Karl-Heinz Kuck (Germany)
Peter Malfertheiner (Germany)
Franco Mantero (Italy)
Éva Mezey (Hungary – USA)
Georg Petroianu (Germany – USA)
Tamás Péter Sótonyi (Hungary)

2010
Roger Y. Tsien (USA)
Masaki Kitajima (Japan)
Hartmut P. H. Neumann (Germany)
István Boldogh (USA)
Constantin Copotoiu (Marosvásárhely, Romania)

2011
Péter Ferenczí (Austria)
Dirk Pickuth (Germany)
Andrzej Wiecek (Poland)
Renato V. Iozzo (USA)
Örs Nagy (Romania)
István Bocskai (Romania)
James S. Skinner (USA)

2012
Pierre Corvol (France)
Tibor Juhász (USA)
George Berci (USA)
Axel Ullrich (Germany)
Jozef Corveleyn (Belgium)
Joseph Kutzin (Switzerland)
Daan Braveman (USA)
Imre G. Csizmadia (Canada)
Árpád Gyéresi (Marosvásárhely, Romania)
Vinod P. Shah (JSS University of Mysore, India)
Jürgen Michael Steinacker (Germany)

2013
Peter Gabor Medveczky (USA)
Arthur J. Moss (USA)
Gerhard M. Kostner (Austria)
Marie T. O’Toole (USA)

2014
Peep Veski (Estonia)
Kai-Ming Chan (China)
Paul G. M. Luiten (Netherlands)
Richard M. Satava (USA)
René Sylvain Kahn (Netherlands)
Péter Gloviczki (USA)
Herbert Ehringer (Austria)

2015
Shigeru Saito (Japan)
Pál Pacher (USA)
Jacques Marescaux (France)
Leena Kaarina Bruckner-Tudermann (Germany)
Stephan Züchner (Germany)
Fausto J. Pinto (Portugal)
György Kálmán Béla Sándor (Finland)
Panos Macheras (Greece)
Attila A. Hincal (Turkey)

2016
László Bögre (England)
Walter Klepetko (Austria)
Lajos Okolicsányi (Italy)
György Kúnos (USA)
Josep Figueras (Spain)
Henning H. Blume (Germany)
Gábor Tigyi (USA)

2017
Gerhard Hindricks (Germany)
Christine Baylis (USA)
Rainer Schulz (Germany)
Mikael Björnstedt (Sweden)
Keiichi Maruyama (Japan)
Josef Smolen (Austria)
Clive G. Wilson (England)
Stefan Offermanns (Germany)

2018
Dr. Miklos Sahin-Toth (USA)
Dr. Maria Antonietta Stazi (Italy)
Dr. Piotr L. Chlosta (Poland)
Dr. Jianguang Xu (China)
Dr. Daan J. A. Crommelin (Netherlands)
Dr. Olavi Pelkonen (Finland)
Prof. Dr. Scott David Solomon (USA)
### PRIVATE TUTORS OF SEMMELWEIS UNIVERSITY

<table>
<thead>
<tr>
<th>Year</th>
<th>Tutors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Dr. Árpád Mayer head physician, Uzsoki Hospital, Oncology Centre  &lt;br&gt; Dr. László Takácsi Nagy deputy head physician, Uzsoki street Hospital, Oncology Centre</td>
</tr>
<tr>
<td>1996</td>
<td>Dr. Elemér Nemesánszky head physician, Buda Hospital of the Hospitaller Order of Saint John of God  &lt;br&gt; Dr. István Hartyánszky, chief physician, National Institute Of Cardiology  &lt;br&gt; Dr. János Strausz medical director, Törökbálint Institute of Pulmonology  &lt;br&gt; Dr. Szabolcs Ottó deputy director-general chief physician, National Oncological Institute  &lt;br&gt; Dr. András S. Szabó associate professor, Head of Department, Saint Stephen University  &lt;br&gt; Dr. Endre Ludwig head physician, Péterfy Sándor street Hospital</td>
</tr>
<tr>
<td>1997</td>
<td>Dr. Béla Goldschmidt head physician, Saint Roch Hospital  &lt;br&gt; Dr. János Hamar head physician, National Institute of Traumatology  &lt;br&gt; Dr. György Jermendy head physician, Bajcsy-Zsilinszky Metropolitan Hospital  &lt;br&gt; Dr. György Karmos senior research fellow, Hungarian Academy of Sciences, Institute of Psychology  &lt;br&gt; Dr. Elek Kisida head physician, Buda Hospital of the Hospitaller Order of Saint John of God  &lt;br&gt; Dr. Tibor Raposa head physician, Saint Stephen Metropolitan Hospital  &lt;br&gt; Dr. Géza Tasnádi head physician, Pál Heim Metropolitan Municipality Children’s Hospital  &lt;br&gt; Dr. István Péter Temesvári head physician, National Institute of Rheumatology and Physiotherapy  &lt;br&gt; Dr. József Tóth head physician, National Oncological Institute  &lt;br&gt; Dr. Károly Sándor Tóth head physician, Saint Margaret Hospital  &lt;br&gt; Dr. Valéria Váradi head physician, Saint Margaret Hospital  &lt;br&gt; Dr. Gábor Pethő director of quality assurance, Pharmavit Ltd.</td>
</tr>
<tr>
<td>1998</td>
<td>Dr. Hedvig Bodánszky consultant, National Medical Centre  &lt;br&gt; Dr. István Láng chief physician, National Oncology Institute  &lt;br&gt; Dr. Béla Lombay chief physician, B-A-Z County Hospital, Radiology Institute, Department of Paediatric Radiology  &lt;br&gt; Dr. János Radó physician, Virányos Clinic  &lt;br&gt; Dr. Károly Simon head physician, Saint Emeric Hospital-Clinic</td>
</tr>
<tr>
<td>1999</td>
<td>Dr. György Bodoky chief physician, Saint Ladislaus Hospital  &lt;br&gt; Dr. Kristóf Nékám head physician, Buda Hospital of the Hospitaller Order of Saint John of God  &lt;br&gt; Dr. Gyula Poór director-general chief physician, National Institute of Rheumatology and Physiotherapy  &lt;br&gt; Dr. László Simon head physician, Tolna County Municipal Hospital, Szekszárd  &lt;br&gt; Dr. Attila Tankó medical specialist, District II. Municipality Clinic  &lt;br&gt; Dr. Gábor Veres director-general chief physician, Balatonfüred State Hospital  &lt;br&gt; Dr. István Vermes chief physician, Medical Spectrum, Twente (Netherlands)  &lt;br&gt; Dr. Bosco Camelo associate professor, University of Rome  &lt;br&gt; Dr. Péter Gőblyös head physician, National Institute of Hematology and Immunology</td>
</tr>
</tbody>
</table>
2000  Dr. Miklós Bély head physician, Buda Hospital of the Hospitaller Order of Saint John of God  
Dr. György Berencsi head physician, Béla Johan National Epidemiology Centre  
Dr. Tamás Szabó Head of the scientific group, Central School of Sport

2001  Dr. Sándor Frenyó head physician, National Traumatology Institute  
Dr. Ferenc Horkay head physician, National Cardiology Institute  
Dr. Krisztina Kádár chief physician, National Cardiology Institute  
Dr. Lajos Kotsis chief physician, National Korányi Institute of TBC and Pulmonology  
Dr. Ilona Kovalszky senior research fellow, No. I. Institute of Pathology and Experimental Cancer Research  
Dr. Aladár Rónaszéki head physician, Elizabeth Hospital of Péterfy Sándor street Hospital  
Dr. Ágnes Szebeni head physician Emeritus, Ministry of Home Affairs Central Hospital  
Dr. András Végh head physician, Pál Heim Metropolitan Municipality Children’s Hospital  
Dr. Gábor Winkler head physician, Saint John Hospital

2002  Dr. Mátyás J. Baló (Banga) head physician, Central Hospital of the Hungarian Homeland Defence Forces, Department of Internal Medicine  
Dr. Béla Büki chief physician, Kremsi Hospital, Department of Otolaryngology  
Dr. Sándor Czirják chief physician, Deputy Director-General, National Scientific Institute of Neurosurgery  
Dr. Gyula Domján chief physician, Saint Roch Hospital, No. I. Department of Internal Medicine  
Dr. Sándor Dubecz chief physician, National Oncology Institute, Department of General Surgery and Thoracic Surgery  
Dr. Lajos Kullmann director-general chief physician, National Medical Rehabilitative Institute  
Dr. Ádám László head physician, Bajcsy-Zsilinszky Hospital, Department of Obstetrics and Gynecology  
Dr. Károly Nagy scientific consultant, Department of Forensic Medicine  
Dr. Erzsébet Temesvári senior research fellow, National Institute of Dermatology and Venereology

2003  Dr. Áron Altorjay head physician, Fejér County Saint George Hospital  
Dr. István Bodrogi head physician, National Oncology Institute  
Dr. Károly Cseh head physician, Sándor Korányi Hospital and Clinic  
Dr. Gábor Faludi head physician, Kútvolgyi Clinical Array  
Dr. Irén Herjaveczi head physician, National Korányi Institute of TBC and Pulmonology  
Dr. Kálmán Róna scientific consultant, Department of Forensic Medicine  
Dr. György Szeifert chief physician, National Scientific Institute of Neurosurgery  
Dr. Imre Klebovics head of science department, EGIS Pharmaceuticals PLC

2004  Dr. Jenő Julow head physician, National Scientific Institute of Neurosurgery  
Dr. László Bognár head physician, National Scientific Institute of Neurosurgery

2005  Dr. György Bagdy head of laboratory, scientific director, National Institute of Psychiatry and Neurology  
Dr. Katalin Borbély head physician, National Scientific Institute of Neurosurgery
<table>
<thead>
<tr>
<th>Year</th>
<th>Name and Details</th>
</tr>
</thead>
</table>
| 2006 | Dr. Ildikó Horváth head physician, National Korányi Institute of TBC and Pulmonology, doctor of the Hungarian Academy of Sciences  
Dr. László Dézsi research supervisor, Gedeon Richter PLC Research Department of Pharmacology and Drug Safety  
Dr. Tamás Szamosi consultant, No. II. Clinic of Paediatrics |
| 2007 | Dr. Róbert Veres head physician, National Scientific Institute of Neurosurgery |
| 2008 | Dr. Attila Csekeő head physician, National Korányi Institute of TBC and Pulmonology |
| 2009 | Dr. Péter Andréka head physician, György Gottsegen National Cardiology Institute, Department of Cardiology  
Dr. István Szikora deputy director-general chief physician, National Neuroscience Institute |
| 2010 | Dr. Tamás Görcs lecturer, Department of Anatomy, Histology and Embyrology  
Dr. György Keleti head physician comm. Joint Saint Emeric and Saint Ladislaus Hospital, Surgery Department  
Dr. Ödön Gaál graduate chemist emeritus, National Institute of Nutritional Science (1972-2005) |
| 2011 | Dr. Béla Schumann director, Laborexpert Kft.  
Dr. Miklós Lőw chemist emeritus, Gedeon Richter PLC  
Dr. András Bálint project manager chief physician, Saint Emeric Municipal Hospital, General Surgery Section  
Dr. Miklós Merksz head physician, Pál Heim Metropolitan Municipality Children’s Hospital, Department of Urologic Surgery  
Dr. András Telekes head physician, Bajcsy-Zsilinszky Metropolitan Hospital-Clinic, Department of Oncology |
| 2013 | Dr. Attila Vörös chief physician, State Medical Centre - Central Hospital of the Hungarian Homeland Defence Forces  
Dr. Zoltán Takács-Nagy head physician, National Oncology Institute, Department of Radiotherapy |
| 2014 | Dr. György Ostoharics-Horváth chief physician, Aladár Petz County Hospital, Department of Psychiatry, Mental Hygiene and Addictology |
| 2015 | Dr. Sándor Bende chief physician, titular associate professor, B-A-Z County Hospital and University Teaching Hospital  
Dr. Tamás Sándor chief physician, (retired volunteer assistant), 2nd Department of Surgery |
| 2016 | Dr. Ferenc Ender chief physician, Joint Saint Emeric and Saint Ladislaus Metropolitan Hospital, Surgery Department |
2017

Virág Katalin Bognár self-employed sociology instructor
Dr. Bertalan Meskó, Webicina Kft., manager
Dr. Gamal Eldin Mohamed Elmowag head physician, Budaörs Healthcare Centre
Dr. Miklós Szokoly director-general consultant, Péterfy Sándor street Hospital, Clinic and Casualty Centre
Dr. Tamás Iváncsy associate professor, Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics, Department of Electric Power Engineering
Dr. Judit Moldvay chief physician, National Korányi Pulmonology Institute, Tumor Biology Department
Dr. Géza Nagy college professor, Semmelweis Hospital, head physician, University of Miskolc, Faculty of Healthcare
THE MANAGEMENT OF SEMMELWEIS UNIVERSITY

Senate

The Senate is the supreme autonomous leading body endowed with rights of decisional authority, initiative, review and control. The chairman of the Senate is the rector of Semmelweis University.

The makeup of the Senate

The member of the Senate may be such a person – excluding representatives of the Student’s Union and other representative organisations – who is employed by Semmelweis University in an employment relationship or as a full-time working public servant, i.e. lecturer, researcher, teacher, or other scope of activity. The Senate consists of 45 members. This number is determined according to the seats available based on position, election and delegation as a result of election, defined in Section 13, part (4)-(5) of the Organisational and Operational Rules. The Rector and Chancellor are ex officio members of the Senate.

Members of the Senate

<table>
<thead>
<tr>
<th>RECTOR</th>
<th>1. Dr. Béla Merkely</th>
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<tr>
<td>CHANCELLOR</td>
<td>2. Dr. Károly Szász</td>
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<tr>
<td>FACULTY OF MEDICINE</td>
<td>3. Dr. Miklós Kellermayer</td>
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<td>4. Dr. Edit Buzás</td>
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<td>5. Dr. Péter Ferdinandy</td>
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<td>6. Dr. Alán Alpár</td>
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<td>FACULTY OF HEALTH SCIENCES</td>
<td>7. Dr. Zoltán Zsolt Nagy</td>
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<td>8. Dr. Gabriella Bednárikné Dörnyei</td>
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<td>9. Dr. István Vingender</td>
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<td>10. Dr. Tímea Tóth</td>
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<td>FACULTY OF DENTISTRY</td>
<td>11. Dr. Gábor Gerber</td>
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<td>12. Dr. Károly Bartha</td>
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<td>13. Dr. Csaba Dobó Nagy</td>
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<td>FACULTY OF PHARMACEUTICAL SCIENCES</td>
<td>14. Dr. Romána Zelkó</td>
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<td>15. Dr. István Antal</td>
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<td>16. Dr. Szabolcs Béni</td>
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<td>FACULTY OF HEALTH AND PUBLIC SERVICES</td>
<td>17. Dr. Miklós Szócska</td>
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<td>18. Dr. Eszter Zimányiné Sinkó</td>
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<td>19. Dr. Beáta Judit Pethesné Dávid</td>
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<td>PETHŐ ANDRÁS FACULTY</td>
<td>20. Dr. Andrea Tenk Miklósné Zsebe</td>
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<td>21. Dr. Éva Szabó Dr. Feketené</td>
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<td>22. Dr. Ibolya Túri</td>
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<tr>
<td>KÁROLY RÁCZ SCHOOL OF PHD STUDIES</td>
<td>23. Dr. Zoltán Benyő</td>
</tr>
</tbody>
</table>
CLINICAL CENTRE

STUDENT’S UNION

DOCTORANDUS STUDENT UNION

PUBLIC SERVICE COUNCIL

SEMMELWEIS LABOUR ORGANISATION

(according to Section 13. Parts (2) and (3)
of the Organisational and Operational Rules)

INVITEES

24. Dr. Attila Szabó
25. Dr. Ferenc Bánhidy
26. Dr. Péter Hermann
27. Dr. Balázs Hankó
28. Dr. Péter Nyirády
29. Dr. Attila Szijártó
30. Tamás Hegedűs
31. Bence Gusztáv Stubnya
32. Bálint Mátyás Borsik
33. Bálint Tripolszky
34. Edina Vajda
35. Frida Méth
36. Hermann Daniel
37. Szilárd Szigeti
38. Cintia Szabó
39. Viktória Kiss
40. Bence Áron Benedikti
41. Dr. Szilárd Szanyi
42. Krisztina Tódorné Bognár
43. Kornélia Dr. Tóthné Kónya
44. Dr. Zoltán Berki
45. Dr. Katalin Antmann

Dr. Ágoston Szél
Irén Baumgartnerné Holló
Dr. Zsolt Kovács
Dr. Levente Török
Dr. Andrea Kormos
Dr. Marcel Pop
Dr. Attila Mócsai
András Boros
Istvánné Riesz
Dr. Péter Reichert
Dr. Miklós Szathmári
András Balogh
Eszter Kovács
Emőke Mártón
representatives of the supervising ministries
GOVERNMENT SEMMELWEIS UNIVERSITY

RECTOR: Prof. Dr. Béla Merkely M.D., Ph.D., D.Sc.

CHANCELLOR: Dr. Károly Szász
VICE RECTORS:  
Prof. Dr. Ferenc Bánhidy M.D., Ph.D., D.Sc.  
General Affairs  
Prof. Dr. Péter Hermann D.M.D., M.Sc., Ph.D.  
Educational Affairs  
Prof. Dr. Péter Ferdinandy M.D., Ph.D., D.Sc., MBA  
Scientific Affairs  
Prof. Dr. Attilal Szabó M.D., Ph.D., D.Sc.  
Clinical Affairs  
Dr. Balázs Hankó Ph.D.  
Strategical and Developmental Affairs  
Prof. Dr. Alán Alpár M.D., Ph.D., D.Sc.  
International Studies

DEANS:  
Prof. Dr. Miklós Kellermayer M.D., Ph.D., D.Sc.  
Faculty of Medicine  
Dr. Gábor Gerber D.M.D., Ph.D.  
Faculty of Dentistry  
Prof. Dr. Romána Zelkó dr. pharm., Ph.D.  
Faculty of Pharmaceutical Sciences  
Prof. Dr. Zoltán Zsolt Nagy M.D., Ph.D., Habil., D.Sc.  
Faculty of Health Sciences  
Dr. Péter Gaál M.D., M.Sc., Ph.D.  
Faculty of Health and Public Services  
Dr. Miklósné Tenk Dr. Andrea Zsebe  
András Pető Faculty

PRESIDENT OF THE DOCTORAL COUNCIL:  
Prof. Dr. Zoltán Benyó M.D., Ph.D., D.Sc.

HEAD OF THE CENTER FOR EDUCATION OF INTERNATIONAL STUDIES  
Prof. Dr. Alán Alpár M.D., Ph.D., D.Sc.

DIRECTOR of the DIRECTORATE OF INTERNATIONAL STUDIES  
and ACADEMIC PROGRAM DIRECTOR FOR MEDICINE, DENTISTRY AND PHARMACEUTICAL SCIENCES IN ENGLISH:  
Prof. Dr. Miklós Csala M.D., Ph.D., D.Sc.

Secretariat  
Office: Basic Medical Science Center  
1094 Budapest IX., Tűzoltó u. 37-47, first floor 1604  
Phone: (36-1) 266-0452  
Fax: (36-1) 266-6734  
e-mail: english.secretariat@semmelweis-univ.hu  
Website http://semmelweis.hu/english/education/english-language-program/
Head of Secretariat:  
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english.secretariat@semmelweis-univ.hu)

Staff:  
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**Dr. Sándor Bordács** (459-1500/ ext 60073;  
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**Ms. Zsuzsanna Busa** (459-1500 ext 60069;  
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**Ms. Sarolta Kokavec** (459-1500 ext 60074;  
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**Ms. Zenina Korponai** (459-1500 ext 60479;  
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**Ms. Edit Kovács** (459-1500 ext 60075;  
kovacs.edit@semmelweis-univ.hu)

**Ms. Petronella Szabó** (459-1500 ext 60081;  
szabo.petra@semmelweis-univ.hu)

Office hours:  
Monday: 1 p.m. – 3 p.m.

Tuesday: 1 p.m. – 3.30 p.m.

Wednesday: CLOSED

Thursday: 9.30 a.m. – 12 p.m.

Friday: 10 a.m. – 12 p.m.
SCHEDULE FOR THE 2019/2020 ACADEMIC YEAR
(Faculty of Medicine, Faculty of Dentistry, Faculty of Pharmaceutical Sciences)

Opening Ceremony  September 6, 2019

First Semester

Date of registration
– 1st year  September 4, 2019
– the other years  September 2, 3, 5, 6, 2019

Place of registration  English Secretariat

Neptun Day  September 5, 2019
Freshmen’s Day  September 7, 2019

First day of the semester
Faculty of Medicine (1st– 5th years)  September 9, 2019
Faculty of Dentistry  September 9, 2019
Faculty of Pharmaceutical Sciences (1st– 4th years)  September 9, 2019

Last day of the semester
Faculty of Medicine (1st– 5th years)  December 13, 2019
Faculty of Dentistry  December 13, 2019
Faculty of Pharmaceutical Sciences (1st– 4th years)  December 13, 2019
5th year Pharmaceutical Sciences:
Practical training  July 22 – September 20, 2019
The semester lasts for 5th year Pharm. Sc. (12 weeks)  September 23 – December 13, 2019

Examination period
Faculty of Medicine  (1st– 5th years)  December 14, 2019–January 31, 2020
Faculty of Dentistry  (1st– 5th years)  December 16, 2019–January 31, 2020
Faculty of Pharmaceutical Sciences (1st –5th years)  December 14, 2019–January 31, 2020

Second Semester

Date of registration (1st– 5th years)  January 27 – 31, 2020

Place of registration  English Secretariat

First day of the semester  for 1st- 5th years
Medicine and Dentistry  February 3, 2020

Last day of the semester  for 1st- 5th years
Medicine and 1st– 4th years Dentistry  May 15, 2020
Last day of the semester for 5th year Dentistry  April 30, 2020

Faculty of Pharmaceutical Sciences
First day of the semester  (1st– 4th years)  February 3, 2020
<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
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<tbody>
<tr>
<td><strong>Last day of the semester (1st– 4th years)</strong></td>
<td>May 15, 2020</td>
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<tr>
<td><strong>First day of the semester (practice)</strong></td>
<td>January 29, 2020</td>
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<td>for 5th year</td>
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<tr>
<td><strong>Last day of the semester (practice)</strong></td>
<td>May 29, 2020</td>
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<td>for 5th year</td>
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<td><strong>Examination period for Faculty of Medicine, Faculty of Dentistry</strong></td>
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<tr>
<td>1st – 5th year Medicine</td>
<td>May 18 – July 3, 2020</td>
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<td>1st – 4th year Dentistry</td>
<td>May 18 – July 3, 2020</td>
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<td>5th year Dentistry</td>
<td>May 4 – June 12, 2020</td>
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<td><strong>Faculty of Pharmaceutical Sciences</strong></td>
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<td>1st – 4th year</td>
<td>May 18 – July 3, 2020</td>
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<tr>
<td><strong>Exam held outside the academic year – EOAY</strong></td>
<td>August 25 – September 2, 2020 (presumably)</td>
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<tr>
<td><strong>EOAY for Pharm. Sc. 4th year</strong></td>
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<td><strong>2019/2020 Schedule for 6th year Medicine</strong></td>
<td>July 15, 2019 – April 30, 2020</td>
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<td><strong>2020/2021 Schedule for 6th year Medicine</strong></td>
<td>July 13, 2020 – April 29, 2021</td>
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<tr>
<td><strong>General Board Examination Period</strong></td>
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<tr>
<td>Faculty of Medicine</td>
<td>November 18-27, 2019</td>
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<td>May 27 – June 12, 2020</td>
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<td>August 24 – September 1, 2020</td>
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<tr>
<td>Faculty of Dentistry</td>
<td>June 15 – 19, 2020</td>
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<tr>
<td>Faculty of Pharmaceutical Sciences</td>
<td>June 3 – 19, 2020</td>
</tr>
<tr>
<td><strong>Graduation Ceremony for Dentistry</strong></td>
<td>July 4, 2020 (Saturday)</td>
</tr>
<tr>
<td><strong>Graduation Ceremony for Pharm. Sciences</strong></td>
<td>June 27, 2020 planned (Saturday)</td>
</tr>
</tbody>
</table>

**Holidays:**

- October 23, 2019 (Wednesday)
- November 1, 2019 (Friday)

**Spring holidays**

- April 6 – 9, 2020
- April 10, 2020 (Good Friday)
- April 13, 2020 (Easter Monday)
- May 1, 2020 (Friday)
Research Students’ Conference: February 12 – 13 – 14, 2020

No lectures or seminars for years 2–5/6:
on February 12 – 13 at the Faculty of Medicine and at the Faculty of Pharm. Sc. (Wednesday – Thursday),
on February 12 (Wednesday) at the Faculty
of Dentistry, on February 13-14 solely for dental
students whose participation at the conference is
certified.

Faculty Day: April 23, 2020 (Thursday)
THE WORDS OF THE SOLEMN VOW AT REGISTRATION

I............... student of Semmelweis University promise under oath that I will respect the Hungarian laws and the Fundamental Law of Hungary. I promise that I shall abide by the regulations of Semmelweis University. I promise solemnly that I will respect the professors and teachers of the University, and that my conduct will be in keeping with the honor of my profession. I will keep the secrets of the patients that I learn about in the course of my studies. I will pursue my studies with full sense of responsibility to prepare myself to the best of my abilities for all my duties and obligations in my profession so as to be able to serve with my knowledge the progress of mankind. So help me God!

HE WORDS OF OATH AT GRADUATION

Faculties of Medicine and Dentistry

“I, ............................................. swear that I will devote myself to the medical profession at all times. I will use the knowledge acquired in the field of medicine to prevent and cure diseases, and to benefit the physical and mental well-being of my patients. I will not betray the confidence of those who turn to me, nor will I take advantage of their defenselessness, nor will I disclose their secrets. I will treat every person with equal care and attention. I will maintain the high quality of my knowledge and skills by continuous education, but will also acknowledge the limits of my knowledge and abilities. I will submit myself to the ethical requirements of my medical practice. I will strive to enhance the reputation of the medical profession and SEMMELWEIS University.”


Faculty of Pharmaceutical Sciences

I, ............................................., swear that in virtue of my acquired knowledge of pharmaceutical sciences, I shall do my professional duty with the utmost diligence, and I shall always behave worthy of my profession. I shall place before all things the care for and the healing of my patients. I shall not reveal any data concerning the health status or the medication of my patients. I shall maintain my theoretical and practical knowledge at a high level. I shall never use my knowledge for activities that are contrary to the ethical code of pharmacists. As a participant in the activity of healing, I shall use my knowledge only for the defense and restitution of health to my fellow humans. I shall do my best to promote the science of pharmacy and keep the good name of the Semmelweis University.
Study and Examination Regulations

Faculties of Medicine, Dentistry and Pharmaceutical Sciences

Section 1

The Scope of the Study and Examination Regulations

1. The Study and Examination Regulations applies to academic and examination matters of Hungarian and foreign students who participate in vocational higher education courses, Bachelor's programmes, Master's programmes, undivided programmes, graduate or postgraduate specialist training courses in Hungarian or in a foreign language, in state-funded or self-financed educational programmes, in credit-based full-time, evening or distance learning programmes.

2. The academic and examination matters of doctoral students are regulated by another policy.

3. Familiarity and compliance with the policy is mandatory for all lecturers, researchers, administrative staff and students who, directly or indirectly, participate in the education process.

Section 2

Basic concepts of the credit system

1. One credit corresponds to the performance of 30 hours of academic work by the student. Study hours include classes (contact hours) and individual study hours.

2. Credits may only be assigned to subjects graded with a mark on a scale of one to five or one to three.

3. Credits can be completed by obtaining at least a satisfactory (2) mark in an evaluation scale of one to five, and a pass mark in an evaluation scale of one to three. The value of a credit is independent of the mark the student received, provided that the student's performance has been accepted, but it can only be validated if the conditions of this Policy are met.

4. An additional 10% of credits can be recognised as completed in the term, in addition to the obligatory credits for the term. If the credit value of the obligatory, obligatory elective, and elective subjects that can be added by the student and the subjects dropped in the previous year exceeds the maximum value that the student can register, the student may have the credit(s) recognised during the following term or terms, in a manner favourable to them. Adding and completing additional subjects corresponding to 10% of the total credit value included in the qualification requirements for the programme is free of charge for state-funded students; self-funded students must pay a fee proportionate to the relevant number of credits.

5. In the credit system, a set number of credits must be completed from various groups of subjects and certain criteria must also be fulfilled within the time limits available for completing a Bachelor's or a Master's programme, or for obtaining a professional qualification. The student may progress according to an individual plan, subject to the preliminary courses completed and other rules, using the available options.

6. Criteria means the mandatory tasks specified in the training and outcome criteria, with no associated credits (e.g. performance of a work placement, fulfilment of language requirements, etc.).

7. The credits required for the degree can be obtained at Semmelweis University in a period two terms shorter than the training period if the student has completed preliminary courses.

Section 3

The curriculum

1. The detailed instruction and academic criteria, as well as the detailed rules of training are defined by the curriculum.

   Completion of the obligatory subjects is mandatory for every student in the given programme, and these subjects may not be substituted by other ones.
2. Model curriculum means the choice of subjects recommended for completing a given programme based on the preliminary requirements, from which the student can deviate within the limits of the Regulations. On average, the model curriculum contains subjects amounting to 30 credits per term.

3. The model curriculum contains, in a breakdown by teaching period,
   a) all obligatory and obligatory elective and elective subjects,
   b) the number of contact hours per week (or term) and the assigned credit value of a subject,
   c) the type of assessment (signature, interim mark or end-of-term examination),
   d) the terms in which the subject is available, the criteria and the deadline for their completion,
   e) the terms and rules of selecting a programme,
   f) the preliminary courses completed,
   g) the requirements for adding and completing the thesis (diploma),
   h) the detailed conditions for proceeding to take the final examination,
   i) the subjects included in the final examination and the rules for selecting them.

4. Preliminary courses means the total of the requirements for the subjects specified in the syllabus for a programme.

5. The preliminary courses are defined by the council of the competent Faculty, and must be submitted to the Student Union for comment. Subjects added contrary to the preliminary requirements or the Study and Examination Regulations will not count.

6. Preliminary criterion (precondition) means the knowledge from another subject, group of subjects or subject module and/or the proven fulfilment of a criterion required to understand the material of a course. A subject may only be added if the subject(s) and criteria identified as preliminary criteria for the subject were already completed prior to addition. It may be also specified as a requirement that certain subjects included in the curriculum must be added at the same time.

7. According to the model curricula, there are no more than 40 contact hours/week (in addition to basic language and physical education courses).

8. The curricula of the individual programmes are determined by the Faculty Council responsible for the training programmes concerned and, with regard to inter-faculty training programmes, by the Senate, in agreement with the councils of the faculties participating in the training programme concerned. The Faculty Council of the faculty responsible for the educational programme will recognise the obligatory and elective subjects from among the subjects accredited according to paragraphs (3) and (4) of Section 3.

9. Module means the multi-subject, back-to-back units (e.g., foundation module, core module) or the equivalent, interchangeable units (specialisation module) within the syllabus of a programme.

10. The student may choose between the specialisation modules simultaneously available in the programme. The number of students choosing a specialisation module may be limited and a minimum headcount for offering the subjects of a specialisation module can be set by the Dean.

Section 4

Subject programme, subject accreditation

1. The knowledge and skills to be acquired as part of the subjects are specified in the subject programmes.

2. The subject programme contains the following:
   a) the code and the full and abbreviated name of the subject,
   b) the number of classes per week (term) (in a breakdown by lecture, classroom practice, laboratory practice, clinical practice and sports practice),
   c) the type of end-of-term assessments (signature, interim mark, practical mark or examination mark),
   d) the credit value assigned to the subject,
   e) the name of the educational organisational unit and the lecturer responsible for teaching the given subject and the preliminary criteria for adding the subject,
   f) the role of the subject in realising the goal of the training, and the description of the syllabus.
   g) a description of how marks (signatures) are given,
   h) any examination criteria,
   i) the written materials for the subject and the most important technical and other aids that can be used,
   j) the number and type of tasks to be completed through individual work/self-study by the student.

3. The accreditation of a subject means the approval of the programme of the subject.

4. The programme for each subject is accredited by the Council of the Faculty concerned.
Section 5

Training periods

1. During term-time, the student participates in classes and performs tasks associated with the completion of the subject. The duration of the term-time is at least 13 weeks. Classes (lectures, practicals) last 45 minutes.
   In term 9 of the pharmacy programme, the term-time lasts 12 weeks, supplemented by an 8-week work placement.
2. Examinations must be taken during the examination period, which consists of an uninterrupted period of at least 7 weeks.
3. Duration of the work placement:
   Faculty of Medicine: the number of weekly hours of summer work placements and the work placement of students in year 6 is 35. In addition to this, students must be on duty for 24 hours once every two weeks.
   Faculty of Pharmaceutical Sciences: the number of weekly hours of summer work placements is 35; the number of weekly hours of work placements preceding the final examination is 40.
4. The Faculty Council will make a decision regarding the schedule for every academic year after consulting the Student Union and it will notify the Rector of the University of that decision.
5. The Rector and the Dean may each authorise three (3) extra days per academic year for an academic break, in agreement with the Student Union and the relevant faculty committee of the Student Union. Preferably, the date of the academic break must be set before the start of term-time. The Dean and the Rector must consult before approving the academic break.

Section 6

Committees and persons responsible for academic matters

Section 7

Student status, obligation of registration

1. Students who gained admission or transferred to the Semmelweis University may establish a student status with the University.
2. Before commencing their studies, students with a Hungarian citizenship take an oath, while students with foreign citizenship make a ceremonial pledge.
3. Students who have become entitled to begin their studies must register for the first term of their studies. By registering, students confirm that they are familiar with and agree to comply with the rules of the University and the Faculty applicable to them.
4. Registration takes place and notifications of continued or suspended studies are made in the period specified for this purpose by the Faculties.
5. Students can register by registering in the student information system; they can report that they intend to continue their studies by reporting this in the student information system.
6. In the event of an accident, illness, or any other unforeseeable, but reasonable circumstance, the student may withdraw their declaration of their intention to continue their studies.
7. Adding subjects means registering for the lectures and seminars announced for a subject. Adding subjects is conditioned on the fulfilment of the preliminary criteria for the subject.
8. Students completing a study period abroad in the given term are also required to report their intention to continue their studies.
9. For students required by a separate legal provision to finance their studies, compliance with this obligation is a precondition for registration or continuing their studies in the relevant term.
10. Students must promptly report any changes in their data registered in the student information system. No legal action can be taken to remedy any adverse effect caused by failure to do so. Students who fail to fulfil their obligation to report any change in their data may be charged a certain additional fee.
11. If the student continues their studies in the training period concerned, they will be entitled to:
   a) add the subjects specified in the curriculum in accordance with their progression and take examinations in the subjects added,
   b) use the University facilities available to students (library, cultural and sports facilities),
   c) use services aimed at the protection of students’ interests,
   d) become a member of academic student workshops,
   e) use the student card that proves their student status,
   f) apply for grants provided by the University, if they study in a state-funded programme.
Section 8

Act CCIV of 2011 On Higher Education

Section 45  (1) The student’s status shall be interrupted if the student declares that they do not intend to fulfil student obligations during the next semester, or fails to register for the next semester. The total combined duration of the period over which the student may interrupt their studies may not exceed two semesters. Students may suspend their status several times, in accordance with specifications stipulated in the course and examination regulation.

(2) Pursuant to the request of the student, the institution may equally authorise the suspension of student enrolment a) for a combined period exceeding the duration set out under Paragraph (1), or b) if relevant provisions have not been defined in this regard in the institution’s regulation on condition that the student is unable to fulfil obligations ensuing from their student status for reasons beyond their control, because of child-birth, an accident or illness, or other unforeseen reason.

(3) The student’s status shall be suspended if the student has been barred from continuing their studies after a disciplinary penalty was imposed against the student.

Suspension of student status

1. The student must register in the student information system during the period specified by the Faculty, even if they do not intend to fulfil their student obligations during the next training period. If the student fails to request the suspension of their studies within a month after the term has started, the term will be regarded as an active term, even if the student fails to attend classes and does not fulfil any academic criteria included in the curriculum.

2. During the period when their student status is suspended, a student
   a) may not receive any payments from the student grant fund,
   b) cannot have their student card validated,
   c) may not exercise their right to vote and to be elected, which means that they cannot be a member of the Student Union until they register again as an active student.

3. A person who has been admitted may postpone the commencement of their studies for a maximum of two terms upon request. Requests for suspended semesters must be made in writing, to the Dean’s Office of the Faculty. After the period specified to request the suspension has passed, the admitted person must register without any special notice. Failing to do so will result in their losing the right to begin their studies.

4. Student status can be suspended on more than one occasion.

Section 9

Termination of student status

Student status is terminated by dismissal if:

1. the number of credit points obtained from obligatory and obligatory elective subjects in the fourth active term following registration is less than 50% of the credit points that can be obtained in the given period,

2. this point is not applicable to students studying at the programs in foreign languages

3. the student was unable to acquire the credits missing because of dropping an obligatory subject, in the term when the subject was offered for the second time at the latest after the first offer.

3a. the student began their studies in the programme concerned in the autumn term of the 2012/13 academic year or later and they failed to pass the retake examinations or repeated retake examinations from a given study unit for the fifth time in a row.

4. If their student status has been terminated based on the provisions of Section 9 (1) and the student is admitted again during a new admission procedure, they may not request the recognition of their previous studies.

Section 10

Readmission

repealed by Senate Decision No. 125/b/2012. (XII. 13.)
Section 11

Transfer

1. A student of another higher education institution may request a transfer to Semmelweis University, to a programme with the same training specialisation, provided that the conditions of the termination of the student status are not met.

2. Transfers to the Faculty of Medicine may only be authorised from the same faculty of another university after the completion of the theoretical module or the preclinical module, to term 5 or 7 of the model curriculum. Requests must be submitted to the Dean’s Office of the Faculty by the 15th of July every year. The request must be accompanied by the curriculum (model curriculum) of the university, and the certified translation of these documents, with regard to studies pursued abroad, if the documents have been issued in a language other than the language of teaching at the Faculty.

Transfers to the Faculty of Dentistry may only be authorised from the same faculty of another university after the completion of the theoretical module or the preclinical module. Requests must be submitted to the Dean’s Office of the Faculty by the 15th of July every year. The request must be accompanied by the curriculum (model curriculum) of the university, and the certified translation of these documents, with regard to studies pursued abroad, if the documents have been issued in a language other than the language of teaching at the Faculty.

Transfers to the Faculty of Pharmaceutical Sciences can be requested by pharmacy students from other universities. Transfers to the Faculty of Pharmaceutical Sciences may only be requested and authorised from the same faculty of another university, after the completion of at least two terms according to the model curriculum, provided that the conditions of mandatory expulsion or exclusion are not met. Transfer cases are decided in the first instance by the Academic Committee of the receiving faculty. Decisions upon comments and complaints in the second instance fall within the powers of the dean of the faculty. No appeal can be made against the decisions of the dean. The transfer request must be accompanied by the curriculum of the discharging university, and the certified translation of these documents, with regard to studies pursued abroad, if the documents have been issued in a language other than the language of teaching. The deadline for submitting transfer requests is the 15th of July. Before making a decision, the Academic Committee will interview students requesting their transfer from foreign universities and, taking the opinion of the head of the educational organisational unit concerned (the lecturer of the subject) into account, the Committee may order students to take a supplementary examination.

3. The condition of the transfer is that the adjusted credit index of the student submitting the transfer request must be at least 3.51-4.00 in the two terms preceding the transfer.

4. Transfers may also be requested at Semmelweis University between programmes, as well as between faculties and training levels. The minimum requirement for this is that at least 75% of the credits that can be obtained in the first four terms of the model curriculum must be obtained and the relevant weighted grade point average must be between 3.51 and 4.00.

5. With regard to transfers, the discharging institutions must declare whether the students concerned were state-funded or self-funded. For state-funded studies, the discharging institution must provide information on the number of state-funded and active terms used by the student in the course of their studies and must declare that the student’s student status has been terminated and their name has been removed from the register as a result of the transfer.

6. Transfers between programmes, faculties and training levels will only be possible if the content of the subjects completed is at least 75% identical to the content of the subjects taught at the Faculty concerned. In all other cases, students may only begin their studies after a successful admission procedure has been conducted at the Faculty concerned, in accordance with the law on admission to higher education institutions.

7. The Educational, Credit, and Credit Transfer Committee of the receiving faculty will decide on the recognition of subjects completed and credits obtained in another programme, at another faculty, or in another institution according to Section 21.

Section 12

Parallel studies

1. In the event of successful admission, students from another programme, faculty or institution may pursue parallel studies at Semmelweis University.

2. Students of Semmelweis University may also participate in parallel training with another institution, which they must report to the dean of the Faculty.
Section 13

Visiting student status

1. Visiting student status is authorised for students of Semmelweis University by the Academic Committee of the Faculty, taking the opinion of the Educational, Credit and Credit Transfer Committee into consideration.

2. Requests for this purpose must be submitted to the Dean’s Office of the Faculty concerned, always attaching the opinion of the head of the educational organisational unit concerned and the receiving institution’s syllabus of the relevant subject.

3. Subjects completed as a visiting student may be recognised in accordance with Section 21.

4. The criteria for transfers and the establishment of visiting student status, as well as for joining programmes required for obtaining additional qualifications or specialisations, are specified by the receiving higher education institution.

5. Studying the following subjects taught at Semmelweis University may only be authorised for students of another university or faculty with the prior consent of the head of the relevant department and if the student concerned studies similar subjects at his own university:
   – anatomy,
   – pathology,
   – forensic medicine and
   – clinical subjects

6. Students who have been authorised as visiting students at any faculty of Semmelweis University may only join the relevant programme at the beginning of the study period.

Section 14

State-funded and self-funded educational programmes

1. There are two ways of becoming a self-funded student at Semmelweis University: by admission as a result of an admission procedure, or by transfer from the self-funded training of another programme, faculty or institution according to Section 11.

2. If the higher education institution establishes – regarding a state-funded student at the end of the academic year – that in the last two terms when their student status was not suspended, they failed to complete at least 50% of the credits specified in the recommended curriculum, the student may only continue his studies in the next academic year as a self-funded student.

3. Students funded through a (partial) grant by the Hungarian state must be reassigned to self-financed training if, in the last two terms when their student status was not inactivated they failed to reach the recommended grade point average of 2.0 calculated using mathematical average calculation from the marks received for subjects added, whereby subjects added but not completed are factored in as an unsatisfactory mark (1).

4. repealed by Senate Decision No. 125/b/2012. (XII. 13.)

5. Credits obtained later than in July during the examination period of the spring term or during the extended examination period should not be regarded as completed or obtained for the purpose of the provisions of this section.

Section 15

Assessment of the student’s performance

Section 16

Announcement and registration of subjects

1. The obligatory subjects to be added are defined by the model curriculum for each term by programme in the order specified therein.

2. Based on the proposal of the educational organisational units, the Dean’s Office of the Faculty concerned publishes the list of obligatory, obligatory elective, and elective, subjects for the next term in the student information system, by the last week of the previous study period.
3. The announcement must include the criteria, lecturer(s), schedule, the minimum and maximum headcount, and the ranking criteria in the event too many students register for the course unless ranking is determined by the order of registration. In addition to being centrally published, the announcement containing the data above is also published by the organisational units responsible for teaching the subjects.

4. Students must register for the offered obligatory, obligatory elective, and elective, subjects by the end of the examination period preceding the relevant term.

5. The maximum headcount for a given course may be limited by the reasonable capacity of the professor teaching the class, the limited number of available teaching materials, the capacity of laboratories and seminar classrooms, and, if agreed by the Student Union, other reasons.

6. Students may choose between subjects, lecturers and classes offered simultaneously (taking the requirements of the curriculum into account). The restrictions listed in paragraph (3) must be taken into account in this respect as well.

7. If the student was unable to complete the credits assigned to a subject added in a given term, they may add the subject again in two future terms, subject to the preliminary courses completed and the provisions of Section 17 (16) of the Study and Examination Regulations. If the satisfactory fulfilment of the interim criteria is confirmed by the professor of the subject by their signature, the student only needs to take the exam in the next term. The student may request another opportunity to obtain the signature.

8. Obligatory subjects that are subject to an exam must be announced in each term with an adequate number of courses in the current term according to the model curriculum, and at least with examination opportunities in cross terms. In the cross term, the student may attempt to take the examination a number of times, corresponding to the number of possible attempts left from the previous term.

9. A sufficient choice of obligatory and elective subjects, of at least 120% of the credits, must be provided every academic year.

10. The announcement of subjects falls within the scope of responsibility of the Dean of the Faculty responsible for the programme.

Section 17

Assessment of knowledge and practical skills, class attendance

1. The student’s performance may be assessed using
   a) a five-point classification [excellent (5), good (4), satisfactory (3), pass (2), fail (1)]
   b) a three-point classification: merit (5), pass (3), unsatisfactory (1).

2. No difference may be made in the assessment of students’ work based on whether they are state-funded or self-funded.

3. Knowledge may be assessed using
   a) oral or written accounts given during class, written (classroom) tests, or assessments of assignments completed outside classes during term-time,
   b) practical marks,
   c) end-of-term examinations,
   d) comprehensive examinations,
   e) final examinations.

4. End-of-term marks can be given as
   a) mid-term marks – both for theoretical and practical subjects – based on assessments during term-time,
   b) marks obtained during an examination; in this case, the mark is based on
      – only the performance at the examination or
      – the combination of mid-term assessments and the performance at the examination.

5. If the mid-term mark is established based on classroom tests or if the condition of taking the examination is any other interim assessment then the student must be provided at least two additional opportunities for meeting such requirements. If the student is still unable to obtain the mid-term mark using these additional opportunities, the student cannot be given the end-of-term signature in the subject concerned.

6. Fulfilment of the mid-term criteria of a subject that is subject to an examination is confirmed by the relevant signature in the electronic student registration system. Proceeding to take the examination is conditional upon obtaining this signature. The signature may be conditional upon achieving 50% of the score (or a 2.50 grade average) that can be achieved in mid-term assessments.

7. In order to obtain an end-of-term signature for the given subject, attendance at at least 75% of practical sessions and lectures is required. If a tolerable absence rate of less than 25% is specified by the head of the educational organisational unit (the lecturer of the subject), an opportunity for making up for missed practical sessions before the start of the examination period at the latest must be provided.
8. The head of the educational organisational unit (the lecturer of the subject) will send a report to the Dean of the Faculty in the first week of the examination period, listing the students they taught who failed to attend at least 75% of the lectures and practical sessions, and those who are denied the end-of-term signature as they were unable to obtain a mid-term mark. The Dean's Office will record the fact of the refusal to sign in the electronic student registration system.

9. The obtaining of a practical mark may be prescribed if the use of the subject in practice and an assessment of practical skills are possible and necessary for the purpose of the training goal. The requirements of subjects that can be assessed by practical marks must be fulfilled by students primarily during term-time. If the practical skills are assessed on a scale of five grades, the “unsatisfactory” mark, and if they are assessed on a scale of three grades, the “fail” mark will mean that the student must add the subject concerned again.

10. Examinations test students’ knowledge of a subject acquired during a teaching period. They are evaluated on a scale of five grades. The final end-term examination is identical to the comprehensive examination in terms of content.

11. A comprehensive examination is the assessment of the knowledge of the synthesised materials of a subject taught over several terms, and the earliest time for taking it is when the last examination relating to the subjects of the comprehensive examination has been passed or the last relevant mid-term mark has been obtained.

12. For subjects that are to be tested by means of examinations and the lectures of which are supplemented by seminars (practical sessions) and also for subjects where the classes consist of seminars (practical sessions) only, the head of the educational organisational unit (the lecturer of the subject) may offer a student an excellent or good mark based on their performance in the relevant teaching period. The student is not obliged to accept this offered evaluation and may request to take an examination.

13. Students will obtain the credit if they are given a mark that is better than an unsatisfactory grade or a “fail” evaluation.

14. No redress is available regarding the marks or evaluations given through assessment.

15. A subject will be considered dropped if, for a subject added, the student
   a) fails to obtain the end-of-term signature,
   b) obtains the signature but fails to appear at the examination and does not attempt to take the examination in the examination period,
   c) is unable to meet the examination requirements in the permitted number of retake examinations and repeated retake examinations (unsatisfactory mark) during the relevant examination period.

16. The latest date for obtaining the credits missing because of dropping a subject is the term in which the subject is announced again, for the second time, unless the student's status is inactive.

17. In the case of cumulative, multi-level subjects spanning multiple terms - unless the end of the registration period of the given term, based on the consent of the head of the educational organisational unit - the head of the Faculty may authorise adding the next term’s unit for solely one subject, if the student has obtained the signature for the subject at the end of the previous term but has been unable to meet the examination requirements. However, the examination mark for the next term can only be obtained if the student has obtained the credits for the subject concerned for the previous term (prerequisite subject).

Section 18

Subject criteria

1. The subject criteria specify the responsibilities of students and the relevant deadlines, for the purpose of fulfilling the subject criteria.

2. The subject criteria contain the following:
   a) the subject syllabus,
   b) the criteria for participation in the classes and opportunities for making up for missed classes,
   c) how to offer an excuse for absence from classes or the examination,
   d) the number, topic and date of mid-term assessments (essays, classroom tests), and the manner of retaking missed or failed mid-term assessments,
   e) the criteria for end-of-term signatures,
   f) how marks are established,
   g) the type of the examination,
   h) how students can register for the examination,
   i) how examination registrations can be amended,
   j) how to offer an excuse for failing to attend the examination,
   k) the list of notes, textbooks, aids and literature to be used for learning the subject.
3. The head of the educational organisational unit ensures that the subject criteria are prepared and sends them for approval to the dean of the faculty concerned by the end of the study period of the second term of the academic year.
4. The dean of the Faculty informs the head of the educational organisational unit concerned of the approval of the subject criteria within 15 days.
5. The subject criteria must be published in the Academic Calendar in the traditional form, as well as in an electronic format, at the beginning of the academic year. The educational organisational unit concerned must also post the information published about its subject in the Academic Calendar on its website and on the department’s notice-board. The information in the information booklet may not be changed during the given teaching period.

Section 19

Rules of examinations and comprehensive examinations; the examination period

1. Examinations must be taken during the examination period, which consists of an uninterrupted period of at least 7 weeks.
2. A student who is unable to fulfil their examination obligation arising from their student status in the spring term of the academic year may also take an exam organised outside the academic year (hereinafter: EOAY). An EOAY shall be regarded as an exam taken in the examination period for the spring term of the academic year, but the student's current term will be closed in such a manner that the results and credit value of such examinations cannot be taken into account for the purposes of reassignment. In connection with the decision on reassignment, no application for changing the reassignment can be submitted based on the result of an EOAY. EOAYs can be taken for the spring term of the given academic year during the period referred to in item 2e).

2a) With regard to undivided master of science degree programmes in medicine and health science, a student may take an EOAY as specified in item 2 for any subject added but not completed during the given spring term, taking into account the number of exam opportunities, by notifying the Dean's Office/Registry Office, and listing the subjects for which they intend to take an EOAY, until the end of the work day following the last day of the examination period and provided that the student had not been dismissed as per item 1–4 of Section 9 upon the closing of the examination period of the spring term, including exemption from the dismissal based on the equitable decision of the AEC.

2b) Taking the exam as specified in item 2) is not considered a subject addition.

2c) With EOAYs, the student may make as many attempts in the period as specified in item 2e) to take the exam for any subject as the number of exam opportunities remaining for the given subject in the given term.

2d) If the student passes an EOAY, the non-completion of the EOAY study unit(s) in the term in which the study subject was added is not considered a subject drop as defined in item 16 Section 17.

2e) The date of the EOAY must be set in such a manner that the student can use the examination opportunities as specified in item 12 of Section 19 in the 7-business-day period – from Tuesday on the week preceding the registration week until Wednesday on the registration week – in the two weeks immediately preceding the term following the spring term of the given academic year, also taking the general rules for the organisation of examinations pursuant to item 3 of Section 19 into account. At least two days must pass between each examination for the given subject. Examinations must be organised in such a manner that all students concerned can register for and take them.

2f) For EOAYs, the conditions of announcing a subject according to item 3 of Section 16 need not be fulfilled. If the student fails to complete the subject as part of the EOAY, they may use the CV course opportunity announced during the term as specified item 7 of Section 16, provided that they still have any remaining examination opportunities based on the difference between the number of failed EOAYs and the number of total examination opportunities as specified in item 12 of Section 19.

2g) Students may retake any failed EOAYs in the next term in which the subject is announced, based on the difference between the number of unsuccessful examinations for the given subject, the number of failed EOAYs and the number of examinations specified in item 12 of Section 19. The number of retake opportunities for a study unit may not exceed the number of fail opportunities specified in Section 59 (4) of the NHEA.

2h) If the student uses an active term in the cases specified in item 7 of Section 16 (FM course and CV course), in the given term and in the following term they may add 15 credits of obligatory elective and elective subjects per term.

3. The number of examination places must be at least double the number of students who added the subject. Educational organisational units must provide at least two examination days a week per course for each year (class) within the examination period for oral examinations, and at least one examination day per week for written examinations. The earliest date when a retake (comprehensive) examination or a repeated (comprehensive) examination can be taken is the third calendar day after the failed examination.

4. Students must register for the examination and they may amend their registration no later than 48 hours before the announced date and time of the examination.
5. If the student fails to appear at the examination, their knowledge cannot be assessed. An excuse for any absence from the examination must be offered to the head of the educational organisational unit (the professor of the subject) within three business days. If no excuse is offered or if it is not accepted, the department will enter the note “absent” into the mark-book; this, however, will not reduce the number of opportunities to take the examination in the given subject but the student will be obliged to pay an amount specified in the charges and benefits policy.

6. Comprehensive examinations will be conducted by leading lecturers (associate professors and university professors) but based on the proposal of the head of department the dean may also authorise the participation of senior lecturers. Comprehensive examinations must be taken before an examination board of at least two members if the comprehensive examination contains the bodies of knowledge of several subjects and if the comprehensive examination is a repeated one. The head of the examination board must be a leading lecturer.

7. The examination can only be taken if the fulfilment of the subject’s requirements for the term are confirmed by a signature in the electronic student registration system. The end-of-term signature can be given by the head of the educational organisational unit responsible for teaching the subject and the professor of the subject.

8. Oral examinations are open to all university citizens. The dean may limit such public access.

9. The announcement of the examinations and holding the announced examinations will fall within the scope of responsibility of the head of the educational organisational unit and the lecturer of the subject.

10. If an examination is unsuccessful, the examiner must record a mark “unsatisfactory” in the electronic student registration system. An examination is considered commenced when the student has drawn a question from the examination topics, and, in the case of practical examinations, when the examination is actually started.

11. If a student does not appear at or fails an examination, they may attempt to pass the failed examination twice during the examination period concerned, in the form of retake and repeated retake examinations. A student may take a third repeated examination (a second repeated retake examination) in one subject per academic year. The student may not take a fourth repeated examination in the same subject in the same term, on the basis of equitable treatment.

12. Repeated retake examinations can be taken at the examination dates offered in the examination period, after the payment of the appropriate repeated examination fee specified in separate regulations. At the student's written request submitted to the head of the department, the student may take the repeated examination before another professor or board.

13. The student may retake successful examinations until the end of the examination period. Students must be informed that their results can also become worse at retake examinations. No additional credits can be obtained by improving the result of an already successful examination through retaking it. If the number of examination places is limited, students registering for a retake examination or a repeated examination will have priority over students registering for a retake of a successful examination.

14. After the written examination, within five business days after the examination day, students may inspect and make notes of the examination papers at the time specified by the educational and organisational unit responsible for teaching the study unit concerned and they may discuss matters relating to the examination questions with the lecturer (for example, regarding mock examinations), and during this discussion any legitimate comments affecting the assessment of the examination must be dealt with. The educational and organisational units must retain all written examination papers for a year.

Section 20

The registration and indicator numbers of academic achievement

1. The academic achievement of students must be recorded in the student information system.
2. The dean of the competent faculty may confirm the admission and registration of students by signing the relevant document.
3. The fulfilment of the requirements can be entered by the head of the educational organisational unit or the professor of the subject, or, if they are not available, the general deputy of the head of the educational organisational unit. All other entries can only be made by the dean's office (registry office).
4. After the closing of the academic period, the number of credits added and obtained by the student, the credit index and the grade point average must be entered into the electronic student registration system. These data can be confirmed by the signature of the dean of the competent faculty.
5. The data in the grade-book may only be amended by a person who is entitled to make the entry to be amended.
6. Entries and amendments must be dated and signed.
7. The grade-book if any must be handed over to the student at the time of the termination of their student status, except in the case of a transfer.
Section 21

Recognition of substituting and elective subjects

1. The recognition of a subject offered by another faculty or institution involves the assessment of whether a subject can be substituted for another subject (or other subjects), and establishing in what respect a subject differs from other subjects.
2. A subject can be substituted for another if at least 75% of the programme of the substituting subject(s) matches the programme of the substituted subject.
3. A subject differs from another one if their programmes are at least 25% different.
4. A subject can only be taken into account for the fulfilment of a requirement related to the curriculum if it is different from all other subjects already taken into account for the fulfilment of the requirements.
5. Students may request the faculty to recognise a subject (subjects) added or completed previously at another faculty or higher education institution before registration or before they declare their intention to continue their studies. Decisions on such recognition are made by the Faculty’s Educational, Credit and Credit Transfer Committee, taking paragraphs (1) and (4) into account. The Committee makes a decision on the applications submitted to it within a deadline that makes it possible for the student who requested the recognition to compile their individual course list for the following term while taking the decision into account.
6. Requests for the recognition of a subject must be submitted to the Dean's Office, addressed to the Educational and Credit Transfer Committee of the Faculty, always attaching the opinion of the head of the educational organisational unit concerned and the syllabus of the relevant subject of the receiving institution.
7. Each Faculty of the Semmelweis University recognise the credit value of the subjects offered by the other Faculties. Any subject offered at Semmelweis University can be added as an elective subject, provided that the preconditions of the subject make this possible.
8. If subjects completed previously are recognised, the time available for the student to finish their studies will be reduced by one term for every 30 credits recognised.
9. If the substituting subject can be assigned the credits as required by the faculty’s curriculum, the mark obtained in connection with the substituting subject must be accepted. If there are multiple grades related to the subject, their rounded average must be taken into account.

Section 22

Work placements

1. Students must perform the work placement prescribed by the Faculty’s curriculum at the educational organisational units of the University or at a training place accredited by the Faculty concerned, based on the syllabuses of the Faculty’s programmes.
2. The dean of the Faculty concerned may authorise the performance of the work placement at another Hungarian university, in their teaching hospitals, or in a foreign health institution, provided that a letter of admission is issued. The student must submit the certificate issued by the receiving institution on the completion of the placement to the Dean’s Office of the Faculty before registration.
3. The supervision of work placements is organised and managed by the head of the educational organisational unit responsible for teaching the subject. The head of the educational organisational unit will send a written report on their experiences relating to the work placements to the dean of the Faculty concerned by 15 September every year.
4. In the case of work placements, the signature cannot be given if the student was absent in more than 25% of the duration of the given work placement.
5. The mandatory work placement must be evaluated as “completed/not completed”. The qualification “not completed” has a suspensive effect and means that the student may not continue their studies until they have completed the work placement. At the Faculty of Pharmaceutical Sciences, the work placement completed before the final examination must be evaluated on a three-point scale: merit (5), pass (3), and unsatisfactory (1).
Section 23

Pre-degree certificate

1. For state-funded Bachelor’s programmes and Master’s programmes, students can have a maximum of two additional active terms above the training period until they obtain their pre-degree certificates, and for state-funded undivided programmes they can have a maximum of four additional active terms. The number of passive terms before obtaining the pre-degree certificate may not be more than two with regard to Bachelor’s and Master’s programmes and four for undivided programmes.

2. The pre-degree certificate is signed by the dean of the Faculty concerned. The pre-degree certificate does not serve as a proof of any professional qualification.

Section 24

The dissertation and degree thesis

1. In Bachelor’s programmes, Master’s programmes and undivided programmes, students must prepare a dissertation or a degree thesis in order to obtain a degree. The purpose of the dissertation is to contribute to students’ improving their ability of discernment and mastering the methods of using libraries and researching specialist literature, and their ability to formulate their opinions succinctly and accurately, by means of independently performing a scientific study of any problem in the given area of science.

2. The preparation of a dissertation (degree thesis) is guided by a thesis supervisor and occasionally also by a consultant. The thesis supervisor can be a professor or researcher of the faculty, or, if authorised by the dean, an external expert. The consultant is a university lecturer, a researcher or an external expert who supports the student’s work. An external thesis supervisor may only be used if an internal consultant is used. Both the fundamental and newest Hungarian studies relating to the subject must be used in processing the subject.

3. The rules for announcing and approving topics for dissertations (degree theses):
The educational organisational unit prepares a list of topics, which must also contain the names of consultants. The list of topics must be published both on the department’s notice board and electronically by the last day of the examination period of the first term of every year, in the case of Bachelor programmes, Master programmes and undivided programmes at least four terms before the year of graduation.

4. Rules for applying for the topics:
Students may choose any of the announced topics. Students may also choose topics other than those announced subject to the approval of the head of the competent educational organisational unit. The student must choose and submit the topic of their dissertation to the head of the given educational organisational unit at least one year before graduation at the latest. If the topic is approved, the head of the unit will arrange its registration and provide a consultant. The chosen topic must discuss a current issue of the discipline concerned.

5. Formal requirements of the dissertation:
The minimum length of the degree thesis is 50,000 characters and it cannot be longer than 100,000 characters (without spaces). Font: Times New Roman, 12. Tables and the cited literature will be included in the length of the thesis but diagrams, other relevant literature and footnotes will not. The degree thesis must be submitted in 2 copies, stapled in a folder or bound as a book. The cover must show the title of the thesis, the student’s name, year and study group, the date of submission and the consultant’s name and workplace. If authorised by the head of department, the student may submit their degree thesis in a foreign language.

6. The submission deadline:
The student must meet the consultant at least three times:
– for the first time no later than 1 October of the year of graduation: the consultant outlines the requirements relating to the preparation of the degree thesis and the possibilities inherent in the topic;
– for the second time no later than 15 November of the year of graduation: the student gives an account of the work until that time;
– for the third time no later than 1 January of the year of graduation: the consultant evaluates the results achieved by the student and advises the student on finalising the findings.

The finished dissertation must be submitted to the department in duplicate, by January 15 of the year of graduation at the latest. At the Faculty of Pharmaceutical Sciences this deadline is 1 March in the year of graduation.
7. The dissertation (degree thesis) must be assessed by a reviewer. The reviewer must be an external expert holding a university degree (college degree) or a university lecturer or researcher invited by the head of the educational organisational unit. The reviewer will also prepare a separate evaluation. The assessments must be sent to the candidate at least 5 days before the dissertation (degree thesis) defence. The reviewer and the thesis supervisor make a proposal on grading the dissertation (degree thesis).

8. The subject of dissertations (degree theses) must fall within obligatory subjects and they are evaluated on a scale of five grades (1-5). The extent of independent research demonstrated in the paper must be taken into account when assessing the dissertation (degree thesis). Dissertations are defended before a panel made up of three members from the educational organisational unit, the chairperson of which is the head of the educational organisational unit or a deputy, and its other members are the consultant and a lecturer of the department. The department may also invite an external lecturer as the third member of the panel, for example from among the private lecturers of the university.

In the event that the thesis is graded as “fail”, the head of the educational organisational unit informs the student of this and the conditions of a repeat thesis.

A dissertation (degree thesis) marked as “unsatisfactory” can only be corrected once.

9. After the defence, the head of the educational organisational unit will hand over a copy of the dissertation to the student and the other copy, as well as a copy of the minutes certifying the defence, will remain with the educational organisational unit. Dissertations must be stored in the library of the educational organisational unit for five years.

A copy of the thesis defence minutes must be sent to the competent dean’s office by 1 April at the latest.

10. Based on the proposal of the head of the educational organisational unit responsible for the subject of the dissertation, the dean of the competent Faculty may exempt the following students from the obligation of writing a dissertation:

- students who prepared an individual competition essay or a joint competition essay (with two authors) for a competition announced by the rector, and achieved first place.
- students publishing a paper as the primary author in a peer-reviewed scientific journal.

Students must submit their applications for exemption by the end of the academic year preceding the year of graduation. The exemption from writing the dissertation does not involve an exemption from the obligation to defend it.

11. The educational organisational unit will return a copy of the successfully defended dissertation (degree thesis) to the student after the defence, and the other copy must be stored in the organisational unit in accordance with the effective archiving rules.

A copy of the form specified in Annex 1, completed in duplicate, must be sent to the competent Dean’s Office 60 days before the final examination period, while the other copy of the form will remain at the organisational unit.

Section 25

The final examination consists of the following:

1. The final examination prescribed in the qualification requirements consists of the following examinations (the parts of the final examination):
   a) written examination
   b) oral examination and
   c) practical examination.

The dissertation (degree thesis) defence is part of the final examination but it is assessed and defended separately from the final examination.

At the Faculty of Pharmaceutical Sciences, defending the degree thesis is the condition for taking the (written, practical and oral) final examination.

2. The dean will determine at least two final examination periods per academic year. Final examinations may only be taken in such final examination periods.

3. The final examination board must have at least two members in addition to the chairperson. The chairperson and the members must be recognised external experts or university (college) professors or associate professors in the special field. At least one member of the board must be an external expert. The chairperson of the final examination board is appointed by the dean – in agreement with the Faculty Council – just like its members, for a period of one to three years.

4. Students must register for the final examination in the dean’s office, on the 60th day before the first day of the final examination period at the latest.

5. The dean of the Faculty is responsible for organising the final examinations. The number of examination boards must be determined on the basis of the number of students who registered for the final examination, assigning no more than 6 students to every examination board for every examination day.
At the Faculty of Pharmaceutical Sciences and the Faculty of Dentistry a maximum of 12 students can be assigned to a final examination board on an examination day.

6. Students will be assigned to their examination boards by way of an electronic lottery. The composition of the boards and students’ distribution among them can only be disclosed on the day of the examination, through the usual method applied by the Faculty.

7. The final examination board establishes the marks of the examination subjects in camera. When the examination is finished, the chairperson of the board announces the results.

8. The result of the final examination is the simple arithmetic mean of the results of its different parts.

9. The result of the final examination is established by the final examination board and the chairperson of the board enters it into the electronic student registration system.

10. The final examination will be successful if the parts of the final examination are at least “pass” marks.

11. If a subject or a section of the final examination is marked as “unsatisfactory”, the candidate will only be required to repeat the final examination in the subject or section the candidate has failed.

Faculty of Pharmaceutical Sciences and Faculty of Dentistry: if the student fails any of the successive parts of the final examination (written, practical and oral parts), the final examination will be regarded as unsuccessful and it cannot be continued. However, it will only have to be repeated from the unsuccessful part.

12. The final examination can be repeated twice. Retake or repeated retake final examinations can only be taken in the following final examination period(s).

13. No credits can be assigned to the final examination.

14. If the final examination is taken after seven years from the issue of the pre-degree certificate, the condition of taking the final examination will be the successful completion of the last academic year.

Section 26

The degree (diploma)

The degree, the certificate

1. The credit value of subjects accomplished in other institutions of higher education and recognized by the University in a credit transfer procedure shall not exceed two-thirds of the credits required for the award of the diploma as defined by the qualification requirements.

2. The conditions of issuing the degree: a type “C” intermediate language certificate in English, German, French, Spanish, Italian or Russian, issued or recognised by the state, and passing at least one basic-level university final examination. (One of these must be English.)

The passing of that examination must be proved by presenting the original language certificate or a certified copy of it.

3. The rector of the University may delegate the right to sign degrees to the dean of the Faculty concerned.

4. If, because of the provisions of paragraph 1, the degree is issued after the final examination period, the degree will be signed by the head of the educational organisational unit instead of the chairman of the final examination board if the chairman of the final examination board is no longer employed by the University when the degree is issued.

5. The degree issued by the University must also contain the classification of the degree.

6. The certificates mentioned in Annex 2 and Annex 2/a are issued by the Dean's Office concerned and this Office keeps records of all certificates issued.

7. The relevant Dean’s Office is responsible for issuing the diploma supplement.

8. The classification of the degree (diploma) is based on the cumulative, weighted grade point average, rounded to two decimal places.

Classification on a scale of five grades:

4.51 – 5.00 excellent
3.51 – 4.50 good
2.51 – 3.50 satisfactory
2.00 – 2.50 pass

Qualification on a scale of three grades:

4.51 – 5.00 summa cum laude
3.51 – 4.50 cum laude
2.00 – 3.50 rite

The subjects that do not end with comprehensive examinations but must be counted in the grade of the degree are specified by the curriculum of the Faculty concerned.
9. **Method of calculation of the classification of degrees:**

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

where:

- \(XD\) = the figure serving as the basis for grading the degree
- \(Xn\) = the sum of the grades of the required comprehensive examinations
- \(n\) = the number of required comprehensive examinations
- \(D\) = the grade of the degree thesis (on a scale of 5) (part of the complex FE)
- \(I\) = the grade of the written examination (part of the complex FE)
- \(Sz\) = the grade of the oral examination (part of the complex FE)
- \(Gy\) = the grade of the practical examination (part of the complex FE)

10. At the student’s request – against the payment of a fee – the university will issue an honorary degree, signed by the rector of the university, the dean of the faculty concerned and the chairman of the final examination board.

The relevant Dean’s Office is responsible for calculating the grade of the degree.

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**Section 27**

**Special permission**

The Academic Committee of the Faculty concerned may, on the basis of special permission, relieve the student once during the given training programme from obligations specified in a Section of this Regulations that do not contain an academic or a payment obligation. Special permission may only be provided in relation to the fulfilment of academic obligation without affecting the content of the academic criteria.

The resolution providing special permission must contain the terms of the approval and an indication that no further special advantages can be provided.

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**Section 28**

**Provisions on students with disabilities**

**Support provided by the University based on the type and extent of the disability**

The coordinator supporting students with disabilities (hereinafter referred to as the Coordinator)

The committee responsible for the affairs of students with disabilities (hereinafter referred to as the Committee)

The opportunities for students with disabilities to enforcing the concessions and support to which they are entitled

Normative funding for supporting students with disabilities
Section 29

Right of remedy in academic matters

1. The student may submit an appeal with a suspensive effect against decisions made by the Academic Committee of the Faculty in the first instance, within 15 days of receiving or being informed of the decision. The request for remedy must be addressed to the Review Board specified in Chapter VI of Section III (Student Criteria) of the Bylaws, and it must be submitted to the organisational unit appointed in Chapter II of the Student Criteria for receiving appeals.

2. Requests for remedy are adjudged by the Review Committee. The Committee will interview the student in person at least once during the procedure; however, if the student or their authorised representative fails to appear at the meeting of the Committee despite being delivered an appropriate notice, the personal hearing may be omitted.

   The decision of the Committee acting in the second instance must be recorded as a resolution and the reasons for its decision must also be stated. The resolution must always contain a reminder for the student that they may request the judicial review of the resolution made on the appeal, within 30 days of receiving such resolution, citing a violation of the law or the provisions of the policy on student status.

3. The resolution of the Committee will become final and enforceable at the time of its delivery unless the student requests a judicial review.

Section 30

The institution’s obligation to provide information and advice

Section 22 of Government Decree 79/2006 (IV.5) relating to Section 57(5) of the Higher Education Act The dean must ensure that, before registration, all students starting their university studies receive the Academic Information Booklet in traditional form as well as in an electronic format.

In order to support students in compiling their unique timetables and to provide them with information on university policies, an advisory body including lecturers and students of the relevant faculty may be established.

Important announcement

Important addition to Section 17/17 of The Study and Examination Policy for the 1st and 2nd year students of Medicine, Dentistry and Pharmaceutical Sciences

The student must obtain the semester signature in the relevant subject. (It means that the number of absences cannot exceed 25%).

The average grade of the mid-terms has to be at least 2,00.

Recommendation, based on the student’s semester academic achievements, from the practice teacher is required.

If the above conditions are fulfilled, the head of the department may give recommendation towards the Dean of the Faculty and the Academic Program Director. Based on it the final decision is made by the Academic Program Director in accordance with the decision of the Dean of the Faculty.
Chapter 5

The procedure of students' disciplinary and liability cases; the rules applicable to the formation of the disciplinary committee, hearings, evidence, defence, publicity and exoneration

GENERAL PROVISIONS

PART 1. THE SCOPE OF THE RULES

Section 1 The Rules apply to any student of Semmelweis University, including students of higher vocational training, college or university-level bachelor courses, master’s courses, undivided courses, advanced training and doctoral courses, regardless of the type of course they attend.

Section 2 Unless otherwise provided by law or agreement, the scope of the Rules also extends to students of foreign nationality.

DISCIPLINARY RULES

PART 2. DISCIPLINARY LIABILITY

Section 3 The professors, researchers, students and employees of the University are required to comply with the relevant laws and the rules of the University and to use the assets in their care and in their use properly and to protect such objects from harm.

Act, Section 70 (1) If the student violates their obligations severely and is personally responsible for the violation, a disciplinary sanction may be applied against the student. Disciplinary sanctions must be imposed in a disciplinary procedure and must be specified in a written decision.

Section 4 No disciplinary sanction is allowed if it is proven in the disciplinary procedure that the student has failed to fulfil their obligations or has violated the rules because they received instructions from a professor or an employee of the University supervising the student and the instructions infringed the law or a rule of the University.

Act, Section 70 (4) No disciplinary hearing may be initiated if a period of three months has passed since the violation or a one-month period has passed since the day the violation was recognised. For the purpose of this provision, ‘recognition’ is defined as the case when the circumstance giving rise to a disciplinary hearing becomes known to the person authorised to start the procedure.

Section 5 If a criminal procedure is started against the student, the deadlines specified in Section 70 (4) of the Act will start when the criminal case is closed.

Section 6 A procedural event related to the student (the order of starting a procedure, the issue of summons, a hearing is held, etc.) will interrupt the statute of limitations period. The statute of limitations period will restart from the day of the interruption.
PART 3. DISCIPLINARY SANCTIONS

Section 7 The purpose of imposing a disciplinary sanction is to educate the student and to prevent further violations.

Act, Section 70 (3) When a sanction is imposed, all circumstances of the violation must be taken into account, including but not limited to the number of injured parties, the severity of the violation and its consequences and whether the violation is a repeated violation.

Act, Section 70 (2) Disciplinary sanctions include:
(a) reprimanding;
(b) severe reprimanding;
(c) reduction or withdrawal of benefits and facilities specified in the rules of reimbursements and benefits;
(d) suspension of studies for a specific period (maximum two semesters);
(e) expulsion from the institution of higher education.

Section 8 Under Section 70 (2) (c) of the Act, the following benefits may be withdrawn:
(a) student grants;
(b) bonuses and cash prizes;
(c) the student’s place in a hall of residence.

Act, Section 70 (3) The duration of the disciplinary sanction referred to in (2) (c) above may not exceed six months; the suspension specified in (d) may not be longer than two semesters. Social support may not be withdrawn as a disciplinary sanction under (2) (c). The disciplinary sanctions referred to in (2) (d) and (e) automatically result in a final or temporary withdrawal of benefits and facilities available to students. The student status will be suspended for the term of the sanction specified in (2) (d). The student’s academic performance will have no effect on whether a disciplinary procedure is started or on what sanction is applied.

Section 9
(1) The procedure may be terminated with a warning as an alternative to a sanction if the severity of the violation is moderate with regard to the circumstances of the case (the character of the student, the motives of the violation and the manner of committing the violation in particular) and therefore not even the mildest sanction is required and the educational effect of the warning will suffice.
(2) By issuing a warning, the disciplinary board expresses its disapproval and communicates to the student that their actions were wrong and instructs them not to violate the rules in the future, thus avoiding future disciplinary procedures.

PART 4. DISCIPLINARY PROCEDURE

Act, Section 70 (1) The student may act in person or through a representative authorised through a power of attorney in accordance with Sections 222–223 of the Civil Code.

Section 10 The disciplinary procedure starts after a violation is reported or after a competent person officially learns of the violation.

Act, Section 71 (1) A disciplinary procedure may be started by the head of the institution or the person specified in the rules of organisation and operation.

Section 11
(1) The disciplinary procedure is started by an order of the Dean or the Chair of the Doctoral Council.
(2) If the Dean or the Chair of the Doctoral Council is permanently obstructed in starting the procedure, the deputy appointed for this purpose may initiate the procedure.

Act, Section 70 (5) The student and their authorised representative must be notified of the start of the procedure. The notification must specify the reason for the disciplinary procedure.
Section 12 The official decision on starting the procedure must include the name, address, faculty, major, year and doctoral programme of the student and also a brief description of the alleged violation.

Act, Section 70 (5) The student must be granted a hearing and must be allowed to present their defence and position. If, at the hearing, the student disputes the fact that the violation occurred, or if establishing the facts of the case is required, a trial must be held. If it is the student that has initiated the procedure, the procedure must be started and carried out. If the student’s proposed evidence is rejected, the reason for the rejection must be specified in the decision, unless it is established that the student has not violated the rules.

Act, Section 70 (6) If the student violates their obligations during practical education, the disciplinary procedure will still be carried out by the institute of higher education.

Act, Section 71 (2) The disciplinary decision of the first instance is made by the disciplinary committee of the institution, which has at least three members. The students’ representative council will appoint at least one third of the disciplinary committee members.

Section 13 (1) The disciplinary procedure of first instance is conducted by the disciplinary committee of the given faculty or doctoral school of the University.

Act, Section 73 (3) The appeal against the first-instance decision is heard by the head of the institution of higher education or a committee formed by the head of the institution for this purpose.

(2) The appellate decision is made by a committee formed by the Rector of the University.

Section 14 (1) The affected faculty establishes a five-member disciplinary committee consisting of 2 professors and 3 students. The two professors of the disciplinary committee are chosen by the Faculty Council and the Doctoral Council for a 3-year term. The chair of the disciplinary committee is the lead professor appointed by the Faculty Council or the Doctoral Council. The professor members may only be re-appointed once after the expiry of their first term.

(2) The 3 student members of the disciplinary committee will be elected by the Faculty Students’ Representative Council and the Doctoral Students’ Representative Council in accordance with their own rules. The representative councils will notify the Dean or the Chair of the Doctoral Council of the elected committee members. The student members will be elected for 1-year terms.

Section 15
(1) The following persons may not be involved in making a decision in a disciplinary case:
   (a) those who cannot be expected to make an unbiased decision in the given case;
   (b) in the appellate procedure, those who participated in the first instance phase of the procedure.

(2) The members of the disciplinary council must disclose any conflicts of interest to the Dean or the Chair of the Doctoral Council, whichever is applicable. Conflicts of interest in the appellate procedure must be reported to the Rector.

(3) A conflict of interest motion may be brought by the student and their legal representative in any phase of the procedure. The motion must be recorded in the minutes of the procedure.

(4) The decision on the motion will be made in a closed sitting of the committee. A formal decision must be made on the acceptance or rejection of the motion. If the motion is accepted, the disciplinary hearing must be adjourned until a new committee member is appointed.

(5) The rule on excluding a member of the committee due to a conflict of interest must also be applied to the person keeping the minutes.

Section 16
If the student is a student at more than one institution of higher education or at more than one faculty of Semmelweis University (has multiple majors or is a guest student), the institution or faculty with the right to conduct the disciplinary procedure will be the one that the obligation the student has failed to fulfil is related to or the one that has been the injured party of the student’s action.

In this case, the disciplinary committee of the institution or faculty conducting the procedure will notify the other institution or faculty.

Section 17 If it is discovered in the procedure that a crime has likely been committed, the Dean or the Chair of the Doctoral Council must report the case to the authorities.
Act, Section 71 (3) If there is a pending criminal procedure in the same case, the disciplinary procedure will be suspended until the criminal case is closed or if the student cannot be heard or tried (as described in Section 70 (5)) in the disciplinary case through no fault of their own.

(5) The disciplinary procedure must be completed within one month unless it is suspended under paragraph (3) above.

Section 18 The suspension of the disciplinary procedure will interrupt the period of the statute of limitations. In this case, the statute of limitations period will restart when the criminal case is closed.

Act, Section 70 (5) The student must be invited to the trial.

Section 19
(1) The student must be summoned to the trial in a written form. The summons must specify the student’s name, the venue and date/time of the hearing and the role the summoned person will have in the procedure. The summoned person must be reminded to bring their proof of identity documents to the hearing. The fact that summons have been issued in writing or orally must be recorded in the case documents.

(2) The student must be informed in the summons that they have the right to submit written materials in defence and can use/select a legal counsel in the procedure. Also, the summons must contain a warning that the student's absence will not prevent the committee from holding a hearing and passing a decision.

Section 20
(1) The student has the right to use the services of a legal counsel in the procedure.
(2) The rights of the student and the counsel:
   (a) they may have access to the documents of the procedure;
   (b) they may put forward motions and submit comments;
   (c) and they may ask questions of the witnesses and experts.

Act, Section 70 (5) The disciplinary trial may be held even if the student or their authorised representative does not attend the trial in spite of a repeated summons issued in accordance with the applicable rules.

Section 21 (1) The disciplinary trial is conducted by the chair of the disciplinary committee. It is the chair’s responsibility to check if the disciplinary rules are complied with; he or she must keep the trial in order, and make sure that the participants are able to exercise their rights. The chair will also appoint a person to record the minutes of the trial.

Section 22
(1) Students, professors and employees of the University are allowed to attend the trial. Out of public interest or to protect the student’s interest, the disciplinary committee may order a closed hearing or order that a part of the hearing will be closed to the public.
   A closed hearing may be requested by the student or a witness if they render it probable that a public hearing would threaten their legitimate interests.
(2) The disciplinary committee has a quorum if at least three members of the committee are present and at least one of them is a professor.
(3) First, the chair of the disciplinary committee records who is present at the hearing and, if there is no legal obstacle to holding a trial, orders the witnesses to leave the room. Then the chair informs those present of the data on the basis of which the disciplinary hearing is held. After this, the committee hears the student’s testimony.
(4) If the chair is not present, the trial is chaired by the other professor member of the committee.
(5) Witnesses or other students tried in the same disciplinary procedure and not yet heard may not be present during the student's testimony.

Section 23
(1) If at the hearing the student admits their responsibility for the violation, and there is no doubt that the admission of guilt is frank, the trial must only be conducted to establish the circumstances (simplified trial).
(2) If the student refuses to admit their responsibility, evidence must be presented.
(3) The disciplinary committee hears the witnesses and experts if necessary and informs those present of the content of any documents obtained.
(4) The witnesses must be asked whether they have any particular interest in the case and whether they are biased. They must be warned that they must tell the truth and that perjury has consequences under criminal law.

(5) Witnesses not yet heard may not be present during the hearing of a witness. If the testimony of the witness contradicts the student’s or other witness’ statement, the persons making the contradictory statements must be allowed to confront each other to clarify the contradiction.

Section 24
(1) Minutes must be kept of the disciplinary trial. The minutes must be signed by the chair of the disciplinary committee, the committee’s members and the keeper of the minutes.

(2) The relevant contents of the minutes must be presented to those heard at the trial and, after they have read the part that concerns them, they must sign the relevant part. The persons heard at the trial may request the correction or supplementation of the contents of the minutes. If the person refuses to sign the minutes, the reason for the refusal must be recorded in the minutes.

(3) The minutes must be added to the disciplinary case documents.

Section 25
(1) The disciplinary committee will make its decision after the evidence procedure. The decision will be made in a closed session of the committee and will be passed by a simple majority vote (Annex 2). The closed session may only be attended by the chair and members of the disciplinary committee and the keeper of the minutes.

(2) The decision may either impose a disciplinary sanction or terminate the procedure.

(3) The committee’s decision may only be based on the testimonies heard at the trial and the evidence examined directly at the trial. If a fact is not proven beyond doubt, it may not be held against the student.

(4) The introductory part of the decision must specify the case number, the faculty or doctoral school passing the decision and the name of the student against whom the disciplinary procedure has been started, the venue and date of the trial and whether the trial was open to the public.

Section 26
(1) A decision imposing a disciplinary sanction must be made if the disciplinary committee establishes that the student is guilty of a disciplinary offence and believes a disciplinary sanction must be imposed.

(2) The operative part of the decision imposing a sanction must include the following information:
   (a) the name and other personal data (date and place of birth, permanent or temporary address, ID card number, year, major and type of course) of the student found guilty in the procedure;
   (b) the disciplinary sanction imposed;
   (c) reference to the possibility of appeal and the 15-day deadline for lodging the appeal;

(3) The commentary of the decision imposing the penalty must briefly describe:
   (a) the facts of the case established by the committee;
   (b) a list of evidence and the assessment of the evidence;
   (c) whether the act or omission qualifies as a severe violation of the student’s obligations and whether the student is personally responsible for the violation, and the degree of the student’s responsibility;
   (d) the aggravating and extenuating circumstances taken into consideration when the penalty was imposed;
   (e) reference to the rules on which the disciplinary sanction is based.

Section 27
(1) The disciplinary committee will terminate the procedure if
   (a) the student’s actions do not qualify as a disciplinary offence, or it is not the student who has committed the offence;
   (b) it has not been proven that the disciplinary offence was committed;
   (c) it is not possible to establish that the student was personally responsible for the offence;
   (d) the statute of limitation period has expired;
   (e) a final and non-appealable disciplinary decision has already been passed regarding the student’s same action; or
   (f) the disciplinary committee chooses to issue a warning instead of imposing a sanction.
(2) The operative part of the decision terminating the procedure must include the following information:
   (a) the name and other personal data of the student;
   (b) the alleged disciplinary offence due to which the procedure has been started;
   (c) a statement that the disciplinary procedure has been closed;
   (d) the reason for terminating the procedure;
   (e) a reference to the fact that a warning has been issued if the committee decided to issue a warning;
   (f) a reference to the possibility of appeal and the 15-day deadline for lodging the appeal;

(3) The commentary section of the decision terminating the procedure must describe the facts of the case, the evidence and the reasons due to which the disciplinary committee terminated the procedure. Also, the decision must refer to the item of paragraph (1) on the basis of which the procedure has been terminated (Annex 3).

Section 28
(1) The chair of the disciplinary committee will announce the disciplinary decision made at the closed session.
(2) When the decision is announced, the operative part of the decision (which is put in writing at the closed session) must be read out and the commentary of the decision must be summarised orally.
(3) When the decision has been announced, the chair of the disciplinary committee will inform those entitled to lodge an appeal to make sure their appeal is filed before the deadline specified in the decision. After this, the chair closes the trial.
(4) The disciplinary decision must be delivered in a written form to those affected but not present.

Section 29
(1) The full decision must be put in writing within 8 days of the day it is announced.
(2) The written decision is signed by the chair of the committee in the required number of copies.
(3) The student and their legal counsel must be delivered a written copy of the decision even if it has been announced in their presence.
(4) The disciplinary committee may not modify a decision that has already been announced. However, minor corrections irrelevant to the merits of the case (misspelt names, numbers, arithmetical and other typographical errors) may be made.

Section 30
(1) The first instance decision may be appealed by the student or their legal counsel.
(2) The person entitled to appeal the decision may lodge the appeal immediately after the decision is announced, may waive the right of appeal or may request time to consider whether to appeal a decision. In the latter case, the deadline for lodging the appeal is 15 days from the day the decision is delivered to the person. If the deadline for filing an appeal is missed, the person may file an appeal within an additional period of 8 working days if they can present a proper reason for the delay.
(3) The written appeal must be submitted to the Dean’s Office or the Doctoral School’s Office but it must be addressed to the disciplinary committee of first instance.
(4) The appeal will automatically suspend the execution of the decision.

Section 31
(1) The disciplinary committee will forward the appeal and the case documents to the person authorised to make the appellate decision without delay when the deadline for appeal expires.
(2) The person authorised to make the appellate decision will make a decision on the appeal within 15 working days from the day they receive the appeal.
(3) As a general rule, the person authorised to make the appellate decision will make the decision on the basis of the documents available. If it is necessary to present evidence, the person authorised to make the appellate decision may summon the affected parties, hear their testimony or obtain other evidence. In the latter case, the deadline for making the appellate decision is 30 days.
(4) The person authorised to make the appellate decision must contact the Faculty Students’ Representative Council or the Doctoral Students’ Representative Council and ask for the relevant Council’s opinion.
(5) The person authorised to make the appellate decision
(a) upholds the first instance decision;
(b) modifies the first instance decision; or
(c) quashes the decision and orders that a new procedure of first instance be conducted.

(6) If the appeal is filed late or is not lodged by the person entitled to appeal the decision, the person authorised to make the appellate decision will reject the appeal.

Act, Section 73 (7) The student may request a judiciary review of the appellate decision within 30 days of the day the student is notified of the appellate decision. The decision may be reviewed by the court if it is against the law or violates the provisions regulating the students’ legal status. The judicial review procedure is regulated by Chapter XX of Act III of 1952 on Civil Procedure. The court has the right to modify the decision. The court will make a decision in the case without delay.

Section 32
(1) The abovementioned rules applicable to decisions of first instance will apply mutatis mutandis to the content and the delivery of the appellate decision (see sections 25 to 29 above). The affected person must be informed in the appellate decision of the possibility of requesting a judicial review.

(2) The disciplinary committee will be responsible for making sure the decision is delivered. The disciplinary committee will also send a copy of the decision to the Dean and the Chair of the Doctoral Council for information purposes.

Section 33 (1) The decision may only be executed when it is final and non-appealable.

Section 34 (1) The decision will become final and non-appealable when
(a) the persons entitled to appeal the decision declare that they do not wish to file an appeal or withdraw the appeal;
(b) the deadline for appeal expires and no appeal is filed;
(c) the person authorised to make the appellate decision has upheld the decision of first instance or has rejected the appeal.

(2) The appellate decision will become final and non-appealable when it is announced.

(3) A clause must be added to a final and non-appealable decision stating that it is final and may be executed. The day it became final and non-appealable must also be shown in this clause.

(4) The final and non-appealable decision must be registered in the records and a copy of the decision must be added to the student’s personal file.

(5) The chair of the disciplinary committee will also send a copy of the final and non-appealable decision to the Dean and the Chair of the Doctoral Council.

PART 5. EXONERATION FROM THE DISCIPLINARY SANCTION

Section 35 The student will be exonerated automatically (i.e. without a specific request and a decision) and the negative consequences will no longer apply to the student
(a) in the case of reprimanding, three months have passed since the day the decision became final and non-appealable;
(b) when the period specified for the reduction/withdrawal of benefits and facilities has expired;
(c) when the period of suspension has expired.

Section 36 If the disciplinary sanction specified in Section 70 (2) (e) of the Act is applied against the student, the student may ask to be exonerated. If such a request is made, it is accepted or rejected by an ad-hoc committee consisting of the Dean or the Chair of the Doctoral Council, a professor appointed by the Dean or the Chair of the Doctoral Council and a student representative delegated by the Faculty Students’ Representative Council or the Doctoral Students’ Representative Council.

Section 37 In the case of expulsion, the disciplinary committee of the first instance may exonerate the expelled student at the student’s request if three years have passed since the day the decision of the first instance was passed.
TORT LIABILITY RULES

PART 6. THE STUDENTS’ LIABILITY FOR DAMAGE

Act, Section 72 (1) If the student causes damage in relation to fulfilling their obligations as a student to the institution of higher education or to the entity organising the practical education, they will be liable to pay damages under the Civil Code with the exception specified in the Act on Higher Education.

Section 38 For the purpose of these rules, damage includes any decrease in the value of Semmelweis University’s assets and the costs required to reduce or eliminate the material losses (reasonable costs) if these have been caused by the student’s illegal and imputable conduct (actions or omissions).

Section 39 The University will be required to prove that damage has arisen, the extent of the damage, that the damage has been caused by the student’s conduct, and the student’s personal responsibility for the damage.

Act, Section 72 (2) If damage is caused by negligent conduct, the amount of damages to be paid by the student may not exceed 50% of the monthly amount of the national minimum wage effective on the day the damage is caused.

Section 40 The damage is deemed to have been caused by negligence if the person responsible can see the potential negative effects of their conduct but carelessly believes that they will not occur, or if the person responsible for the damage is unable to see the potential negative effects because they fail to pay attention or fail to act with due care as expected in the given circumstances.

Act, Section 72 (2) If the damage is caused intentionally, the student must pay full compensation for the damage.

Section 41 Damage is caused intentionally if the person responsible for the damage wants to produce the negative effects of their conduct or does not mind such negative effects.

Section 42 If more than one student cause the damage together, they will be jointly and severally liable to the University for the damage and, among themselves, will be responsible for a share of the compensation in proportion of how imputable their conduct was.

Act, Section 72 (3) If the student receives assets from the University on the basis of a list or certificate of receipt and must return these or otherwise account for them but there is a deficiency or the assets are damaged, the student will have full responsibility for the damage caused provided that the assets are in their custody or are used/handled by them exclusively. The student will be exempt from liability if the deficiency has been caused by a reason beyond the student’s control.

Section 43 The student will be exempt from liability if the student can prove that they have acted in a manner that can be considered reasonable in the given circumstances.

Section 44
(1) The student’s liability under tort is established by the disciplinary committee in a procedure conducted by the committee. The procedure is the same as the disciplinary procedure.

(2) If damage is caused but no disciplinary offence is committed, and the person required to pay damages accepts their liability in writing and the amount of damages (i.e. the factual and legal bases of the damages are clear), or if the damage caused by negligence does not exceed HUF 10,000, the disciplinary committee will conduct a simplified tort procedure.

Section 45 If the damage is caused intentionally, the committee will conduct a single procedure that will include both the disciplinary and the tort case and will make one decision in the disciplinary case and one in the tort case.
PART 7. THE UNIVERSITY’S LIABILITY FOR DAMAGE

Act, Section 72 (4) The institution of higher education, the hall of residence and the organiser of practical education will have full liability to the student for any damage caused to the student in relation to the student’s legal status, admission into the hall of residence or practical education, regardless of any personal responsibility. The rules of the Civil Code will apply with the exception that the institution of higher education, the hall of residence and the organiser of practical education will only be exempt from liability if they can prove that the damage has been caused by a reason beyond their control. Damages need not be paid if they have been caused by the injured party’s conduct beyond the other party’s control.

Section 46 (1) If the student suffers damage under Section 72 (4) of the Act, they may formally demand compensation from the Dean or the Chair of the Doctoral Council. The letter of demand must include the student’s data, the description of the facts of the case (as verified by witnesses and/or other evidence) and the amount of damages claimed (in HUF).

(3) The Dean or the Chair of the Doctoral Council will have discretionary powers to decide on the damage claim on the basis of the Financial Director’s recommendation if the amount demanded does not exceed HUF 100,000. If the damage claim exceeds this amount, the Dean or the Chair of the Doctoral Council will request the disciplinary committee to conduct a procedure.

Part 8. ASSESSING THE VALUE OF DAMAGED OR LOST ASSETS

Section 47

(1) If an event of damage occurs, the event must be recorded in the form of minutes as soon as possible, regardless of whether the student has caused it or suffered it.

(2) When an asset is damaged, the value loss remaining after repair (due to amortisation) and the repair costs must be taken into consideration in the course of calculating the amount of the damage.

(3) If the asset is destroyed, rendered unusable or cannot be located, the retail price on the day the damage occurs must be used to establish worth. If the retail price cannot be established, the purchase value should be used.

(4) No lost profits can be taken into account when the damage is assessed.

(5) Damages should be paid in cash, unless it is reasonable to provide the compensation in kind (i.e. the asset can be repaired or replaced).

(6) If it is likely that the compensation will exceed HUF 10,000, the Financial Director’s opinion must be obtained before the amount is assessed.

PART 9. ENFORCING THE CLAIM FOR DAMAGES

Section 48

The following forms/templates must be used for the purpose of enforcing claims for damages:

Annex 4: The student’s notification of a hearing in a tort case
Annex 5: Decision on the claim for damages

Section 49 The decision issued on the basis of the minutes of the tort procedure contains the name and personal data of the person causing the damage, the description of the damaged, lost or destroyed asset, the amount of damages payable, the manner of providing compensation and the deadline for providing compensation (Annex 5).

The person responsible for the damage may be allowed to pay in instalments if this is reasonable due to their financial situation. A copy of the decision on the damages must be sent to the Financial Director. The minutes must be signed by the chair of the tort committee and the keeper of the minutes.

Section 50 If the deadline for the payment of the compensation expires and no payment is made, the person responsible for the damage must be sued in court and the documents of the case must be sent to the Legal Department for this purpose.
Section 51 The statute of limitations is three years. If the damage has been caused by a crime, the statute of limitations is five years, unless the statute of limitations of the particular crime is longer. In the latter case, the statute of limitations for the damage claim will expire when the statute of limitations for the criminal case expires.

Section 52
(1) The Civil Code will apply to all financial liability-related issues not regulated above.
(2) A judicial review of the final tort decisions may be sought in court.

Rectorial Circular

on the independent work of students and on certain questions concerning lecture and practice policies

In order to meet the requirement for independent student work and to ensure the smooth functioning of lectures and practices, I hereby draw the attention of the students of Semmelweis University to the following:

I. In the course of testing one’s knowledge and practical skills, it is prohibited, under disciplinary liability, to use any unauthorised material, or to secure any illicit advantage. For the purpose of this provision, advantages ensured to disabled students in accordance with legal provisions or university regulations and allowances based upon individual decisions made in accordance with Chapter III Part III of The Rules of Operation and Organisation of Semmelweis University qualify as allowed advantages.

II. The independent creation of original work, as well as the true and accurate citation, and the precise and complete indication of the sources used are not only scientific requirements, but also obligations arising from legal regulation.

Intellectual property is protected by the laws of Hungary. The content of this protection is defined particularly by the Copyright Act, the acts on inventions and patents, and on trademarks and the Civil Code of Hungary. The intellectual property of another person is only allowed to be used in accordance with these regulations.

All creations of literature, science and art shall fall under copyright protection as defined by Act No LXXVI of 1999 on copyright. According to this act, from a work disclosed to the public any part may be cited by indication of the source and naming the author indicated therein. Such citation shall be true to the original and its scope shall be justified by the nature and purpose of the borrowing work. The free use is permitted only so far as it does not conflict with a normal exploitation of the work and does not unreasonably prejudice the legitimate interests of the author, and it is in compliance with the requirements of fairness and is not designed for a purpose incompatible with the intention of free use.

The consequences of the abuse of rights relating to intellectual property are provided by law, thus the abuse of these rights may also fall under disciplinary liability.

III. In the absence of previous authorization, it is prohibited, under disciplinary liability, to take photos or make video or sound recordings at lectures and practices. In addition, any misuse of the likeness or recorded voice of another person shall be deemed as a violation of inherent rights and may result in other consequences. The disclosure of likeness or recorded voice of another person shall be authorized by that person.

I request all students to take notice of the above.
Attention to Students of Foreign Language Programs at Semmelweis University

In recent years, Semmelweis University has built a valuable student community by maintaining high academic standards and placing much emphasis on the ethical integrity of our education. The overwhelming majority of our students appreciate our efforts. Unfortunately, a small minority does not want to accept our ethical guidelines, and tries to take undue advantage at exams by using unacceptable techniques.

We therefore do implement the following sanctions:

Against students who are found at exams possessing forbidden items, including electrical devices, such as mobile phones, ipods, etc. a disciplinary action will be initiated that can end with immediate discharge with disgrace from Semmelweis University. By implementing this rule, we wish to preserve the academic and material value of the Semmelweis Diploma.

NEPTUN.NET Unified Education System

Summary for Students

At Semmelweis University, the education system NEPTUN.Net is used for performing administrative tasks related to education. The users of the system – registry clerks, faculty secretaries, instructors and students – have different authorities to access the information stored in the system.

For the students of the institution, the system provides the following functions:
- To check their personal data and information related to their studies,
- To register for subjects,
- To register for exams,
- To check grades entered into the system,
- To monitor the grants transferred,
- To get information on their payment obligations,
- To manage their finances,
- To receive messages within the system from registry clerks, secretaries of institutions and instructors.

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

Students can access the NEPTUN.Net system on any computer located in students’ terminal rooms (in the Student Centre /NET/ and in the Central Library) or any other computer with Internet access using a browser (Internet Explorer 7 or Mozilla Firefox version 2) from the official university Neptun Portal (http://net.neptun.sote.hu).
(For a detailed description of the Students’ WEB please check the Neptun Portal – Support / Neptun usage / Aids by role / Aids for students).

Entering the system

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

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

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

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

Subject registration (choosing subjects, choosing courses)

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

1. Displaying the list of subjects: Select the appropriate semester (e.g. 2019/20/1) and the curriculum, then select “Subject list of the chosen curriculum” under „Subject type” to display obligatory and elective subjects. The option “Other elective subjects” may be used if the institution concerned manages its elective subjects separated from the curricula. If you do not find any subject in this list, this only means that at your institution these elective subjects are also integrated into the curricula. In this case, you should choose the option “Subject list of the chosen curriculum” at this question. By ticking “Show only those subjects that will be launched” you can make sure that only those subjects appear in the displayed subject list which will be launched in the semester selected. You can display the subject list filtered according to the conditions set by clicking on the “List subjects” button.

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

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

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

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

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

1. List exams: On entering the page for the first time all future exam dates announced in the current semester will appear, but you can filter the list. If you only want to see the exam dates of a given subject, select the subject from the “Subjects” roll-down menu, then click on the button “List exams”.

2. Exam registration: To register for an exam, click on “Register” in the line of the given date. The programme will report on the success or failure of exam registration.

3. Canceling exam registration: If you register for an exam by mistake or you simply change your mind and want to cancel your registration, click on „Cancel” next to the given exam. (Normally this can be done prior to the exam within the cancellation deadline. This deadline varies according to institution: at AOK /Medicine/, FOK /Dentistry/ and ETK, it is 48 hours while at GYTK /Pharmaceutical Sciences/, it is 24 hours.) In such a case, the system attempts to remove you from the given exam date and will report on the success or failure of the operation.

4. Payment of retake exam fee: By clicking on “Payment” under “Finances”, you will be taken to the page where the list of settled and payable items is displayed. Here you can also fulfill your financial obligations. On the “Payment” tab, click on the “Transcribe item” button and on the appearing “Transcribe item” window, enter the payment title (retake exam), then select the subject for which you would like to transcribe the exam fee from the roll-down list. Finally, click on the „Create item” button. You can take over the invoice of the item created in the Dean’s Office. To list current items, select the current semester using the “Semester” roll-down menu under “Filters” on the 1.) “List items” tab. (Items you have displayed are marked as “Own item” in the “Status” column.) To view the details of a given item, click on “Details” in the line of the item concerned.

Message management

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

The NEPTUN system assists students and university employees in the accurate and effective performance of administrative tasks related to their studies. In order to ensure faultless operation, it is indispensable that authority rules are complied with and that accurate data is provided. Therefore, please note that data changes or wrong data must be corrected within 8 days using „Modify data”. 
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Background  The Department of Neurosurgery was established in 1977 and is operated by the National Institute of Neurosurgery, which is a stand-alone neurosurgical hospital. It has 156 beds in its wards, which includes the only paediatric neurosurgical department in Hungary. The National Institute is the third largest neurosurgical service-provider in Europe.

Profil  The Department of Neurosurgery is involved in virtually the entire spectrum of neurosurgical practice. All other specialties needed for modern neurosurgery (e.g. neuroradiology, neuroophthalmology, neurootology, electrophysiology, neuropathology and neurology) are also present, and are organised in a multidisciplinary structure. The biggest neuro-intensive care department, with separate units for paediatric cases, is maintained and operated by the Department.

Education  Lectures are given on neurosurgery to medical undergraduates in Hungarian and English. Postgraduate resident training is also provided, in addition to further training courses.

Health Care  Annually, around 3500 major operations are performed in five theatres, including endovascular interventions, stereotactic surgery, endoscopic and laser surgery, neuro-implantation, in addition to the so-called classical micro-neurosurgical operations. The outpatient turnover is 50,000. The Department has the highest case mix index in Hungary, indicating the most complicated cases, which makes a unique background for both undergraduate and postgraduate teaching.

Research  Multidisciplinary organisations with a high patient turnover are ideal for basic and clinical research. Cerebral vascular malformations, tumours of the base of the skull, pituitary adenomas, functional neurosurgery and interventions, neurooncology, spine surgery as well as intra- and post-operative patient monitoring are the major fields of interest for the Department’s 98 staff members (of which 23 are neurosurgeons, including residents).
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Clinical specialist: Dr. Csilla Bolyós (part time), Dr. Brigitta Blancz, Dr. Péter Döme, Dr. Luca Egerváry,
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International affairs: Balázs Marczin
Head lecturer: Mrs. Klára Szalay Nagy

The department was founded on July 1st, 1970 (EüM 43/1969) - first under the name of Department of Military Medicine (as part of the Institution of Medical Training), then as the Institution of Military Medicine, and later as the Institution of Military and Disaster-Medicine. From 2001 it was named ÁOK (Faculty of Medicine) Department of Military and Disaster Medicine, Semmelweis University. The name has undergone further changes since July 1st, 2004 as university reorganization affected and integrated a number of sub-divisions (the former Department of Oxyology and the Department Group of Emergency Care Training) into this department. Since March 27th, 2014, by legislation of the senate (40/2014), the present name of the institution is the Department of Military-, Disaster- and Order Enforcement Medicine. It is currently located at the Medical Centre, Hungarian Defence Forces complex, where the functionality of the institution is provided by a series of separate contracts of cooperation.

PROFESSIONAL PROFILE
– Coordination, education and science-related questions regarding military and disaster medicine
– Maintaining an established and widely expanding network of local and international cooperation in the fields of military, disaster, and order enforcement medicine
– Continuing the long-running collaboration between the NATO Centre of Excellence for Military Medicine and Semmelweis University
– Contract-governed scientific collaboration between departments of the National University of Public Services and Semmelweis University
– The observing and analysing of disasters either occurring in the present or that are historically documented throughout the World - and application of the findings under Hungarian circumstances
– Establishing training programmes related to the department’s field and organising such courses for the doctors and professionals, both civilian and military-employed.
– Providing the graduate education course “The Medical Fundamentals of Disaster Resolution” in Hungarian, English and German languages
– The education of trainee specialists at both theoretical and technical levels, coordination of these projects
– Preparation of candidates for the Military-, Disaster and Order Enforcement exam
– Hosting Qualification Examinations and organising the related preparation course
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Assistant professor: Dr. János Gerle, Dr. László Kádár, Dr. Endre Somogyi,
Dr. Katalin Károlyházy (tutor 5th year)
Assistant lecturer: Dr. Péter Faluhelyi, Dr. Marianna Jáhn (tutor 4th year),
Dr. Katalin Kalocsai, Dr. Mercédesz Linninger,
Dr. Krisztina Mikulás
Dr. Zsuzsanna Tóth, Dr. Pál Sajgó, Dr. Katalin Nemes,
Dr. Dénes Palaszkó (tutor 2nd year, 3rd year 2nd semester)
Clinical specialist: Dr. Péter Schmidt (tutor)

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Assistant professor: Dr. Miklós Kaán, Dr. Gergely Balaton, Dr. Ibolya Kéri
Assistant lecturer: Dr. Mária Budai, Dr. Beáta Szádeczky, Dr. Adrienn Barta,
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Assistant professor: Dr. Emese Bertalan-Balogh (tutor of the 3rd, 4th and 5th years),
Dr. Lívia Budai, Dr. Marianna Budai, Dr. Nikolett Kállai-Szabó, Dr. Mária Hajdú

Senior research scientist: Dr. Borbála Dalmadi-Kiss

Assistant lecturer: Dr. Viktor Fülöp, Dr. Miléna Lengyel, Dr. Nóra Mike-Kaszás,
Dr. Noémi Niczinger, Dr. Zsófia Edit Pápay

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☎: 217-0891

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Dr. Gergely Völgyi (tutor)

Assistant lecturer: Dr. Gergő Tóth
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Head of Department
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Full Professor
Dr. Éva Szökő

Professor Emeritus
Dr. Tamás Török

Professor Emerita
Dr. Kornélia Tekes

Associate Professor
Dr. László Tóthfaluszi
Dr. Tamás Tábi
Dr. Gabriella Juhász

Assistant Professor
Dr. Péter Petschner

Assistant Lecturer
Szilvia Kalmárné dr. Vas

Junior Research Fellow
Nóra Eszlári
Dr. Laufer Rudolf

PhD students
Dr. Fruzsina Bagaméry
Dr. Emese Bogáthy
Dr. Andrea Edit Édes
Dr. Orsolya Geda
Dr. Papp Noémi

Dr. István Vincze

Secretary
Katalin Faragóné Szombathelyi

Finance officer
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Technician
Györgyi Divikiné Gúth
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The Department of Pharmacodynamics at the Faculty of Pharmaceutical Sciences was founded in 1979. The Department is responsible for the teaching of three obligatory subjects; the Pharmacology and Toxicology, the Basic Medical Pathophysiology, and the Drug Therapy in the undergraduate pharmacy program. We also teach elective subject and take part in the postgraduate education of pharmacists. The Department is located on the 8th floor of the Nagyvárad Tér building (NET) of the University, but some of our offices and laboratories can be found on the groundfloor, on the 3rd floor and on the 11th floor.

**Pharmacology and toxicology**

This page contains informations for 7th and 8th semester pharmacy students of the English Program about pharmacology and toxicology. The thought in 112 lessons of lectures and 56 lessons of practice over two semesters on the basis of internationally recognized textbooks. The mechanism of action and pharmacokinetic properties of drugs as well as their clinical indications and adverse effects are emphasized. In the toxicology part in addition to the toxic effect of various drugs, environmental toxicology and the most common acute and chronic poisonings are discussed.

Requirements: Weekly 4 lessons of lectures and 2 lessons of practice in both semesters (7th and 8th). Exams: Practical mark (2 credit points) based on 2 midterm written exams in both semesters. Oral semifinal exam (4 credit points) at the end of 7th semester. Oral final exam (4 credit points) at the end of 8th semester. Education materials published on the MOODLE site!

**Basic medical pathophysiology**

This page contains informations for 7th and 8th semester pharmacy students of the English Program about Basic medical pathophysiology. The taught in 56 lessons of lectures over 2 semesters. The program is based on the special demands of pharmacy students. Pathophysiologic basis of the common disorders is discussed to help the understanding the principals of (pharmaco)therapy.

Teacher and tutor: Prof. Kornélia Tekes

Requirements: Weekly 2 lessons of lectures in both semesters (7th and 8th).

Exams: Written semifinal exam (2 credit points) at the end of 7th semester. Oral final exam (2 credit points) at the end of 8th semester.

**Drug therapy**

This page contains informations for 9th semester pharmacy students of the English Program about Drug therapy. The subject is taught in 24 lessons and 24 lectures of practices. Evidence based pharmacotherapy of the most common disorders and the adverse effects and interactions of the used drugs are discussed. Information about the over-the-counter medications and treatment of chronic disorders are specially emphasized.

Requirements: Weekly 2 lessons of lectures and 2 lessons of practices in the 9th semester.

Exam: semifinal exam (4 credit points) at the end of 9th semester.
**MTA-SE Neuropsychopharmacology and Neurochemistry Research Group**

*Duration of the project:* 07.01.2013-06.30.2018  
Link: http://semmelweis.hu/gyogyszerhatastan/mta-se-research-group/  
The MTA-SE Neuropsychopharmacology and Neurochemistry Research Group supported by the Hungarian Academy of Sciences examines the different interactions of genetic and environmental factors involved in the development of depression using genomic and imaging methods.

**NAP-2-SE New Antidepressant Target Research Group**

*Duration of the project:* 2017.12.01.-2021.11.30.  
Link: http://semmelweis.hu/gyogyszerhatastan/nap-2-research-groups/nap-2-se-new-antidepressant-target-research-group/  
Supported by the National Research, Development and Innovation Office and as a part of the Hungarian Brain Research Program 2.0 the research group tries to identify new drug targets for the treatment of depression using genome-wide gene-environment interaction analysis (GEWIs).  
The project based on the results of the previous *NAP-A-SE New Antidepressant Target Research Group*.

**SE-NAP 2 Genetic Brain Imaging Migraine Research Group**

Link: http://semmelweis.hu/gyogyszerhatastan/nap-2-research-groups/se-nap-2-genetic-brain-imaging-migraine-research-group/  
Supported by the National Research, Development and Innovation Office and as a part of the Hungarian Brain Research Program 2.0. the research group is investigating the neural response (brain activity) and genetics of people with migraine, tension headache and in healthy control subjects to identify biomarkers of migraine and new drug targets.  
The project based on the results of the previous *MTA-SE-NAP B Genetic Brain Imaging Migraine Research Group*. 
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http://semmelweis.hu/orgchem/hu/
Secretariat phone/fax: (36-1)-2170851
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Secretary of Students’ Scientific Association: (36-1)-476-3600 / extension 53055

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Secretary of Students’ Scientific Association
Educational Secretary (Hungarian and German course)

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deme.ruth@pharma.semmelweis-univ.hu

Scientific Coworker
Dr. Klára Eszter Herke Ph.D. (extension 53028)
herke.klara@pharma.semmelweis-univ.hu

The Department of Organic Chemistry was founded in 1957 and its first head was Prof. Ottó Clauder. The infrastructure of the Department (the students’ and tutors’ laboratories, the equipment for preparative work and the library) was gradually built up and finally a spectroscopic unit was established. In 1977, Prof. László Szabó took over as head of the Department and after it, in 1997 Dr. Ákos Kocsis was appointed as acting director. After that from 1997 Prof. Péter Mátyus was the head of the Department. Since 2016 to June 2017 Dr. Gábor Krajoszvskzy was the acting director. The present head of the Department is Dr. István Mándity.

In the following post the aim and structure of the teaching and research activities are summarized.
The aim of the education in organic chemistry is to create an organic chemical basis for subsequent subjects in the curriculum of students at the Faculty of Pharmaceutical Sciences. To attain this goal, besides the main lectures (112 hours in the 3rd and 4th semesters) and parallel laboratory practicals (110 hours) in organic chemistry, the Department offers a choice of a special course to its students (Drug Syntheses, and Named Reaction in Organic Chemistry), and meanwhile, continuous enlargement
of number of special courses is planned. The available methods based on Computational Chemistry and Molecular Modeling have been involved in the official education material since 1998. The teaching activities at the Department also include the introduction of selected students into research in organic and medicinal chemistry, the direction of diploma work and participation in the postgraduate (Ph.D.) education. The Department takes part in several international research and educational cooperation programmes (such as ERASMUS).

The Department additionally plays an important role in the postgraduate education of pharmacists, as organizer of the Medicinal Chemistry Programme, and offers a two-year post-graduate programme in Drug Research and Development.

The main research fields at the Department were the synthesis and chemical properties of heterocycles, including some natural products. In the last few years, important results have been achieved in the fields of synthesis strategies, including palladium-catalysed cross-coupling reactions of pyridazines and uracils, and mechanistic studies and the synthetic development of certain thermal rearrangement reactions. Another research field was at the Department involves medicinal chemistry with the design and synthesis of antiarrhythmic compounds, ligands of \( \alpha \)-adrenoceptors and inhibitors of semicarbazide-sensitive amine-oxidase.

The Department cooperated in both research and education with several academic (e.g. the Semmelweis University Department of Pharmacodynamics, Department of Pharmacology and Pharmacotherapy, Department of Ophthalmology, and II. Department of Internal Medicine; Peter Pazmany Catholic University Faculty of Information Technology, the University of Debrecen, Pécs, and Szeged; the Hungarian Academy of Sciences Chemical Research Centre; the University of Vienna, Palermo, Cagliari, Universidad de CEU San Pablo (Madrid), National University Singapore); and industrial (Richter Gedeon, EGIS, Pannonpharma) organizations.

The main research profiles in the Department are involving primarily – preserving the departmental traditions at least partially – heterocyclic syntheses, preparation of compounds with chloride ion transporter effect, peptide chemistry, chemistry of bifunctional compounds, introduction of processes of „green chemistry” (such as use of solvents carbon dioxide neutral, elaboration of organic chemical reactions taking place in water, application of continuous-flow chemical technologies). The research work is facilitated by separation, spectroscopic and computational methods.
Institute of Clinical Experimental Research – Teaches at the Faculty of Pharmaceutical Sciences

1094 Budapest IX., Tűzoltó u. 37-47.
☎: 210-0306

Head of the Department: Prof. Dr. Zoltán Benyó M.D., Ph.D., D.Sc.
Full professor: Prof. Dr. Péter Sándor,
Associate professor: Dr. Tamás Ivanics, Dr. Zsuzsanna Miklós (tutor)

Institute of Digital Health Sciences

1094 Budapest, Ferenc tér 15. floor II.

Head of Department: Dr. Miklós Szócska Ph.D.
Professor Emeritus: Dr. habil Elek Dinya Ph.D.
Associate professor: Dr. Zoltán Ádám Tamus Ph.D.
Assistant professor lecturer: Péter Dombai, Dr. Tamás Iváncsy Ph.D., Zoltán Sándor,
Tamás Tóth, Dr. Gergely Zajzon
Administrator: Ms. Dóra Bacsa

Centre of Physical Education and Sport Sciences

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

Director: Kornélia Várszegi

Sport establishments: Sports Ground and Gymnastic Hall

Phone/fax: 262-5529, 264-1408

Fencing Hall

Budapest, V. Semmelweis u. 2.
☎: 267-0377

National Ambulance Service

1134 Budapest, XIII. Róbert Károly krt. 77.
☎: 350-3737, 350-0388; 350-6931

Director-General: Dr. Gábor Göbl M. D.
Dr. László Gorove (tutor), Dr. Judit Schönborn (tutor),
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☎: +(36-1) 486-4960
Head of the Division: Katalin Zöldi Kovács Ph.D.
Tutor: Alexandra Bakó

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☎: +(36-1) 215-9338 Fax: +(36-1) 215-9338; ext 53814
Director: Dr. Éva Kovács Ph.D.

Central Library
1085 Budapest, VIII. Mikszáth Kálmán tér 5.
☎: 317-5030
General Director: Péter Szluka
Science secretary: Zsuzsa Margittai

Directorate for Safety Technology - Department for Disaster Management and Civil Protection
1083 Budapest, VIII. Illés u. 15.
☎: 313-7961; ext 60601, 60579, 60594
Director: István Mészáros
Supervisor: Pál Kocsik M.Sc.
Registrar: Girusné Erzsébet Lovász
Information on language courses - for students of Medicine and Pharmaceutical Sciences

(Information for Dentistry students in Study Program of 1st, 2nd and 3rd year of the Faculty of Dentistry!)

Hungarian is a compulsory subject. Students of Medicine and Pharmaceutical Sciences study Hungarian (Hungarian Medical Terminology) for 5 semesters.

Students who are in their 1st year:
At the end of the first semester students are required to take an exam (written and oral). Students have 4 classes a week, are expected to write minimum 2 tests during the semester and are granted 4 credits for the successful completion of the exam. In semester 2 students take 4 classes a week, are required to write minimum 2 tests and are granted 2 credits for the successful completion of the semester.

Students who are in their 2nd year:
In semesters 3-4 students take 4 classes a week, are required to write minimum 2 tests and are granted 2 credits for the successful completion of the semester.

Students in their 3rd year:
At the end of semester 5 students are required to take the final exam and are granted 2 credits for the successful completion of the exam. The final exam is a prerequisite for starting the fourth year.
For students of Medicine and Pharmaceutical Sciences, in semester 5 Hungarian (Hungarian Medical terminology) is compulsory with 4 classes per week, students are required to take the final exam at the end of the semester and will be granted 2 credits for the successful completion of the exam. The final exam is a prerequisite for starting the fourth year.

Medical terminology is compulsory in the first semester of the first year with 2 lessons per week and 2 credits for the semester.
FACULTY OF MEDICINE
BASIC MODULE
STUDY PROGRAMME

New curriculum to be introduced in an ascending system for students starting 1st year studies in the 2019/2020 academic year. (Please note that corrections could be implemented.)

First year

1st Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Chemistry</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Cell Science</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Macroscopic Anatomy I.</td>
<td>1</td>
<td>6</td>
<td>7</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Medical Biophysics I.</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Medical Sociology – Health Care*</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Medical Communication</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>–</td>
</tr>
<tr>
<td>Medical Terminology (latin)</td>
<td>10 in total</td>
<td>28 in total</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>First Aid</td>
<td>0.5</td>
<td>1</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Hungarian Medical Terminology I.</td>
<td>–</td>
<td>4</td>
<td>4</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>Physical Education I.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>23.5</strong></td>
<td><strong>32</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum.

*Medical Sociology can be taken either in the 1st or in the 2nd semester.
## STUDY PROGRAMME

### First year

#### 2nd Semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Biochemistry I.</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>semi-final</td>
</tr>
<tr>
<td>Macroscopic Anatomy II.</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>final</td>
</tr>
<tr>
<td>Macroscopic Anatomy and Embryology I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
</tr>
<tr>
<td>Medical Biophysics II.</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>final</td>
</tr>
<tr>
<td>Introduction to Patient Care</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
</tr>
<tr>
<td>Hungarian Medical Terminology II.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
</tr>
<tr>
<td>Physical Education II.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
</tr>
<tr>
<td>Nursing Summer Practice</td>
<td>–</td>
<td>168 hours</td>
<td>1</td>
<td>signature (ends with a practical exam)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8,5</td>
<td>21,5</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

Introduction to Medical Informatics (Obligatory elective subject) *** – 1 1 pract. mark –

Medical Profession (Obligatory elective subject) *** 0.67 1.33 2 pract. mark –

---

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum.

**The prerequisite is that registration has been done for the marked subject – corequisite - as well.

*** The subject must be registered for, and must be completed during the first 2 years of studies.
LIST OF TEXTBOOKS  (The list may change!)
11. Seminar manuals: published on homepage: semmelweis.hu/biokemia/

Recommended textbooks:
MACROSCOPIC ANATOMY I – II.

Department of Anatomy, Histology & Embryology

Course Director: Dr. Andrea D. Székely
Dr. Sándor Katz

LEARNING OBJECTIVES

**Aims of the lectures in anatomy:** Presentation of the important and/or complicated chapters such as introductory chapters, thorax, pelvis, hand, foot, skull, heart, chapters of the visceral organs, central nervous system, organs of special senses, topographical anatomy.

**Aims of the practical sessions in the dissecting room:** Based on the weekly programs (see separate), students will both observe prosected cadaver specimens (bones, joints, muscles, viscera, brain) and perform dissections on parts of, or on an entire, enbalmed cadaver.

Students are supervised by the lab instructors. Bones, joints, muscles and peripheral nervous system will be primarily taught in the dissecting room.

**LECTURES:** First semester: 1×45 min; second semester: 2×45 min.

**PRACTICAL CLASSES:** First semester: 6×45 min; second semester: 7×45 min.

**ECTS CREDITS:** Altogether 16 (first semester: 7; second semester: 9).

**MIDTERM TESTS:** Oral and/or written

**ACCEPTENCE OF THE SEMESTER:**
Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in 25%. Attendance will be recorded in the lectures and in the dissection room classes.

Please, see further requirements on the department’s website.

**TYPE OF EXAMS:** oral and written
First semester: semifinal examination, second semester: final exam

**Semifinal and final examinations consist of written and oral (practical and theoretical) parts**
1. Written pretest (e-learning module – access to SeKA account is obligatory)
2. Macroscopic Anatomy (identification of structures on true anatomical specimens) including relevent theoretical questions
LIST OF TEXTBOOKS


Recommended textbooks:

eBook ISBN: 9780323312899 014
## COURSE DESCRIPTION

### Macroscopic Anatomy I.

**Lectures and dissection classes**

**Subject matter:** Macroscopy and clinically oriented anatomy of the parts of the musculoskeletal system, i.e. osteology, arthrology and myology, together with the vascular and nervous supply of the limbs and the trunk. Skull. Cavities, muscles and internal organs of the Head & Neck region.

**Credits:** 7

**Prerequisite:** none

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Dissection room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>1. The role of anatomy in the medical curriculum. Terminology</td>
<td>General introduction to practical work in the dissection room, tools and rules</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper limb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bones</td>
</tr>
<tr>
<td>Week 2</td>
<td>3. General arthrology and myology. Joints, muscles and movements of the shoulder and the upper girdle</td>
<td>Upper limb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bones and joints</td>
</tr>
<tr>
<td>Week 3</td>
<td>3. Muscles and actions of the elbow joint</td>
<td>Upper limb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dissection of the muscles, vessels and nerves</td>
</tr>
<tr>
<td>Week 4</td>
<td>4. Joints, muscles and actions of the wrist and the hand</td>
<td>Upper limb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dissection of the muscles, vessels and nerves</td>
</tr>
<tr>
<td>Week 5</td>
<td>5. Bones, joints, construction of the pelvis. Muscles and actions of the hip joint</td>
<td>Lower limb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bones and joints</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dissection of joints of the lower limb</td>
</tr>
<tr>
<td>Week 6</td>
<td>6. Muscles and actions of the knee joint</td>
<td>Lower limb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dissection of the muscles, vessels and nerves</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cadaver and free limb dissection</td>
</tr>
<tr>
<td>Week 7</td>
<td>7. Muscles and joints of the foot. Architecture of the foot</td>
<td>Lower limb</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dissection of the muscles, vessels and nerves</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cadaver and free limb dissection</td>
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<td>1. Midterm test (oral): Upper and lower limbs including the girdles.</td>
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<td>Week 8</td>
<td>8. Ribs, components and movements of the thorax. Diaphragm.</td>
<td>Dissection of the limbs and superficial regions of the the trunk (cadaver). Demonstration of the components of the body wall on prospected specimens</td>
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<tr>
<td>Week 10</td>
<td>10. Components, muscles, joints and ligaments of the vertebral column. Intervertebral, atlantooccipital and atlantoaxial joints</td>
<td>Dissection of the limbs and superficial regions of the the trunk (cadaver). Demonstration of the components of the body wall on prospected specimens</td>
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<td>Bones of the facial skeleton, mandible. Orbit, nasal cavity, pterygopalatine fossa</td>
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<td>Head and neck specimens</td>
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<td></td>
<td>Muscles, fasciae and movements of the neck.</td>
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<tr>
<td>Week</td>
<td>Lectures</td>
<td>Dissection room</td>
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<tr>
<td>Week 12.</td>
<td>12. Temporomandibular joint, muscles of mastication; muscles of facial expression. Muscles, fasciae and movements of the neck.</td>
<td>Head and neck specimens&lt;br&gt;Topography of the superficial regions&lt;br&gt;Temporomandibular joint&lt;br&gt;Muscles of mastication and facial expression&lt;br&gt;2. Midterm test (e-learning type)&lt;br&gt;Bones, joints, muscles and fasciae of the trunk and head &amp; neck</td>
</tr>
<tr>
<td>Week 13.</td>
<td>14. Composition and part of the oral cavity, palate, faucial isthmus and pharynx</td>
<td>Dissection of superficial regions of the head and neck. Demonstration of the cavities on prospected specimen</td>
</tr>
</tbody>
</table>

**Topic list for the semifinal examination**

**Musculoskeletal Anatomy**

- General osteology, classification of bones
- Bones, spaces and connections of the skull, external and internal skull bases
- Neurocranium, components and cavities (anterior, middle and posterior cranial fossae)
- Viscerocranium, components and cavities (walls and connections of the nasal cavity, orbit, oral cavity, pterygopalatine and infratemporal fossae)
- Bones of the axial and appendicular skeleton
- Vertebrae, ribs, sternum
- Bones of the girdles and limbs
- General arthrology
- Fibrous and cartilaginous joints
- Components of the synovial joints
- Classification of synovial joints; movements and mechanisms
- Structure of the vertebral column, the gross anatomy of the muscles acting upon it
- Movements and muscles of the head & neck (atlantooccipital and atlantoaxial joints)
- Joints of the shoulder girdle, the gross anatomy of the muscles acting upon them
- Shoulder joint, the gross anatomy of the muscles acting upon it
- Elbow joint, the gross anatomy of the muscles acting upon it
- Structure and movements of the radiocarpal joint, gross anatomy of the muscles acting upon it
- Metacarpophalangeal and interphalangeal joints, the gross anatomy of the muscles concerned with the movements
- Carpometacarpal, metacarpophalangeal and interphalangeal joints of the thumb, the gross anatomy of the muscles concerned with the movements
- Hip joint and the gross anatomy of the muscles concerned with the movements
- Knee joint and the gross anatomy of the muscles concerned with the movements
- Ankle joint together with the gross anatomy of the muscles acting upon it
- Subtalar and talocalcaneonavicular joints, the muscles acting upon them
- Temporomandibular joint and the gross anatomy of the muscles acting on it
- Architecture and classification of bones
- Structure and actions of somatic muscles
- Osteofibrous structure of the thoracic cage (bones, joints, ligaments, movements)
- Muscles and movements of the thorax
- Muscles of the back and neck (occipital region)
- Axilla, the quadrangular and triangular spaces
- Cubital fossa
- Muscles and cross section of the arm
- Muscles and cross section of the forearm
- Osteofibrous spaces and muscle compartments of the hand, tendinous sheaths
- Muscles and spaces of the abdominal wall, rectus sheath
- Composition of the pelvis (bones, ligaments and membranes)
- Inguinal canal, femoral canal
- Subinguinal hiatus, vascular and muscular compartments; adductor canal, femoral canal
- Muscles of the buttock, the posterior abdominal wall and the pelvis (external and internal muscles of the hip)
- Osteofibrous compartments, muscles and cross section of the thigh
- Popliteal fossa
- Osteofibrous compartments, muscles and the cross section of the leg
- Structure of the foot, arches of the foot
- Osteofibrous compartments of the foot, tendinous sheaths
- Muscles of mastication
- Muscles of facial expression
- Superficial muscles of the neck, muscle triangles
- Deep muscles of the neck and the laminae of the cervical fascia

**Vessels and nerves**
- Dorsal branches of the spinal nerves, intercostal nerves
- Cervical plexus, brachial plexus, lumbar plexus, sacral plexus.
- Innervation of limbs
- Innervation of the trunk
- Cutaneous innervation
- Axillary artery and branches
- Arteries and veins of the arm, forearm, and hand
- Arteries and veins of the lower limb

**Lymphatic drainage**
- Lymph nodes and vessels of the limbs
- Lymphatic drainage of the thoracic wall including the mamma
- Lymph nodes and lymphatic vessels of the head&neck

**Internal organs of the head & neck region**
- Subclavian artery and its branches
- Common and external carotid arteries and their branches
- Maxillary artery and its branches
- Veins of face and neck
- Oral cavity (divisions, boundaries)
- Floor of mouth, sulcus lateralis linguae
- Types and morphology of teeth
- Blood supply and innervation of teeth
- Tonsils (anatomy)
- Faucial isthmus, palate
- Macroscopy of the tongue
- Salivary glands together with topography
- Pharynx and parapharyngeal spaces
- Blood supply and innervation of pharynx
- Pharyngeal muscles
- Nose, nasal cavity (boundaries, nasal meatus, vessels)
- Paranasal sinuses (connections, vessels)
- Larynx (shape, position, vessels, nerves)
- Skeleton and joints of larynx
- Laryngeal ligaments (fibroelastic membranes, mucous membrane)
- Muscles of larynx, innervation
# Macroscopic Anatomy II.

**Lectures and dissection classes**

**Subject matter:** Morphology, topography and clinically oriented anatomy of the internal organs (i.e. cardiovascular, gastrointestinal, respiratory and urogenital systems).

Morphology and topography of the intracranial spaces, macroscopy of the central nervous system. Course and branches of cranial nerves. Autonomic nervous system.

**Credits:** 9

**Prerequisite:** Macroscopic Anatomy I.

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Dissection room</th>
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<tbody>
<tr>
<td>Week 2.</td>
<td>3. Vessels, conducting system of the heart. Surface projection of the heart, pericardium. Auscultation points &lt;br&gt; 4. Stomach and small intestines (duodenum, jejunum, ileum)</td>
<td>Organs of the thoracic cavity &lt;br&gt; Heart, great vessels, pericardium &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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<td>Week 3.</td>
<td>5. Liver, gall bladder, pancreas, spleen. &lt;br&gt; 6. Large intestine, rectum</td>
<td>Organs of the thoracic cavity &lt;br&gt; Mediastinum, passages of the diaphragm &lt;br&gt; branches of the thoracic aorta &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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<td>Week 4.</td>
<td>7. Peritoneum, peritoneal recesses, peritoneal relations of abdominal organs. &lt;br&gt; 8. Morphology of the kidney, capsules of the kidney, ureter, urinary bladder.</td>
<td>Organs of the abdominal cavity &lt;br&gt; Esophagus, abdominal aorta, stomach, liver, gall bladder, spleen, celiac trunk &lt;br&gt; Lesser omentum, omental bursa, duodenum, pancreas &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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<td>Week 5.</td>
<td>9. Organs, vessels and nerves of the retroperitoneum &lt;br&gt; 10. Morphology and coats of the testicle.</td>
<td>Organs of the abdominal cavity &lt;br&gt; Jejunum, ileum, superior mesenteric artery &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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<td>Week 6.</td>
<td>10. Morphology of the epididymis, spermatic cord, seminal vesicle and prostate &lt;br&gt; 12. Morphology and histology of penis and male urethra. Male perineum</td>
<td>Organs of the abdominal cavity &lt;br&gt; Large intestines, greater omentum &lt;br&gt; Inferior mesenteric artery, rectum &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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<td>Week 7.</td>
<td>13. Ovary, Fallopian tube and uterus &lt;br&gt; 14. Vagina, female perineum, external genital organs</td>
<td>Organs of the abdominal cavity/pelvis &lt;br&gt; Retroperitoneum, kidney, ureters &lt;br&gt; Urinary bladder &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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<td>Week 8.</td>
<td>15. Blood supply and lymphatic drainage of the abdomen and lesser pelvis &lt;br&gt; 16. Introduction to the study of the nervous system &lt;br&gt; Meninges, hemispheres, CSF, lateral ventricles</td>
<td>Dissection of organs of the lesser pelvis &lt;br&gt; Female urogenital tract, broad ligament &lt;br&gt; Male urogenital system &lt;br&gt; Male and female perineal regions &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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<td>Week 9.</td>
<td>17. Diencephalon, 3rd ventricle. Brain stem, cerebellum, 4th ventricle &lt;br&gt; 18. Spinal cord, spinal segment. Spinal nerves.</td>
<td>Dissection of organs of the lesser pelvis &lt;br&gt; Female urogenital tract, broad ligament &lt;br&gt; Male urogenital system &lt;br&gt; Male and female perineal regions &lt;br&gt; Cadaver dissection &lt;br&gt; Demonstration of prosected specimens</td>
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1. Midterm test 1 (oral) Internal organs
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Dissection room</th>
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<tbody>
<tr>
<td>Week 10.</td>
<td>19. Intracranial topography</td>
<td>Anatomy of the central nervous system</td>
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<td>20. Cranial nerve nuclei</td>
<td>Morphology of the brain and spinal cord</td>
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<td>Blood supply, meninges, sinuses</td>
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<td>Cranial nerve exits, CSF circulation, cisterns</td>
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<td>Cadaver dissection</td>
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<td>Demonstration of prosected specimens</td>
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<td><strong>Easter break</strong></td>
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<td>Week 11.</td>
<td>21. Olfactory nerve (CN 1), optic nerve (CN 2). Orbit</td>
<td>Anatomy of the central nervous system</td>
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<td>22. Extraocular muscles and eye movements. Protective and</td>
<td>Telencephalic hemispheres, gyri and sulci,</td>
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<td>lacrimal apparatus of the eye.</td>
<td>Diencephalon, lateral and 3rd ventricles,</td>
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<td>Cadaver dissection</td>
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<td></td>
<td>Demonstration of prosected specimens</td>
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<td>Week 12.</td>
<td>23. Oculomotor nerve (CN 3), trochlear nerve (CN 4), abducent nerve (CN 6)</td>
<td>Anatomy of the central nervous system</td>
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<td>24. Trigeminal nerve (CN 5)</td>
<td>Brain stem, cerebellum, 4th ventricle</td>
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<td>Frontal sections of the brain</td>
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<td>Cadaver dissection</td>
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<td>Demonstration of prosected specimens</td>
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<td>2. <strong>Midterm test (e-learning type)</strong></td>
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<td>Week 13.</td>
<td>25. Facial nerve (CN 7)</td>
<td>Dissection of the deep head and neck region</td>
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<td>26. Glossopharyngeal nerve (CN 9), vagus nerve (CN 10), accessory nerve (CN 11), hypoglossal nerve (CN 12)</td>
<td>Facial regions, parotid nest, infratemporal fossa, para- and retropharyngeal spaces, fascial layers</td>
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<td>Cadaver dissection</td>
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<td>2. Midterm test (e-learning type)</td>
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<td>Week 14.</td>
<td>27. Anatomy of the midle and internal ears</td>
<td>Dissection of deep head and neck region</td>
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<td>28. Sympathetic and parasympathetic nervous systems</td>
<td>Deep cervical fascia, carotid sheath, sympathetic trunk</td>
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<td>Cadaver dissection</td>
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<td>Demonstration of prosected specimens</td>
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**TOPICS OF THE FINAL EXAMINATION**

1. **Topics of the 1st semester (see at Macroscopic Anatomy I.)**
   +
2. **Topics of the 2nd semester (see below)**

**Circulatory system**
- Shape, external features of heart
- Chambers of heart
- Endocardium, ostia, valves of heart
- Skeleton of heart, anuli fibrosi
- Structure of heart wall
- Pulse generating and conducting system of heart
- Pericardium
- Position and surface projections of heart
- Percussion and auscultation (area of cardiac dullness, heart sounds)
- Radiology of heart
- Pulmonary circulation
- Ascending aorta, arch of aorta and its branches
- Thoracic aorta and its branches
- Abdominal aorta and its branches
- Celiac trunk and its branches
- Superior mesenteric artery and its branches
- Inferior mesenteric artery and its branches
- External and internal iliac artery and its branches
- Internal pudendal artery and its branches
- Superior vena cava and its tributaries
- Inferior vena cava and its tributaries
- Azygos and hemiazygos veins and their tributaries
- Portal vein and its tributaries, portocaval anastomoses
- Cutaneous veins and lymphatic vessels of trunk

**Digestive system**
- Tongue (parts, vessels, innervation)
- Salivary glands (anatomy)
- Isthmus of fauces
- Palate, palatine muscles
- Pharynx, (shape, position, parts, muscles)
- Topography of the pharynx, para- and retropharyngeal spaces
- Esophagus (anatomy)
- Stomach (shape, position, parts)
- Peritoneal relations of stomach
- Blood supply and innervation of stomach
- Duodenum (shape, position, divisions, vessels)
- Jejunum-ileum (shape, position, vessels)
- Rectum, anal canal (shape, position, vessels)
- Liver (shape, position)
- Gall bladder and biliary passages (anatomy)
- Liver (peritoneal relations, vessels)
- Circulation of liver, liver sinusoids
- Pancreas (shape, position, vessels)
- Peritoneum, greater and lesser omentum, mesentery, omental bursa

**Respiratory system**
- Trachea and bronchial tree
- Lung (shape, parts, surfaces, hilum)
- Lung (position, topography, vessels, nerves)
- Surface projection of pleura and lung

**Body cavities**
- Thoracic wall
- Pleura, pleural cavity
- Mediastinum (divisions and content)
- Diaphragm
- Abdominal cavity (divisions and surface projections)
- Abdominal wall (muscles, fasciae)
- Rectus sheath
- Hernia sites

**Urogenital system**
- Kidney (shape, position, hilum, sinus, capsules)
- Kidney (section, vascular architecture)
- Renal pelvis and calyces
- Ureter
- Urinary bladder (shape, position, muscles, vessels)
- Female urethra
- Testis (shape, position, vessels)
- Epididymis, vas (ductus) deferens, spermatic cord
- Scrotum, coats of testis
- Seminal vesicle
- Prostate
- Male urethra, bulbourethral gland
- Penis (shape, position, mechanism of erection, vessels, nerves)
- Pelvic floor, male perineum
- Hernia canals (inguinal and femoral)
- Ovary (shape, position, vessels)
- Uterine tube (shape, position, vessels)
- Uterus (shape, parts, wall, cavity)
- Uterus (position, supporting structures, vessels)
- Broad ligament (lig. latum) and its components
- Vagina, female perineum
- External female genital organs (mons pubis, labia, vestibule of vagina, greater vestibular gland, vessels)

**Macroscopy of the nervous system**
- Intracranial topography
- Dura mater, dural sinuses
- Arachnoid mater, pia mater, cisterns, CSF circulation
- Description and meninges of the spinal cord
- Brain stem (medulla oblongata, pons, midbrain)
- Cranial nerves, brain, dural and skull exits
- Cerebellum
- Diencephalon (parts, blood supply).
- Thalamus, hypothalamus
- Lateral ventricles
- III. ventricle
- IV. ventricle
- Hemispheres
- Basal ganglia
- Internal carotid artery (course, parts and branches)
- Vertebral artery (course and branches)
- Circle of Willis
- Veins of the brain
- Branches of cranial nerves (CN 3, CN 4, CN 5, CN 6, CN 7, CN 9, CN 10, CN 11, CN 12)
- General composition of the autonomic nervous system
- Sympathetic system (cranial, cervical, thoracic and lumbar parts)
- Sympathetic trunk
- Parasympathetic system (cranial and sacral parts)

- Extraocular muscles. Eye movements.
- Eyelids, conjunctiva, fasciae of the orbit, lacrimal apparatus
MICROSCOPIC ANATOMY AND EMBRYOLOGY I (– II).

Department of Anatomy, Histology & Embryology

Course Director:  
Dr. Andrea D. Székely  
Dr. Sándor Katz

LEARNING OBJECTIVES

Aims of the lectures in embryology: Presentation of the early development from the differentiation of the germ cells to the formation of the human embryo (general embryology). Presentation of the development of the organs and functional systems parallel with the gross anatomical and histological lectures including the frequently occurring malformations.

Aims of the lectures in histology: Presentation of the cell, basic principles in cell biology (mitosis, cytoskeleton, cellular motility), detailed presentation of the basic (epithelial, connective, muscle and nervous) tissues. Complementing gross anatomy with a detailed presentation of the fine structure of organs, including the ultrastructural details together with the molecular background.

Important chapters: basic tissues, viscera, central nervous system.

Aims of the practical sessions in the histology room: Facilitate the understanding of ground (epithelial, connective, muscle and nervous) tissues and the fine structure of the organs through the observation and interpretation of histological specimens.

LECTURES: 2 × 45 min in both semesters  
PRACTICAL CLASSES: I.: 3 × 45 min; II.: 2 x 45 min.  
ECTS CREDITS: Altogether 9 (I.: 5; II.: 4).  
MIDTERM TESTS: written (e-learning type)

ACCEPTENCE OF THE SEMESTER:
Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in 25%. Attendance will be recorded in the lectures and in the dissection room classes.

Please, see further requirements on the department’s website.

TYPE OF EXAMS: oral and written  
I.: semifinal examination, II.: final exam

Semifinal and final examinations consist of written and oral parts
1. Written pretest (e-learning module – access to SeKA account is obligatory)  
2. Oral test in Microscopic Anatomy: identification of structures on virtual histological specimens including relevant theoretical questions

LIST OF TEXTBOOKS

Recommended textbooks:
1. The Developing Human – Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
## COURSE DESCRIPTION

### Microscopic Anatomy and Embryology I.

**Lectures in Histology and Embryology; practical classes in Histology**

### Subject matter

**Histology:** Microscopy of the ground (basic) tissues (epithelia, glandular tissues, connective and supporting tissues, types of muscle tissues. Histology of the corpuscular elements of the blood, cells of the red bone marrow. Microscopical structure of the internal organs (cardiovascular, gastrointestinal, respiratory and the urogenital systems)

**Embryology:** Basic principles of human development, introduction to the clinical embryology. General embryology, including spermatogenesis, oogenesis, fertilization, cleavage, blastulation, formation of germinal layers, body axes, molecular basis of right-left asymmetry, Hox genes, formation of the placenta, fetal membranes. Organ development including the early onset of fetal circulations, and the development of the limbs, together with the trunk and the skull. Factors inducing congenital malformations. Development of the internal organs together with their malformations.

**Credits:** 5

**Prerequisite:** Cell Biology

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Histology laboratory</th>
</tr>
</thead>
</table>
| **Week 1** | 1. Epithelial tissues, cell contacts, intercellular connections  
2. Glandular epithelium | Introduction  
Simple and stratified epithelial tissues |
| **Week 2** | 3. Connective tissue cells and fibres. Extracellular matrix  
Cells and fibrous elements  
Blood and red bone marrow |
| **Week 3** | 5. Supporting tissues (cartilage, bone)  
6. Ossification, bone remodelling | Supporting tissues  
Cartilage, bone  
Types of ossification |
| **Week 4** | 7. Muscle tissues  
8. Histology of vessels | Smooth, skeletal and cardiac muscle types  
Blood vessels |
| **Week 5** | 9. Histology of the tongue and teeth  
10. Histology of the airways | **Gastrointestinal tract**  
Lip, tongue, lingual papillae. Tooth bud |
| **Week 6** | 11. Gametes, fertilization, cleavage, blastulation  
12. Implantation. Placenta, placental circulation, fetal membranes | **Respiratory system**  
Larynx, trachea, lung |
| **Week 7** | 13. Histology of the esophagus and stomach  
14. Microscopic anatomy of the small and large intestines | **Gastrointestinal tract**  
Esophagus, stomach |
| **Week 8** | 15. Molecular basis for gastrulation. Formation, differentiation and derivatives of the germinal layers  
16. Neurulation, folding of the embryo. Body axes, left-right lateralization, asymmetry | **Gastrointestinal tract**  
Duodenum, jejunum, ileum, colon |
| **Week 9** | 17. Histology of the liver and pancreas  
18. Pharyngeal arches, development of the foregut | **Gastrointestinal tract**  
Liver, gall bladder, pancreas |
| **Week 10** | 19. Development of the face, malformations  
20. Development of the midgut and hindgut | **Midterm test:**  
Histology and Embryology |
| **Easter break** | | Urinary system  
Kidney, ureter, urinary bladder |
| **Week 11** | 21. Microscopical anatomy of urinary organs  
22. Development of the urinary system | **Male genital system I.**  
Testis, epididymis, spermatic cord |
| **Week 12** | 23. Histology of the male and female genital systems  
24. Development of the genital system | **Male genital system II.**  
Seminal vesicle, prostate, penis, glans penis  
**Female genital system I.**  
Ovary, corpus luteum, uterine tube |
| **Week 13** | 25. Development of the peritoneum (peritoneal relations)  
26. Development of the heart | **Female genital system II.**  
Uterus (proliferation, secretion), vagina, placenta |
| **Week 14** | 27. Development of arteries and veins  
28. Development of the respiratory system. Fetal circulation | |
Topic list for the semifinal examination

**General Histology**
- Concept of basic tissues
- Definition and classification of epithelial tissue
- Simple epithelia
- Stratified epithelia
- Membrane specializations of epithelia
- Glandular epithelia
- Pigment epithelium, sensory neuroepithelium
- Cells of connective tissue
- Ground substance and fibres of connective tissue
- Types of connective tissue
- Blood and the corpuscular elements of blood
- Histology of the bone marrow, maturation of erythrocytes and platelets
- Differentiation of granulocytes, lymphocytes and monocytes
- Histology of cartilage
- Histology of the bone tissue
- Intramembranous ossification
- Endochondral ossification
- Growth and remodeling of bone
- Smooth muscle and myoepithelial cells
- Skeletal muscle tissue
- Cardiac muscle tissue
- Histological structure of arteries and arterioles
- Composition of capillaries and veins
- Wall structure of hollow organs
- General composition of glands
- Histological structure of intestinal villi
- Enteroendocrine system
- Histology of the pancreas

**General Embryology**
- Spermatogenesis, spermiogenesis
- Oogenesis
- Fertilization, cleavage of the zygote
- Blastocyst formation; the bilaminar embryonic disc
- Implantation
- Formation of body axes
- Formation of the intraembryonic mesoderm; the notochord
- Neurulation (neural tube and neural crest)
- Derivatives of ectoderm
- Derivatives endoderm
- Differentiation of the intraembryonic mesoderm; formation and derivatives of the somites
- Derivatives of the intermediate mesoderm
- Lateral plate mesoderm and its derivatives
- Folding of the embryo
- Development of the primitive cardiovascular system, the fetal circulation
- The structure and function of the placenta
- Development of the fetal membranes (chorion and amnion) and the umbilical cord
- Periods of embryonic / fetal life
- Twin formation
Development of internal organs
- Development of the heart, looping of the heart tube
- Formation of atria, development of the interatrial septum
- Formation of ventricles, development of the aorticopulmonary septum
- Development of arteries
- Development of the inferior vena cava
- Development of the portal vein
- Development of the superior vena cava, azygos and hemiazygos veins
- Fetal circulation

- Face development
- Development and differentiation of the foregut
- Derivatives of pharyngeal pouches and grooves
- Derivatives of pharyngeal arches
- Development of the tongue
- Tooth development
- Development and differentiation of the midgut
- Development and differentiation of the hindgut
- Formation of the liver and pancreas

- Formation of the nasal cavity and paranasal sinuses
- Development of the lower airways including the lungs
- Kidney development
- Development of the urinary passages
- Gonadal development
- Development of the male genital tract
- Development of the female genital tract
- Development of the male/female external genitals
- Development and divisioning of the body cavities
- Development of the peritoneum
CELL SCIENCE

Department of Genetics, Cell- and Immunobiology

Address: NET Building, H-1089 Budapest, Nagyvárad tér 4.
Course director: Edit Buzás MD, DSc
Course coordinator: Orsolya Láng MD, PhD
Credit: 3

Lectures (1 hours per week):
1. Cell theory. Model cells in Medicine
2. Cell membrane
3. Structure and function of nucleus
4. Endoplasmic reticulum
5. Golgi complex, vesicular transport and secretion
6. Endocytosis. Autophagy
7. Cell adhesion and cell junctions
8. Cytoskeleton
9. Cellular movement
10. Structure and function of mitochondria and peroxisomes
12. Cell cycle and mitosis
13. Stem cells and differentiation
14. Cellular aging and cell death

Practices (2 hours per week):
1. The light microscope
2. The general cell structure. Light microscopic microtechnique
3. The electron microscope. Cell membrane
4. The interphase nucleus. Cyto(histo)chemistry
5. Immunohistochemistry. Super-resolution microscopy
6. Cell and tissue culture
7. Endoplasmic reticulum
8. Golgi complex and secretion
9. Endocytosis and lysosomes
10. Cell surface differentiation, enzyme-histochemistry
12. Mitosis
13. Meiosis
14. Cell death (necrosis and apoptosis)

The order of topics may vary

Course requirements: Students must participate at least 75% of the classes. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.

The course ends with a written exam. It contains multiple choice, essays, drawings, etc. covering both theoretical and practical part of the subject. Further details will be announced at the website of the department (http://gsi.semmelweis.hu).

Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)
# MEDICAL BIOPHYSICS I.

**Tutor: Dr. István Voszka**

**First Semester**

<table>
<thead>
<tr>
<th>Week Lecture (1.5 hours per week)</th>
<th>Laboratory (2.5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Radiations (basic concepts)</td>
<td>Laboratory safety rules</td>
</tr>
<tr>
<td>2 Properties of electromagnetic radiations; wave and corpuscular nature</td>
<td>Resonance</td>
</tr>
<tr>
<td>3 Attenuation of radiation</td>
<td>Emission spectroscopy. Light sources</td>
</tr>
<tr>
<td>4 Luminescence and its applications</td>
<td>Spectrophotometry</td>
</tr>
<tr>
<td>5 Lasers and their medical applications</td>
<td>Optical lenses; light microscope</td>
</tr>
<tr>
<td>6 Thermal radiation, thermography. Biological effects of light</td>
<td>Detection of nuclear radiations</td>
</tr>
<tr>
<td>7 Production and spectrum of X-radiation Cyclotron; Linear accelerator;</td>
<td>Oscilloscope</td>
</tr>
<tr>
<td>8 Attenuation of X-radiation, interactions</td>
<td>Special light microscopes</td>
</tr>
<tr>
<td>9 Atomic structure; Radioactive decay law Gamma-radiation and its detection</td>
<td>X-ray diagnostics</td>
</tr>
<tr>
<td>10 Radiotherapy, radiosurgery; Isotope diagnostics</td>
<td>Optics of the eye</td>
</tr>
<tr>
<td>11 SPECT, PET Beta-radiation, beta-decay</td>
<td>Polarimeter</td>
</tr>
<tr>
<td>12 Alpha-radiation, alpha-decay Interaction with matter</td>
<td>Coulter counter</td>
</tr>
<tr>
<td>13 Dosimetry</td>
<td>Determination of skin-impedance</td>
</tr>
<tr>
<td>14 Radiation protection; estimation of risk</td>
<td>Concentration determination with refractometer</td>
</tr>
<tr>
<td></td>
<td>Repetition</td>
</tr>
</tbody>
</table>
## MEDICAL BIOPHYSICS II.

### Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (1.5 hours per week)</th>
<th>Laboratory (2.5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bonds and their significance in macromolecular structure; Boltzmann distribution, examples</td>
<td>The attenuation of gamma-radiation</td>
</tr>
<tr>
<td>2</td>
<td>Liquid crystals, membranes</td>
<td>Dosimetry</td>
</tr>
<tr>
<td>3</td>
<td>Electronic properties of condensed materials (solids, macromolecules)</td>
<td>Amplifier</td>
</tr>
<tr>
<td>4</td>
<td>Ultrasound properties, generation of ultrasound</td>
<td>Gamma energy determination</td>
</tr>
<tr>
<td>5</td>
<td>Ultrasonography, Doppler methods</td>
<td>Pulse generators (e.g. pacemaker, defibrillator)</td>
</tr>
<tr>
<td>6</td>
<td>Methods for structure examination</td>
<td>Sine wave oscillators (high frequency heat therapy, ultrasound)</td>
</tr>
<tr>
<td>7</td>
<td>Basic concepts of Thermodynamics, First law</td>
<td>Audiometry</td>
</tr>
<tr>
<td>8</td>
<td>General description of transport phenomena, Onsager’s equation, examples</td>
<td>Isotope diagnostics</td>
</tr>
<tr>
<td>9</td>
<td>Diffusion; transport across membrane</td>
<td>Densitography (CT)</td>
</tr>
<tr>
<td>10</td>
<td>Resting potential and its local changes</td>
<td>Flow of fluids. Electric model of vascular circulation</td>
</tr>
<tr>
<td>11</td>
<td>Action potential, properties, interpretation</td>
<td>Electrocardiography</td>
</tr>
<tr>
<td>12</td>
<td>General characteristics of sensory function, hearing, vision</td>
<td>Diffusion</td>
</tr>
<tr>
<td>13</td>
<td>Biophysics of muscle function</td>
<td>Sensory function</td>
</tr>
<tr>
<td>14</td>
<td>Motor proteins</td>
<td>Repetition</td>
</tr>
</tbody>
</table>
MEDICAL CHEMISTRY

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry

Lectures and practical lessons
Lectures and laboratory lessons are held every week; detailed schedules can be found under corresponding tabs.

Prerequisites for acknowledging the semester
(1) Participation in the laboratory practicals is compulsory; students are obliged to sign the attendance sheets at the end of each lab lesson. In case of more than three absences from the labs for any reason, the semester cannot be acknowledged and the student is not going to be allowed to sit for the semifinal exam. Missed practicals can be completed only in the same week with another group; certificate of participation issued by the host teacher needs to be presented by the student to his/her own teacher.
(2) It is compulsory to pass both midterm examinations.

Midterm examinations
Two midterm written examinations will be held in weeks 6 and 13 of the semester, respectively, during lab lessons. Midterm tests consist of four theoretical questions (10 points each) and four problems (calculations; 10 points each). The material of midterm I covers that of lectures delivered in the first 5 weeks, while midterm II is based on the lecture material of weeks 6-12. Midterm tests will be marked by your own lab teacher.
Grading of midterms:
0 – 40 points: 1 (fail)
41 – 50 points: 2 (pass)
51 – 60 points: 3 (fair)
61 – 70 points: 4 (good)
71 or more points: 5 (excellent)

Passing both midterms is a prerequisite for acknowledgement of the semester. Failed midterms might be retaken twice at your own lab teacher. Retakes cannot be performed later than 14th December.

Semifinal examination
Only those students who have fulfilled both acknowledgement criteria, thus obtained an official electronic Neptun signature, are entitled to sit for the semifinal exam.
The semifinal is an oral exam conducted by a two-member examination committee.
Students take one topic from each of the following groups of topics:
I. Problems (calculations)
II. General and inorganic chemistry 1
III. General and inorganic chemistry 2
IV. Organic chemistry
V. Labs
Students having achieved an average of 4.5 or 5.0 of midterm marks will take only 3 topics from groups II, III and IV.

Exemption from attending the course
Students who learned general, inorganic and organic chemistry at university levels prior to the commencement of their studies at Semmelweis University might be exempted from attending the Medical Chemistry course. Students are kindly asked to present their official documents (academical transcripts and a detailed syllabus on the courses they have completed) to the tutor (Gergely Keszler, EOK building, room 2.132).

Registration and modification of examination dates
Electronically, via the Semmelweis University Neptune System.
Retakes are not possible within 3 days following the exam.
All our examination rules comply with the official examination regulations of the Semmelweis University.
Recommended textbooks
1. General chemistry:
2. Ebbing-Gammon: General Chemistry, latest edition
3. Organic chemistry:
5. Sasvári: Bioorganic compounds
6. Inorganic chemistry:
7. Tóth: Concise inorganic chemistry for medical students
8. Lab lessons:
10. Hrabák: Selected Collection of Chemical Calculations and Biochemical Exercises (latest edition)

Description of the curriculum
The principal aim of the course is to prepare students for the understanding of Biochemistry and Molecular Biology. This requires a firm knowledge of the foundations of general, organic and inorganic chemistry.
The Medical Chemistry course encompasses the following chapters of Chemistry:

I. General Chemistry
Structure of atoms, ions and molecules. Chemical bonds
Relation of atomic radius, ionization energy, electron affinity and electronegativity to the periodic table. Ionic bond, ion radius, ions. Covalent bonding, s and p bonds, hybrid orbitals, hybridization of carbon. Electron pair repulsion, geometry of molecules, bond angle. Molecular orbital theory.


Solutions, laws of aqueous solutions, their biological and medical aspects

Electrolytes


Electrochemistry

Thermodynamics
Chemical kinetics
Reaction kinetics, rate of reaction, order and molecularity. Half-time of reactions. The van’t Hoff rule. Activated complex, transition state, activation energy. The Arrhenius equation. Catalysis, catalysts. Reversible processes, the law of mass action, equilibrium constant and its relation to free energy change. Consecutive reactions, the importance of rate-limiting steps in metabolic processes.

II. Inorganic chemistry
Properties of non-metals

Properties of metals
Alkali metals and their compounds. Alkali earth metals and their compounds, the biological significance of calcium and magnesium. Earth metals. Heavy metals and their biological importance. Precious metals. Medically important metals and metal-containing compounds.

III. Organic chemistry
General properties of organic compounds

Classification of hydrocarbons based on their carbon backbone

Functional groups. Classification and chemical characterization of compounds containing various functional groups
Classification of organic compounds according to their functional groups.
1. Halogenated hydrocarbons, their physicochemical properties.
2. Organic compounds containing hydroxyl groups. Classification. Alcohols, physical properties, chemical reactions. Enols and phenols, their chemical reactions. Synthesis of ethers, their reactions.
5. Organic compounds containing sulfur: thiols, thiophenols and thioethers, their synthesis and physicochemical properties.
6. Organic compounds containing nitrogen: classification, physicochemical properties of nitro compounds. Amines, classification, synthesis, basicity. Important chemical reactions of amines (e.g. Schiff base formations). Amides of carbonic acids.
MEDICAL BIOCHEMISTRY I.

Department of Medical Biochemistry

Credits: 5
Total number of hours: 70; lectures (hours): 42; practices (hours): 28
Type of the course: obligatory
Academic year: 2019/2020

Code of the course
Name of Head of the Department: Professor László Csanády M.D. Ph.D. D.Sc.
Contact details: H-1094 Budapest, Tűzoltó u. 37-47. tel: +36-1-459-1500#60010 e-mail: csanady.laszlo@med.semmelweis-univ.hu
Position: Temporary Head of Department
Date of Habilitation: 2013 Its number: 341

Aim of the course:
The aim of this course is to examine biologically important molecules - namely amino acids, carbohydrates, lipids and nucleotides - identify their contributions to metabolic processes emphasized from a medical point of view, examine the structure and function of proteins, and address mechanisms of catalysis performed by enzymes. Furthermore, three basic biochemistry modules are outlined: The enzymology module, encompassing general principles of enzyme kinetics and how enzymes influence efficiency and controllability of chemical processes in biological systems, as well as how they affect structure and regulation of metabolic pathways; the bioenergetics module, addressing the relationships between mass-energy conversions in the human body emphasizing nutritional aspects, also elaborating on thermodynamic aspects of metabolism; and the ‘first’ intermediary metabolism module, presenting the salient features of carbohydrate and lipid metabolism which are essential for understanding physiological and pathological processes of the human body. During practices, students apply the theoretical knowledge acquired at lectures as part of case-oriented discussions in an effort to interpret - from a molecular point of view - medically relevant conditions.

Location of the course (lecture hall, practice room, etc.):
Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:
Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound medical decisions.

Prerequisite (s) for admission to the course: Medical Chemistry
Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects
How to apply for the course: Application is through the Neptun online system

The course in thematic details:

Lectures: weekly 2x70 min (3 hours)
Lecturers: Prof. Ádám Veronika (ÁV), Prof. Csanády László (CSL), Prof. Kolev Krasimir (KK), Dr. Komorowicz Erzsébet (KE), Dr. Szöllősi András (SZA), Dr. Törőcsik Beáta (TB), Prof. Tretter László (TL)
Practices (P): 2 hours every week
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practices (P): 2 hours every week</th>
</tr>
</thead>
</table>
  (CSL, SZA) | P: Structural and chemical characteristics of amino acids; pH and temperature dependent properties.                                                                                                       |
  (CSL, SZA, KK, TL) | P: Current protein diagnostic and structural test methods and their medical applications.                                                                                                             |
  (KK, TL) | P: Interpretation of pathological conditions stemming from alterations in protein structure, elucidated by atomic resolution techniques.                                                                 |
| 4    | Structure and kinetics of metabolic pathways. Principles of metabolic control. Strategies for identifying enzymes as drug targets.  
  (KK, TL) | P: Quantitative characterization of enzyme functions and its importance in the interpretation of pathophysiological conditions.                                                                 |
  (TL) | P: Identification of metabolic pathways.                                                                                                                                                    |
  (TL) | P: Bioenergetics                                                                                                                                  |
| 7    | Glycolysis  
  Metabolism of fructose and galactose, pathological aspects. Regulation of glycolysis and gluconeogenesis.  
  (AV, BT) | P: Carbohydrates in the diet. Food fibers and additives.                                                                                                                                           |
  (AV, BT) | P: Lactic acidosis                                                                                                                                  |
| 9    | Blood glucose level and its regulation II; hyperglycaemia. Biochemistry of diabetes mellitus (DM) type I and type II  
  (AV, TB) | P: Fructose intolerance; McArdle’s disease                                                                                                                                            |
  (AV, TB) | P: Structure and function of the most important lipids in the body and in the diet.                                                                                                            |
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practices (P): 2 hours every week</th>
</tr>
</thead>
</table>

**Potential overlap(s) with other topics:** none

**Requirement for special study:** not applicable

Policy regarding attending practice; policy regarding absences:
Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 3 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.

**Means of assessing acquired knowledge during the semester:** not applicable

**Requirement for acknowledging the semester, and for allowing the student to take the semi-final exam:** In case of absences amounting to more than 10.5 hours, the semester is not acknowledged.

**Exam Type:** Colloquium (semi-final), Form: written test exam, based on material of the official textbook, lectures and practices published at the department’s website (http://semmelweis.hu/biokemia/en/).

**Exam Requirements:** The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.

**Types and modes of grading:**
The competition is held on week 13, and the structure of the competition is the same as that of the semi-final.

The grade of the semi-final exam is based on:

**Written test:**
This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam:
60-65: grade 5 (excellent)  
49-59: grade 4 (good)  
41- 48: grade 3 (satisfactory)  
33-40: grade 2 (pass)  
If 39 and below, then the grade of the semi-final exam is ‘fail’.

**How to apply for the exam:** The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

**Opportunities to repeat the exam:** an exam can be re-taken only after two calendar days.

**Printed, electronic and online notes, textbooks, tutorials, and literature for online learning (html for online material):**
Harper’s Biochemistry (30th edition, or latest)  
Online material published in the department’s website (http://semmelweis.hu/biokemia/en/)
MEDICAL PROFESSION

Lecturer: Prof. László Kalabay MD PhD
Institute: Department of Family Medicine
Duration: One semester, lectures: 6x2 hours, practices: 6x3 hours/semester
Exam: Practical mark (written exam)
Credit value: 2 credit points
Minimum/maximum group size: 55/210

Second Semester

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

Application: Péter Torzsa MD Tel: 355-8530 e-mail: torzsa.peter@med.semmelweis-univ.hu
Application date: 30th January
Precondition: Only for students in the 1st year.
MEDICAL SOCIOLOGY – Health Care

Semester: half class in the first semester and half class in the second semester

Institute of Behavioural Sciences

Type of the course: compulsory

code: AOKMAG425_1A

credit: 2

Course leader: Dr. József Kovács

Academic year: 2019/20 Groups 1-8 in the first semester, groups 9-16 in the second semester

Course objectives:

By the mid to late 20th century, the biomedical model in medicine was replaced by the biopsychosocial model. There are biological, psychological and social factors in the background of illness. This is the approach we take in this course in looking at various aspects of health, illness and medical work. Our goal is to introduce future medical doctors to the social factors they must be familiar with in working with patients. Topics include social stratification and health inequalities, the principles of health care systems, medicalisation and the changing medical profession, illness behaviour, intercultural issues in health care as well as the challenges of digital health.

Course Syllabus:

1. Introduction to medical sociology, basic concepts and principles. (lecture)
2. Health and illness in society, a historical transformation of mortality and morbidity patterns. (lecture)
3. Social stratification, social inequalities and health (lecture)
4. Intercultural healthcare (lecture)
5. The challenges of digital health (lecture)
6. Globalisation and therapy choice (lecture)
7. Midterm examination (Lecture)
8. Preparation for project work and for health care system workshop (practical)
9. Health care systems workshop (practical)
10. Global poverty and inequalities, Inequalities and health- social class (practical)
11. Inequalities and health: age, ethnicity and gender (practical)
12. The doctor-patient relationship in the 21st century (practical)
13. Illness behaviour (practical)
14. project work evaluation (practical)

Participation and making up for absences:

No less than 75% of all classes must be attended. One practical absence can be made up by undertaking an extra task set by the practical leader or by participating in the practical with another group.

Justification of the absence in the lectures and examinations:

Medical certificate

Checks during the semester (reports, written checks):

Written midterm test in week 7 on the materials covered in the lectures. The midterm will consist of multiple choice questions and a case analysis. This is 50% of the final grade. The lecture notes are made available on (www.magtud.hu).

1. project task in the practicals. This is 40% of the grade
2. Written exam in the examination period (40%)
3. Bonus points will be given for extra tasks 10 points
Requirements for the signature at the end of the semester:
- Participating in 75% of the classes.
- Passing the midterm in week 7 (with retake possibilities)
- Doing the project work

Method of the calculation of marks:
- Participating in 75% of the classes and doing the project task in the practicals

Grades:
- 0-50 points – 1
- 51- 60 points -2
- 61-74 points -3
- 75-84 points -4
- 85 points and over 5

Type of the exam:
written

Requirements for the exam:
The material needed to study will be made available on the departmental homepage.

Application for the exam: Neptun

Changing the application for the exam:
Neptun

Justification of the absence from the exam:
Medical certificate

Course and recommended text books:
Applied Sociology of Health and Illness: A Problem Based Learning Approach by Costas S. Constantinou ISBN 9781908911940
MEDICAL COMMUNICATION

Educational Unit: Institute of Behavioural Sciences
Name of the course: Behavioral sciences I. (medical communication)
Type of the course: obligatory
credit: 2 credits
Course director: Dr. József Kovács
Course leader: Dr. János Pilling
Study affairs: Dr. Adrienne Stauder (stauder.adrienne@med.semmelweis-univ.hu
Secretary: Jozefa Barreto (secretariat) barreto.jozefa@med.semmelweis-univ.hu
Secretariat: NET Building, 20th floor, Room-2015; Tel: 210-2930/56114, 56501
With any request concerning the course, please first contact Jozefa Barreto, course secretary.

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

Course Syllabus:

LECTURES: Week 1-7
Week 1: Introduction. Communication difficulties and possible solutions in the everyday medical practice.
Week 2: The development of patient-physician collaboration, promote behavior change.
Week 3: Suggestive communication in medical practice.
Week 4: The specialties of age in medical communication: communication with ill children
Week 5: Communication about functional complaints
Week 6: Communicating bad news. Communicating with people with disabilities.
Week 7: Telemedicine.

SEMINARS: Week 6-12
Week 6: Seminar. Communication in everyday life and in the medical practice. The role of non-verbal and metacommunicative signs in communication.
Week 7: Seminar. The active listening. Communication aspects in empathy.
Week 8: Seminar. Patient information, patient education.
Week 9: Seminar. Creating and maintaining compliance.
Week 10: Seminar. Communicating bad news (practice). How to recognize communication signs of suicide?
Week 12: Seminar. Cultural aspects in medical communication. Review

Participation and making up for absences:
A signature will be given with the prerequisite of participation (minimum 75% of the lectures and 75% of the seminars). Participation list will be recorded at the end of every lecture/seminar. It is possible to make up for ONE absence by participating in another seminar group the same week (only once in a semester, upon agreement with both teachers!).
Justification of the absence in the lectures and examinations: medical certificate

Checks during the semester (reports, written checks): -

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

Method of the calculation of marks: performance on the oral exam. The Medical Communication Teaching Group will organize a competitive examination at the end of the seminar period. Those students who obtain a good or an excellent grade at this exam, can be exempted from the oral exam.

Type of the exam: oral
Requirements for the exam:

Exam topics:

„A” list
1. Basic definitions in communication and their role in medical practice: basic elements, axioms and levels in communication; verbal communication.
2. The role of non-verbal communication.
3. The role of active listening and the role of empathy.
4. The doctor-patient consultation.
5. Communication issues in patient information.
6. Patient education and shared decision making.
7. Convincing strategies in medical practice: learning theories and cognitive models;
9. The role of suggestive communication in the doctor-patient interactions.

„B” list
1. Communication with acute patients.
2. Communication with sick children.
3. Communication with older patients.
4. Communication with somatizing patients.
5. Communication with alcohol- and drug-dependent patients.
6. Communication about sexual problems.
7. Communication aspects with patients committing suicide attempt.
8. Prevention and management of violence
11. Telemedicine.

Application for the exam: Through the Neptun system.
Changing the application for the exam: Through the Neptun system.
Justification of the absence from the exam:
Course and recommended text books:

Course text book:

Recommended text books:
INTRODUCTION TO MEDICAL INFORMATICS

Name of the educational organizational unit: SE EKK

Type of the subject: 1 practice / week
code: AOVINF244_1A
credit value: 1
Name of the lecturer of the subject:
Dr. Miklós Szócska

Teachers:
Dr. Tamás Iváncsy (PhD, lecturer)
Dr. Ádám Zoltán Tamus (PhD, associate professor)
Tamás Tóth (assistant lecturer)
Zoltán Sándor (assistant lecturer)
Péter Dombai (lecturer)

Administrator: Ms. Dóra Bacsa

Term: spring
The exercise of the subject in the in the realization of the aim of the education:
To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences. The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.
Select the desired course in Neptun when registering to the subject! Changing topics/groups is possible only according to the rules of the registration in Neptun! You must attend the course you have selected in Neptun!

OPTIONAL courses:

I. SCIENTIFIC COMMUNICATION COURSE
The course gives an introduction to the paper based and oral publications and presentations. The students have to find a medical problem (a topic) to work out during the course.
2. Structure of a scientific publication. The importance and meaning of the sections of the paper. Structure of an oral presentation.
3. Scientific publication in practice: finding and evaluating information and creating paper and presentation on the selected topic.

II. DATABASES COURSE
The course gives an introduction to structuring and retrieving data using databases. The students perform practical examples of data management and query using a current software solution.
1. Introduction to database theory and data modelling principles (the application, logical and physical models, basic concepts and objects).
2. Data handling in practice: planning a relational database, managing tables and fields
3. Information retrieval from databases: the role and structure of queries, performing basic queries
4. Data management via user interfaces – basic concepts and principles
III. BIOMEDICAL SIGNAL PROCESSING COURSE
The students learn about the basics of biomedical signals, their acquisition, digital storage and processing. They perform practical analysis of selected signal examples.
1. Introduction to biomedical signal processing, objectives of signal analysis, Components of human-instrument system
2. Examples of biomedical signals (electrical and mechanical signals), and transducers.
3. The basics of signal processing, the digitalizing (sampling, Shannon-theory, quantization).

IV. PRESENTATION TOOLS
The course provides an overview of visual representation of medical information for various audience. The students learn the use of several related tools, and work up a selected topic.
1. Introduction to presentation techniques: How to make a good presentation? – technical and non-technical skills, best practices
2. Types of medical information, online information sources
3. Visual representation of information: word cloud, infographic etc.
4. Online tools for creating and sharing presentations

Requirements of participation of the lessons and the possibility of substitution of the absence:
According to rules of the Studies and Exam Code. Attendance on at least 3 of the 4 practices is mandatory.

The mode of the certificate in case of absence from the lessons:
According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term (including also the number and the type of the students’ exercises which are solved individual by them)
Attendance on at least 3 of the 4 practices is mandatory
The mode of acquisition of the mark:
Practical exercise

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:
The educational materials are available at http://dei-cloud.semmelweis.hu
Username and password is announced at the first practice.

INTRODUCTION TO PATIENT CARE

Practice: 2 hours per week
Credit: 2
Examination: pract. mark
FIRST AID

Tutor: Dr. István Hornyák

Topics

- BLS (Basic Life Support)
- BLS + AED (management of situations)
- BLS + AED (Management of situations)
- Fractures, dislocation, sprain. Slings.
- Poisoning. Drugs. Drunkenness.
- BLS

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

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

Mode of certifying absences: oral – referring to practices.

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

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

Mode of certifying absences: oral – referring to practices.

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

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

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division

Lectores 10 in total; Practicals 28 in total

Assessment: 3 written tests

Role of subject in fulfilling the aim of training:
Students get familiarized with the Latin and Greek terminology of medicine in order to facilitate the acquisition of other subjects. Special focus is dedicated to anatomy, physiology, pathology and pharmaceutics. Furthermore, the course provides an introduction into general scientific terminology.

Brief description of subject:
The main aim of the subject is:
1. to acquire a knowledge of about 500-600 Latin words and phrases as a minimum vocabulary (basic vocabulary of medical and scientific language),
2. the correct application of
   a) anatomical names,
   b) names of diseases
   c) names of drugs,
3. to understand diagnoses and prescriptions;
4. to learn about abbreviations used in prescriptions.
5. to be able to make a clear distinction between medical terms of English and Latin/Greek.

Course content of practical lessons:
1. Grammar:
   Nouns: the 5 Declensions
   Adjectives - construction of the most important attributive structures with the vocabulary of anatomy, clinical subjects and of pharmaceutics.
   Prepositions (in anatomical, clinical and pharmaceutical phrases)
   Numerals: Usage on prescriptions.
2. Texts containing:
   a) anatomical names;
   b) clinical and patho-anatomical diagnoses;
   c) prescriptions
3. Vocabulary

Latin and bilingual (Greek-Latin) nouns, adjectives, numerals and prepositions used in anatomy, the clinical subjects and pharmaceutics;

Course material, recommended textbook(s), professional literature and supplementary reading(s)
Belák E. Medical Terminology for Beginners (earlier title: Medical Latin), Budapest: Semmelweis Kiadó.
HUNGARIAN MEDICAL TERMINOLOGY I.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division
4 lessons per week, 4 credits,
Assessment: end-term written and oral exam

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students’ awareness of cultural differences is one of our top priorities.

Brief description of subject:
The first three modules are dedicated to learning basic general vocabulary and grammar. In the first module students acquire basic structures and the vocabulary for everyday topics / e.g. shopping, food, housing etc./, language for „survival.”. The course places special emphasis on phrases essential for everyday communications, e.g. introductions, greetings, getting/giving information etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:
Lesson 1-2: The alphabet
Lesson 3-4: Greetings
Lesson 5-6: Where are you from?
Lesson 7-8: Introducing people
Lesson 9-10: Numbers-phone numbers
Lesson 11-12: What time is it?
Lesson 13-14: Practising telling the time
Lesson 15-16: Days
Lesson 17-18: When do you study?
Lesson 19-20: What is it? - food
Lesson 21-22: Consolidation
Lesson 23-24: Test 1 + situations
Lesson 25-26: What is the food like? - adjectives
Lesson 27-28: What do you think of English tea?- giving opinions
Lesson 29-30: I would like a tea
Lesson 31-32: Shopping for food
Lesson 33-34: Ordering food- in a café
Lesson 35-36: Rooms in the flat
Lesson 37-38: Furniture in the rooms
Lesson 39-40: Where are the furniture?
Lesson 41-42: As a guest
Lesson 11-12: At a party
Lesson 43-44: Where can I find the library?
Lesson 45-46: When shall we meet?
Lesson 47-48: Asking for information, setting programs
Lesson 49-50: Places in the city
Lesson 51-52: Consolidation
Lesson 53-54: Test 2 + situations and communication practice
Lesson 55-56: Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)
HUNGARIAN MEDICAL TERMINOLOGY II.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /‘survival language’/ and in their academic studies. Raising students’ awareness of cultural differences is one of our top priorities.

Brief description of subject:
The first three modules are dedicated to learning basic general vocabulary and grammar. In the second module students acquire basic structures and the vocabulary for everyday topics (e.g. family, relatives, at the doctor’s etc.) language for “survival”. The course places special emphasis on phrases essential for everyday communications, e.g. likes, dislikes, offering help, etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:
Lesson 1-4: Forming questions
Lesson 5-6: Plural forms
Lesson 7-8: What do you like doing in your free time?
Lesson 9-10: I would like to……
Lesson 11-12: Communication skills
Lesson 13-14: A date – what do you like?
Lesson 15-16: I like dancing, swimming etc.
Lesson 17-18: I can ride a bike, drive etc.
Lesson 19-20: Communication practice
Lesson 21-22: Can I help you? In a clothes shop
Lesson 23-24: Can I give you something else?
Lesson 25-26: Communication practice
Lesson 27-28: Consolidation
Lesson 29-30: Test 1 + situations
Lesson 31-32: I have a headache – at the doctor
Lesson 33-34: At the chemist’s
Lesson 35-36: Communication practice – at the doctor, at the chemist’s
Lesson 37-38: My family, family members
Lesson 39-40: Family relations
Lesson 41-44: Communication practice- introducing your family
Lesson 45-48: My boss’ wife – social relations
Lesson 49-50: Consolidation
Lesson 51-54: Test 2 – situations, communication practice
Lesson 55-56: Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)
PHYSICAL EDUCATION I.

Department of Physical Education

Type of Subject: Compulsory
Code of Subject: AOKTSI009_1A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.)

I. St. year I. semester:

<table>
<thead>
<tr>
<th>1 – 2 weeks:</th>
<th>General information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accident, fire and environmental education. The mid-year adoption requirements, the construction of classes and the presentation of the university recreational and sports opportunities for extra-curricular activities. The purpose and practice of the warm-up, such as preventing sport injuries. Common warm-up. Free exercises.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 – 4 weeks:</th>
<th>Stamina Development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preferably outdoors, on grass ground running, with the aim of developing good running and breathing techniques.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 – 6 weeks:</th>
<th>Coordination enhancing exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Various arm and leg exercises in place and in motion (walking, running, jumping, etc.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7 – 8 week:</th>
<th>Balls skill development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Introducing the most popular ball-games (football, basketball, handball, volleyball). Exercising technical and tactical elements of the games.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9 – 10 weeks:</th>
<th>Strengthening exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hand-wait exercises in walking, running and jumping stationary.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11 – 12 weeks:</th>
<th>Posture improving exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core muscle strengthening exercises in various positions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13 – 14 weeks:</th>
<th>Stretching exercises and it’s relaxing effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The physiological background of stretching and it’s practical role and importance in everyday activities.</td>
</tr>
</tbody>
</table>

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!
PHYSICAL EDUCATION II.

Type of Subject: Compulsory
Code of Subject: AOKTSI009_2A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.).

I. St. year II. semester:

<table>
<thead>
<tr>
<th>1 – 2 weeks:</th>
<th>General information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra-curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 – 4 weeks:</th>
<th>Stamina Development</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5 – 6 weeks:</th>
<th>Coordination enhancing exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The Floorball – learning the basic technical and tactical aspects of the game to improve hand-eye coordination.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7 – 8 week:</th>
<th>Strengthening exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using medicine-balls focusing on different muscle groups.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9 – 10 weeks:</th>
<th>Ball games</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basketball – skill improving exercises (dribblings, throws, passes, etc.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11 – 12 weeks:</th>
<th>Posture improving exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wall-bar exercises (pull-ups, crunches, etc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>13 – 14 weeks:</th>
<th>Stretching exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Stretching exercises in pairs using sitting, standing, recumbent positions.</td>
</tr>
</tbody>
</table>

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!
COMPULSORY SUMMER PRACTICE

Nursing Course – 168 hours
Ends with a practical exam.

Proof of completion (Certification of completed famulus practice) must be submitted prior to registration to the next academic year. Students who do not submit the certificate of completion on time will have their registration placed on hold until the proof of completion is received by the English Secretariat. Certificates can be downloaded at http://www.semmelweis-english-program.org/index.php?option=com_content&task=view&id=79&Itemid=101

Please read more about the rules concerning the criteria of selecting the foreign clinical practice positions and accepting the practice period spent abroad: http://www.semmelweis-english-program.org

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

Week 2
(practicing the things learnt in the previous week)
- Making beds with turnable bedcase (first with nurse’s help)
- Use of comfort equipment (under supervision)
- Disinfectants in the ward
- Cleaning and sterilization of bedpans, urinals and spittoons
- Helping with taking temperatures, sterilization of thermometers
- Helping with serving food
- Helping with feeding bed patients

Week 3
(practicing the things learnt in the previous two weeks)
- Helping with making the beds of patients unable to move
- Helping with changing beds of patients unable to move
- Helping with moving active and passive patients in bed
- Helping with the patients’ placing in chairs, stretchers and wheelchairs
- Helping with the washing of not seriously ill patients, mouth hygiene and nail care
- Helping with the dressing and undressing of the patients
- Taking temperatures
- Practicing how to feel the pulse
- Helping with keeping linen cupboards, wardrobes and equipment clean and tidy
Week 4
(practicing the things learnt in the previous 3 weeks)
- Attending patients in the morning without help (washing, cleaning the mouth and nails, combing, making beds)
- Helping with comfort equipment without help
- Helping with cold and warm treatment, applying compresses, stupes, ice bags, thermofors
- Practicing to keep temperature and pulse charts
- Working with syringe, practicing pumping
- Helping to sterilize the syringe (the importance of sterilization)
- Helping with preparing and sending samples to the labs, filling up guide slips
- Staying in the lab for one or two days, or 12 hours per day favourably in the department’s lab helping and practicing urine analysis

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

### Second Year

#### 3rd Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microscopic Anatomy and Embryology II.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>final</td>
<td>Medical Biochemistry I., Microscopic Anatomy and Embryology I.</td>
</tr>
<tr>
<td>Medical Physiology I.</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>semi-final</td>
<td>Macroscopic Anatomy and Embryology II., Medical Biochemistry I., Medical Biophysics II.</td>
</tr>
<tr>
<td>Medical Biochemistry II.</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>final</td>
<td>Medical Biochemistry I.</td>
</tr>
<tr>
<td>Molecular Cell Biology I.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Medical Chemistry, Cell Science</td>
</tr>
<tr>
<td>Medical Psychology</td>
<td>1</td>
<td>2.5</td>
<td>3</td>
<td>final</td>
<td>Medical Sociology, Medical Communication</td>
</tr>
<tr>
<td>Hungarian Medical Terminology III.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>Physical Education III.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13</strong></td>
<td><strong>18.5</strong></td>
<td><strong>28</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Introduction to Clinical Medicine (Obligatory elective subject) | – | 2 | 2 | pract. mark | Medical Profession |

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum.

* The subject must be registered for, and must be completed during the first 2 years of studies.

---

* **Important note:** Students starting their 2nd, 3rd, 4th, 5th and 6th year find their yearly program in the Appendix (last chapter of the Calendar)
## Second Year

### 4th Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Microbiology I.</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final</td>
<td>Microscopic Anatomy and Embryology II., Medical Physiology I., Medical Biochemistry II.</td>
</tr>
<tr>
<td>Medical Physiology II.</td>
<td>6</td>
<td>4.5</td>
<td>10</td>
<td>final</td>
<td>Medical Physiology I.</td>
</tr>
<tr>
<td>Molecular Cell Biology II.</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>final</td>
<td>Molecular Cell Biology I., Medical Biochemistry II.</td>
</tr>
<tr>
<td>Immunology</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
<td>semi-final</td>
<td>Molecular Cell Biology II.,* Medical Biochemistry II.</td>
</tr>
<tr>
<td>Genetics and Genomics</td>
<td>2</td>
<td>1.5</td>
<td>4</td>
<td>semi-final</td>
<td>Molecular Cell Biology II.*</td>
</tr>
<tr>
<td>Hungarian Medical Terminology IV.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract.mark</td>
<td>Hungarian Medical Terminology III.</td>
</tr>
<tr>
<td>Physical Education IV.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>16.5</strong></td>
<td><strong>28</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum.

*The prerequisite is that registration has been done for the marked subject – corequisite - as well*
LIST OF TEXTBOOKS (The list may change!)

7. Medical Genetics and Genomics (e-book)

Recommended textbooks:

MICROSCOPIC ANATOMY AND EMBRYOLOGY (I -) II.

Department of Anatomy, Histology & Embryology
Course Director:  
Dr. Andrea D. Székely  
Dr. Sándor Katz

LEARNING OBJECTIVES
Aims of the lectures in embryology: Presentation of the early development from the differentiation of the germ cells to the formation of the human embryo (general embryology). Presentation of the development of the organs and functional systems parallel with the gross anatomical and histological lectures including the frequently occurring malformations.

Aims of the lectures in histology: Presentation of the cell, basic principles in cell biology (mitosis, cytoskeleton, cellular motility), detailed presentation of the basic (epithelial, connective, muscle and nervous) tissues. Complementing gross anatomy with a detailed presentation of the fine structure of organs, including the ultrastructural details together with the molecular background. Important chapters: basic tissues, viscera, central nervous system.

Aims of the practical sessions in the histology room: Facilitate the understanding of ground (epithelial, connective, muscle and nervous) tissues and the fine structure of the organs through the observation and interpretation of histological specimens.

LECTURES: 2 × 45 min in both semesters
PRACTICAL CLASSES: I.: 3 x 45 min; II.: 2 × 45 min.
ECTS CREDITS: Altogether 9 (I.: 5; II.: 4).

ACCEPTENCE OF THE SEMESTER:
Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in 25%. Attendance will be recorded in the lectures and in the dissection room classes.

Please, see further requirements on the department’s website.

TYPE OF EXAMS: oral and written
I.: semifinal examination, II.: final exam

Semifinal and final examinations consist of written and oral parts
1. Written pretest (e-learning module – access to SeKA account is obligatory)
2. Oral test in Microscopic Anatomy: identification of structures on virtual histological specimens including relevant theoretical questions

LIST OF TEXTBOOKS

Recommended textbooks:
1. The Developing Human – Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
## COURSE DESCRIPTION

**Microscopic Anatomy and Embryology II.**

**Lectures in Histology and Embryology; practical classes in Histology**

**Subject matter**

**Histology:** Microscopical structure of the CNS and PNS (cerebrum, cerebellum, brain stem, spinal cord, ganglia) organs of special senses (apple of eye, inner ear), endocrine glands (pineal, pituitary, thyroid, suprarenal glands) skin and appendages, lymphatic system and the mammary gland.

**Embryology:** Development of the central and peripheral nervous system, development of the organs of senses, together with their malformations.

**Credits:** 4

**Prerequisites:**
- Macroscopic Anatomy I-II.
- Microscopic Anatomy I.
- Cell Biology.

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Histology laboratory</th>
</tr>
</thead>
</table>
| **Week 1** | 1. Cellular components of lymphatic tissue. Thymus, tonsils, MALT  
2. Structure and circulation of lymph nodes and spleen | Thymus, tonsils |
| | **Week 2** | 3. Microscopy of the CNS – fine structure of the spinal cord  
4. Microscopy of the CNS – spinal reflexes, receptors, effectors, monosynaptic/proprioceptive reflexes | Lymph node, spleen |
| | **Week 3** | 5. Microscopy of the CNS – Nociceptive (withdrawal) and autonomic reflex arcs  
6. Microscopy of the CNS – Fine structure of the cerebral cortex. Cortical fields, Brodmann areas | Histology of the peripheral nervous system (peripheral nerve, motor end plate, spinal cord) |
| | **Week 4** | 7. Microscopy of the CNS – Diencephalon, thalamic nuclei  
8. Microscopy of the CNS – Sensory systems, epicritical and protopathic pathways | Histology of the central nervous system |
| | **Week 5** | 9. Microscopy of the CNS – Motor systems, pyramidal tract  
10. Microscopy of the CNS – Structure and connections of the basal ganglia. Motor pathways arising from the brain stem | Endocrine system |
| | **Week 6** | 11. Microscopy of the CNS – Microscopy of the cerebellum, pathways. Functional considerations  
12. Microscopy of the CNS – Hypothalamus, the hypothalamo-hypophysial system. | Midterm test (Histological slides of weeks 1-5) |
| | **Week 7** | 13. Microscopy of the CNS – Brainstem monoaminergic systems  
14. Microscopy of the CNS – Limbic system | Microscopy of the CNS - consultation |
16. Differentiation of the brain vesicles | Microscopy of the CNS - consultation |
| | **Week 9** | 17. Formation and derivatives of the neural crest and placode ectoderm  
18. Development of the skull | Midterm test  
Microscopy of the CNS  
Development of the nervous system |
| | **Week 10** | 19. Development of the vertebral column, limb development  
20. Skin and appendages. Mammary gland | Histology of palm skin, scalp skin  
Mammary gland |
| | **Week 11** | 21. Fibrous and vascular coats of the eyeball. Lens, chambers of the eye, vitreous body, accommodation  
22. Inner coat of the eyeball, retina | Organs of special senses I.  
Eyeball, retina, lacrimal gland |
| | **Week 12** | 23. Optic nerve, visual pathway, visual cortex, disorders. Visual reflexes  
24. Middle ear - tympanic cavity, tympanic membrane, auditory ossicles | Organs of special senses II.  
Organ of Corti |
| | **Week 13** | 25. Bony and membranous labyrinth. Vestibular system  
| | **Week 14** | 27. Microscopy of the CNS – Olfactory and gustatory systems  
28. Drugs of abuse, opiates and receptor mediated actions in the CNS | Revision I. |
TOPICS OF THE FINAL EXAMINATION

Topic list of the semifinal examination (see there)
+
Topic list of the present semester (see below)

**Lymphatic organs**
- Histological structure of lymph nodes
- Spleen (fine structure and circulation)
- Thymus
- Tonsils, MALT

**Development of the nervous system and organs of special senses**
- Development and primary differentiation of the neural tube
- Development of brain vesicles
- Development of the peripheral nervous system (neural crest, placodes)
- Development of the organ of vision
- Development of the organ of hearing & equilibrium

**Development of the locomotor system**
- Membranous and cartilaginous neurocranium and viscerocranium
- Development of the limbs and vertebral column
- Development of the muscular system

**Neurohistology**
- Histology of the neurons developing from the neural tube
- Glial cells
- Histology of the neurons and supporting cells developing from the neural crest
- Fine structure of peripheral nerves
- Receptors and effectors
- Interneuronal synapses

**Microscopy of the central nervous system**
- Fine structure (microscopy) of the spinal cord
- Proprioceptive reflexes
- Nociceptive reflexes
- Autonomic reflexes
- Fine structure of the medulla oblongata
- Fine structure of the pons
- Fine structure of the midbrain
- Classification of cranial nerve nuclei
- Tracts of the brain stem
- Reticular formation, monoaminergic systems
- Fine structure of the cerebellum
- Cerebellar afferents and efferents
- Fine structure of the thalamus
- Hypothalamo-hypophyseal system
- Fine structure of the basal ganglia
- Fine structure of the cerebral cortex, cortical fields
- Tracts of the protopathic sensibility (anterolateral system)
- Tracts of the epicritic sensibility (posterior funiculus/medial lemniscus)
● Corticospinal tract (pyramidal tract)
● Extrapyramidal system
● Limbic system (nuclei and tracts)

Endocrine organs
● Gross and microscopical anatomy of the pituitary gland; development of the posterior lobe
● Blood supply, histology and development of the anterior and intermediate lobes of the pituitary gland
● Microscopical anatomy of the pineal gland
● Microscopical anatomy and the development of the thyroid gland
● Microscopical anatomy and the development of the parathyroid gland
● Microscopical anatomy and the development of the suprarenal gland
● Histology of the islands of Langerhans

Organs of special senses
● Microscopical structure of the skin (scalp and palm)
● Histology of the mammary gland (lactating and non-lactating)
● Coats of the eyeball
● Chambers of the eye, vitreous body
● Lens, accomodation
● Visual pathway, visual reflexes
● External ear, tympanic membrane, Tympanic cavity, auditory tube, hearing ossicles.
● Organ of Corti, Auditory pathway
● Vestibular system
● Bony and membranous labyrinth
● Cochlea and cochlear duct
● Organs of olfaction and taste
MEDICAL PHYSIOLOGY I.

Department of Physiology

Name of subject: Medical Physiology I.
Type of subject: Compulsory subject
Subject code: AOKELT466_1A (subject to change by introducing the new curriculum)
Credit Points: 10
Head of the Department: Dr. László Hunyady, Full Professor
Course Director: Dr. Péter Várnai, Full Professor
Tutor: Dr. András Balla

Aim of Medical Physiology course:
The goal of Medical Physiology course is to give the students the understanding of the concepts and principles of medical physiology. The lectures provide the information base while the seminars and practices provide the student with an opportunity to assimilate and integrate the material. Appropriate clinical perspectives are presented throughout the course.

Schedule of the subject:
1. Introduction, body fluids. Functions of cellular membranes, transport across membranes. Transepithelial transports.
3. Ion channels and resting membrane potential. Action potential. Physiology of nerve cells, synaptic transmission in the central nervous system.
5. Cardiac cycle. Regulation of cardiac output. Electrocardiography (ECG).
Practices:
- Blood cell counting, determination of hemoglobin concentration and hematocrit, measurement of erythrocyte sedimentation rate
- Leukocyte differential count on peripheral blood smear
- Typing of Blood Groups, Blood Coagulation Test
- Measurement of transport rate on red blood cells. Hemolysis
- Investigation of cardiac functions in situ
- Blood pressure measurement in humans
- Echocardiography
- Computer simulation: Neuromuscular junction
- Electromyography (EMG), nerve conduction velocity
- Recording and analyzing the human ECG
- Computer simulation: Skeletal and smooth muscle
- Effects of vagal nerve stimulation on cardiac functions
- Respiratory physiology calculations
- Evaluation of acid-base parameters with the Siggaard-Andersen nomogram

Attendance at classes: The lecture hours per week are 5; the practice hours per week are 5. The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature.

Absences:
No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. Missed sessions must be reported to the teacher the week after. There are no extra practices. Absence from the exam must be certified at the Head of the Department or Course Director within 3 working days.

Grading Performance in Seminars and Practices:
The knowledge of the students is tested in a written form on a weekly base. The written short tests cover the material of lectures of the previous week. The following rules will be enforced during the short tests: electronic devices must be kept in the baggage; any form of communication is disallowed; students not complying with these rules will be disqualified immediately. Evaluating the work of the student is based on his/her classroom tests and performance practice in the regular period of the semester. Missed tests cannot be repeated. The evaluation of the weekly written test will be expressed as a percentage. The average of the best written tests (the tests in the semester minus the three worsts) and the practical grade (also is expressed as a percentage) result a five-point scale:

\[
\begin{align*}
0-54 \% & = 1, \\
55-64 \% & = 2; \\
65-74 \% & = 3, \\
75-84 \% & = 4, \\
85-100 \% & = 5.
\end{align*}
\]

This grade is taken into account in the exams.

Obtaining signatures:
The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature. Students must write a lab report for each practice using the Practical Book. The Practical Book should be signed by the teacher not later than one week after the practice. Participation in the practices is compulsory. No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited.
Semi-final exam:
In the examination period the students have to give semi-final exam in the first semester.
Type and grading of exams:
The semi-final exam is oral exam. The oral exam consists of two theoretical questions (I-II). The overall result of the oral exam is based on the two theoretical grades and the lab work grade but a failed (1) theoretical question results in an overall failed (1) final exam.
Lists of the theoretical questions are listed in the webpage in the Department of Physiology. The following rules will be enforced during the exams: electronic devices must be kept in the baggage; baggage and overcoats should be placed next to the wall of the lecture halls; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.
Requirements of the exams:
Semi-final exam: material of the Medical Physiology I.

Registration for the exam:
Registration for the exam must be recorded through the NEPTUN system.
Modification of the registration for the exam:
Modification in the registration must be recorded through the NEPTUN system not later than 48 hours before the start of the exam.

Absences from the exams:
Failing to certify absence or denying it cause registering “absence” = “nem jelent meg” in the lecture book and/or in the NEPTUN system.

List of textbooks:
MEDICAL PHYSIOLOGY II.

**Type of subject:** Compulsory subject  
**Subject code:** AOKELT466_2A (subject to change by introducing the new curriculum)  
**Credit Points:** 10  
**Head of the Department:** Dr. László Hunyady, Full Professor  
**Course Director:** Dr. Péter Várnai, Full Professor  
**Tutor:** Dr. András Balla

Prerequisite: Medical Physiology I. (subject to change by introducing the new curriculum)

**Aim of Medical Physiology course:**  
The goal of Medical Physiology course is to give the students the understanding of the concepts and principles of medical physiology. The lectures provide the information base while the seminars and practices provide the student with an opportunity to assimilate and integrate the material. Appropriate clinical perspectives are presented throughout the course.

**Schedule of the subject:**
2. Humoral immunity. Cellular immunity. Regulation of immune response, blood groups  
3. Endocrine regulations. The hypothalamo-adenohypophyseal system; growth hormone, somatomedins.  
5. Hormonal regulation of intermediary metabolism.  
7. Function of the reproductive system: male sexual function; female sexual function; endocrinology of pregnancy, parturition, and lactation.  
8. Introduction to neurophysiology. Physiology of nerve & glia cells.  
9. Sensory functions.  
10. Physiology of hearing and equilibrium.  
11. Physiology of vision.  
12. Motor functions.  
13. Integration of autonomic responses.  
14. Electroencephalogram (EEG); sleep phenomena. Learning and memory. Regulation of behavioral mechanisms, motivation; emotion.

**Practices:**
- Studies on circulatory reactions of a virtual rat  
- Circulatory and respiratory reflexes in rabbit (Demonstration, Practice)  
- Smooth muscle of rabbit small intestine  
- Human pulmonary function tests - Spirometry  
- Measurement of cardiac output in rat  
- Pulse wave in human  
- Oral glucose tolerance test (OGTT)  
- Human pulmonary function tests - Body plethysmography  
- Electrooculography (EOG) and investigation of the vestibular system  
- Spiroergometry  
- Human visual physiology  
- Investigation of reflexes  
- Practice for lab exam. Lab exam

Attendance at classes: The lecture hours per week are 6; the practice hours per week are 4.5. The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature.

**Absences:**
No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. Missed sessions must be reported to the teacher the week after. There are no extra practices. Absence from the exam must be certified at the Head of the Department or Course Director within 3 working days.
Grading Performance in Seminars and Practices:
The knowledge of the students is tested in a written form on a weekly base. The written short tests cover the material of lectures of the previous week. The following rules will be enforced during the short tests: electronic devices must be kept in the baggage; any form of communication is disallowed; students not complying with these rules will be disqualified immediately. Evaluating the work of the student is based on his/her classroom tests and performance practice in the regular period of the semester. Missed tests cannot be repeated. The evaluation of the weekly written test will be expressed as a percentage. The average of the best written tests (the tests in the semester minus the three worsts) and the practical grade (also is expressed as a percentage) result a five-point scale:

- 0-54 %  =  1,
- 55-64 %  =  2;
- 65-74 %  =  3,
- 75-84 %  =  4,
- 85-100 %  =  5.

This grade is taken into account in the exams.

Obtaining signatures:
The attendance of a minimum of 75% of practices (including seminars) is necessary for the end-term signature. Students must write a lab report for each practice using the Practical Book. The Practical Book should be signed by the teacher not later than one week after the practice. Participation in the practices is compulsory. No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited.

Final exams
In the examination period the students have to give final exam in the second semester. Participation in the final exam requires the completed “Anatomy, Cell, Histology and Embryology III” course with a successful exam.

Type and grading of exams:
The final exam consists of practical, written and oral part. The practical part (lab exam) takes place in the last week of the second semester. Passing the lab exam is not a prerequisite to participate on the final exam, but failed lab exam is taken into account in grading the final exam as fail (I) partial grade. The written and oral part of the final exam is held on the same day. The oral part consists of two theoretical questions (I-II). Failed (I) theoretical question results in an overall failed (I) final exam. The mathematical average of four or five partial grades (lab grade, written exam grade, two oral exam grades, and lab exam grade) gives the grade of the final exam.

Lists of the theoretical questions are listed in the webpage in the Department of Physiology. The following rules will be enforced during the exams: electronic devices must be kept in the baggage; baggage and overcoats should be placed next to the wall of the lecture halls; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Requirements of the exam:
Final exam: material of the Medical Physiology I. and Medical Physiology II.
Participation in the final exam requires the completed “Anatomy, Cell, Histology and Embryology III” course with a successful exam.

Registration for the exam:
Registration for the exam must be recorded through the NEPTUN system.
Modification of the registration for the exam:
Modification in the registration must be recorded through the NEPTUN system not later than 48 hours before the start of the exam.

Absences from the exams:
Failing to certify absence or denying it cause registering “absence” = “nem jelent meg” in the lecture book and/or in the NEPTUN system.

List of textbooks:
# MEDICAL MICROBIOLOGY I.

**Institute of Medical Microbiology**

Program Director: **Prof. Dr. Dóra Szabó**  
Tutor: **Dr. Ágoston Ghidán**

**Second Semester**

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

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

Department of Medical Biochemistry

Credits: 5
Total number of hours: 70; lectures (hours): 42; practices (hours): 28
Type of the course: obligatory
Academic year: 2019/2020
Code of the course
Name of Head of the Department: Professor László Csanády M.D. Ph.D. D.Sc.
Contact details: H-1094 Budapest, Tűzoltó u. 37-47. Phone: +36-1-459-1500#60010 e-mail: csanady.laszlo@med.semmelweis-univ.hu
Position: Temporary Head of Department
Date of Habilitation: 2013  Its number: 341

Aim of the course:
The aim of the course is to comprehensively describe metabolic processes in the human body, from a medical point of view. The main theme of the semester is to elaborate further on carbohydrate and lipid metabolism commenced in Medical Biochemistry I, elaborate on amino acid and nucleotide metabolism, examine more thoroughly intermediary metabolism including the integration of processes throughout the organs and the human body as a whole. Furthermore, this course aims to afford to medical students the skills of being able to interpret complex physiological processes in the human body at a molecular level. During practices they discuss rapidly developing, promising areas of medicine ("tomorrow’s medicine"). The medical biochemical orientation of the course is based on the presentation of molecular bases of diseases that pose serious public health problems (cardiovascular, neurodegenerative, cancer states), with particular emphasis on discussing potential molecular targets of therapy.

Location of the course (lecture hall, practice room, etc.):
Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:
Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound medical decisions.

Prerequisite(s) for admission to the course:
Medical Biochemistry I.

Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects.

How to apply for the course: Application is through the Neptun online system.

The course in thematic details:

Lectures: weekly 2×70 min (3 hours)
Lecturers: Prof. Ádám Veronika (ÁV), Prof. Csanády László (CSL), Prof. Kolev Kraszimir (KK), Dr. Komorowicz Erzsébet (KE), Dr. Szöllősi András (SZA), Dr. Törőcsik Beáta (TB), Prof. Tretter László (TL)

Practices (P): 2 hours every week
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practices (P): 2 hours every week</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Structure and function of nucleotides. The fate of nucleotides obtained through diet. Formation and elimination of uric acid; its metabolic role in humans. Molecular basis of gout. Synthesis and degradation of purine and pyrimidine nucleotides. Effects of cytostatic drugs on nucleotide metabolism. (KK)</td>
<td>P: Vitamin B12 deficiency and methylmalonic acidemias</td>
</tr>
<tr>
<td>5</td>
<td>Metabolic characteristics of brain and adipose tissue. Metabolism of lymphocytes and intestinal epithel cells. The starvation-feeding cycle and its regulation. Regulation of hepatocyte metabolism in starvation. (TL, TB)</td>
<td>P: Acute and chronic liver disease</td>
</tr>
<tr>
<td>10</td>
<td>General overview of blood clot formation and elimination. Fibrinogen and fibrin. Prothrombin activation and regulation of thrombin activity. Triggers of blood clotting, amplification of the initiation. Inhibitors of blood coagulation and negative feedback mechanisms. (KK, KE)</td>
<td>P: Molecular background of congenital thrombophilias</td>
</tr>
</tbody>
</table>
Week | Lectures | Practices (P): 2 hours every week
---|---|---
12 | Neutrophils and endothelial cells in haemostasis. Hemodynamic and biochemical interactions in haemostasis. The role of endothelial dysfunction in atherosclerosis. LDL oxidation and pattern-recognition receptors (TLR, scavenger receptors). Cholesterol induced pyroptosis. (KK, KE) | P: Atherosclerosis
14 | Molecular entities and drug targets for proliferation, differentiation, survival, angiogenesis, metastasis. (TL,TB). | P: Molecular basis of body’s energy consumption; dysregulation in metabolic syndrome

Potential overlap(s) with other topics: none
Requirement for special study: not applicable
Policy regarding attending practices; policy regarding absences:
Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 3 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.
Means of assessing acquired knowledge during the semester: not applicable
Requirement for acknowledging the semester, and for allowing the student to take the final exam: In case of absences amounting to more than 3 practices, the semester is not acknowledged.
Exam Type: Final. Form: written test exam, based on material of the official textbook, lectures and practices published at the department’s website (http://semmelweis.hu/biokemia/en/).

Exam Requirements: The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.
Types and modes of grading:
The competition is held on week 13, and the structure of the competition is the same as that of the final.

The grade of the final exam is based on:

Written test:
This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam:
60-65: grade 5 (excellent)
49-59: grade 4 (good)
41- 48: grade 3 (satisfactory)
33-40: grade 2 (pass)
If 39 and below, then the grade of the semi-final exam is ‘fail’.

How to apply for the exam: The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

Opportunities to repeat the exam: an exam can be re-taken only after two calendar days.
Printed, electronic and online notes, textbooks, tutorials, and literature for online learning (html for online material):
Harper’s Biochemistry (30th edition, or latest)
Online material published in the department’s website (http://semmelweis.hu/biokemia/en/)
MOLECULAR CELL BIOLOGY I

Department of Medical Chemistry, Molecular Biology and Pathobiochemistry

Mandatory course; Credit: 4

Description of the curriculum
The principal aim of the course is to provide an insight into the storage and expression of genetic information throughout replication, transcription and translation. Our current understanding of the multilevel regulation of gene expression will also be discussed, followed by an up-to-date summary of methods applied in molecular biotechnology.

Module I.
DNA, RNA and protein synthesis (storage and expression of genetic information)


Module II. Methods in molecular biology and gene technology

Requirements for acknowledgement of the semester

1. Participation in the laboratory lessons is obligatory; students have to sign the attendance sheets at the end of each lesson. In case of more than three absences from the lab lessons (including the oral midterm in week 9 and the written test in week 14) for any reason, the semester will not be acknowledged and the student will be not allowed to sit for the semifinal exam. Missed practicals can be made up in the same week at another group; certificate from the host teacher should be presented by the student to his/her own teacher. The schedule of practical lessons can be downloaded from the official homepage of the Department.

2. The oral midterm examination (week 9) has to be passed before the commencement of the examination period. The material of the midterm examination corresponds to that of lectures of weeks 1-8 (see the Midterm 1 topic list on the website). Failed midterms can be retaken at most twice. Importantly, students cannot get a better mark than 2 on the retake (this rule does not pertain to students who missed the midterm due to an illness proven by a medical certificate). Dates of retakes will be disclosed in due course.
Lab test and exam bonus

A written test will be held in week 14 of the semester (see the schedule of labs for details). Students are supposed to answer a lab topic from the corresponding topic list (“Lab test”). Topics will be selected and marked by your own lab teacher. As it is not compulsory to pass the lab test, it cannot be taken again.

If the average of the marks obtained on the oral midterm and the written lab test is at least 4.0 or better, one will be exempted from answering lab topics (group IV) on the semifinal exam.

Semifinal exam

The course is finished with an oral exam. Students will be examined by a two-member examination committee. 4 topics taken from the topic list have to be answered.

Students are not allowed to leave the examination room between taking exam topics and getting their grades. Importantly, you fail the whole exam if you fail even on just one of your topics.

Recommended textbooks

1. Lodish: Molecular Cell Biology (8th edition)
2. Hrabák: Laboratory Manual - Medical Chemistry and Biochemistry

MOLECULAR CELL BIOLOGY II.

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry

Director of the course: Prof. Gábor Bánhegyi M. D., Ph. D., D. Sc.

Mandatory course; credit: 5

Exam: final

Detailed program to be given by the department later – online!
IMMUNOLOGY

Department of Genetics, Cell and Immunobiology
Course director: Prof. Dr. Edit Buzás
Tutor: Dr. Marianna Csilla Holub

Credits: 3

<table>
<thead>
<tr>
<th>Lectures (2 hr / week)</th>
<th>Practicals / Seminars (1,5 hr / week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The role, processes, organs and cells of the immune system</td>
<td>Basic terms; the immune system in the lab</td>
</tr>
<tr>
<td>2. Principles of natural immunity</td>
<td>Methods based on antigen-antibody interactions I. Immunoserology</td>
</tr>
<tr>
<td>3. The complement system; inflammation and acute phase reaction</td>
<td>Methods based on antigen-antibody interactions II</td>
</tr>
<tr>
<td>4. Antigen, antigen presentation and MHCs</td>
<td>Methods based on antigen-antibody interactions III Flow cytometry</td>
</tr>
<tr>
<td>5. Antigen receptors and their formation</td>
<td>Case studies I</td>
</tr>
<tr>
<td>6. T lymphocytes and cell-mediated immune response</td>
<td>Complement assays, HLA typing</td>
</tr>
<tr>
<td>7. B lymphocytes and humoral immune response</td>
<td>Vaccination I.</td>
</tr>
<tr>
<td>8. Mucosal immunity</td>
<td>Vaccination II.</td>
</tr>
<tr>
<td>9. Midterm exam (written)</td>
<td>Biological therapies I</td>
</tr>
<tr>
<td>10. Immune response in infections; immunodeficiencies</td>
<td>Biological therapies II</td>
</tr>
<tr>
<td>11. Hypersensitivity</td>
<td>Hypersensitivity I.</td>
</tr>
<tr>
<td>12. Immunological tolerance; natural and pathological autoimmunity</td>
<td>Hypersensitivity II-IV.; Immunological databases</td>
</tr>
<tr>
<td>13. Antitumor immunity</td>
<td>Screening methods for autoantibodies</td>
</tr>
<tr>
<td>14. Immunology of transplantation and pregnancy</td>
<td>Case studies II</td>
</tr>
</tbody>
</table>

The sequence of lessons may change.

75% minimum attendance of both the lectures and practical lessons is necessary for the end-term signature. Retake for the midterm will be organized for those student, how miss the midterm because an acute disease, but they have to show up the medical record.

Exam: written test in the exam period. The exam grade will be calculated from the sum of midterm scores and exam scores. For passing you have to reach more than 50 % of both the exam scores and total scores.

Literature:
KUBY Immunology • W. H. Freeman and Company • New York • 2013
Immunology seminars (e-book): http://gsi.semmelweis.hu (The user name and password is on the course datasheet of the Neptun.)
GENETICS AND GENOMICS

Department of Genetics, Cell- and Immunobiology
Course director: Prof. Dr. Edit Buzás
Course coordinator: Dr. F. Ágnes Semsei
Prerequisite subject: Medical Biochemistry, Molecular and Cell Biology III.
Credit: 4

Lectures (2 hours per week):
1. Introduction to human genetics, the human genome
2. Monogenic inheritance (Autosomal inheritance)
3. Role of sex in inheritance
4. Chromosomal aberrations
5. Genetic variations
6. Epigenetics
7. Genetics of biological processes
8. Introduction to genomics. Methods in genomics
9. Genomic approach of complex inheritance
10. Midterm
11. Population genetics and genomics
12. Evolution genetics and genomics
13. Pharmaco- and nutrigenomics
14. Genome and environment

Practices (1,5 hours per week):
1. Cytogenetics I.
2. Cytogenetics II.
3. Molecular genetic methods and applications in human genetics I.
4. Molecular genetic methods and applications in human genetics II.
5. Pedigree analysis: autosomal inheritance I. (AD)
6. Autosomal inheritance II. (AR)
7. Sex-linked inheritance I. (XR)
8. Sex-linked inheritance II. (XD, mitochondrial)
9. Consultation
10. Complex inheritance
11. Gene therapy
12. Genetic aspects of cell cycle and cell division disorders
13. Meiosis, gametogenesis; pre-implantation genetic testing
14. From genes to bedside

Important notes:
Students must visit at least 75% of the lessons. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.

There is one midterm during the semester. Spare midterm is organized for those students, who miss the midterm because an acute illness, but they have to show up the medical record to the tutor in one week. There is no opportunity to improve the midterm scores.

After the course there is a written exam (single choice and essay questions, family tree, karyogram, evaluation of molecular genetic studies etc.). The exam grade is calculated from the sum of midterm scores (maximum 40) and exam scores (maximum 60). Students have to reach more than 50 % of both the exam scores and total scores to pass the exam. In the third exam midterm scores are not calculated.

Core text: Medical Genetics and genomics (e-book)
Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)
MEDICAL PSYCHOLOGY

Institute of Behavioral Sciences
Type of the course: compulsory
credit: 3 credits
Presenter of the course: Dr. János Kollár
Course leader: Dr. József Kovács
Semester: 2019/2020, 2\textsuperscript{nd} semester

Course objectives: The course is designed to give a broad overview of the field of medical psychology, including concepts, theory, and research.

Learning objectives:

- Develop an understanding of the complex interplay between one’s physical well-being and a variety of biological, psychological, and social factors.
- Learn the nature of the stress response and its impact in the etiology and course of many health problems.
- Understand the approach of bio-psycho-social model and become familiar with some frequent psychosomatic diseases.
- Be able to identify various psychological disorders and key personality traits related to health / disease.

Course Syllabus:

Lectures:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Human Behaviour</td>
</tr>
<tr>
<td>2</td>
<td>Major Schools of Psychology</td>
</tr>
<tr>
<td>3</td>
<td>Stress and illness; behavioral interventions</td>
</tr>
<tr>
<td>4</td>
<td>Conscious states, sleep, dreaming and general anesthesia</td>
</tr>
<tr>
<td>5</td>
<td>Stigmatization and people living with disabilities</td>
</tr>
<tr>
<td>6</td>
<td>Psychological correlates of cardiovascular disorders</td>
</tr>
<tr>
<td>7</td>
<td>Affects, Emotion and Motivation</td>
</tr>
</tbody>
</table>

Seminars:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Developmental psychology, attachment theories</td>
</tr>
<tr>
<td>2</td>
<td>Personality theories</td>
</tr>
<tr>
<td>3</td>
<td>Human sexuality and sexual disorders, psychology of reproduction, psychology of birth</td>
</tr>
<tr>
<td>4</td>
<td>Depression and mood disorders</td>
</tr>
<tr>
<td>5</td>
<td>Anxiety and medical illnesses</td>
</tr>
<tr>
<td>6</td>
<td>Eating disorders</td>
</tr>
<tr>
<td>7</td>
<td>Psychosomatic disorders – case studies; somatization and dissociative disorders</td>
</tr>
<tr>
<td>8</td>
<td>Personality disorders</td>
</tr>
<tr>
<td>9</td>
<td>Sleep disorders</td>
</tr>
<tr>
<td>10</td>
<td>Addiction, substance use</td>
</tr>
<tr>
<td>11</td>
<td>Suicide, cry for help, crisis intervention</td>
</tr>
<tr>
<td>12</td>
<td>Psychology of death, grief, and dying</td>
</tr>
<tr>
<td>13</td>
<td>Behaviour change and psychotherapy. Stress management in medical practice.</td>
</tr>
</tbody>
</table>
Participation and making up for absences: Students are expected to attend regularly the course and participation list will be recorded at the end of every lecture and every seminar. To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature needed to absolve the course. The maximum number of absences permitted: one absence from the lectures and three absences from the seminars. Content of the lectures may appear in the exams.

Justification of the absence in the lectures and examinations: Absence should be justified for the seminar leading teacher within three working days.

Checks during the semester (reports, written checks): Every student should prepare presentations on the topics designated by the seminar leader teacher. Active participation is expected.

Requirements for the signature at the end of the semester: Active participation on the practices. The teacher has the right for refusing to give signature to the students who didn’t work on the desired level on the seminars.

Method of the calculation of marks: Grades will be based on student’s performances at the final written exam.

Type of the exam: Written final examination taken in the examination period.

Requirements for the exam: The material of the lectures and seminars.

Application for the exam: Through the Neptun system.

Changing the application for the exam: Through the Neptun system.

Justification of the absence from the exam: Absence should be justified for the course leading teacher within three working days.

Course and recommended text books:

Required textbook:

Recommended text books:

Additional readings:
The powerpoint slides and prezi presentations used for the lectures and seminars and also some related papers will be assigned for reading during the course, and they will be made available on the course website.
INTRODUCTION TO CLINICAL MEDICINE

**Lecturer:** Prof. László Kalabay MD PhD  
**Institute:** Department of Family Medicine  
**Duration:** One semester, practices: 12×2.5 hours/semester  
**Exam:** Written. Practical mark (written exam)  
**Credit value:** 2 credit points  
**Minimum/maximum group size:** 55/210

**Thematic:**
- Formation of the consciousness of profession.
- Most frequent diseases in the clinical department and the general practitioner’s office. Case reports.
- Referral of patients. The medical consultation.
- Communication with the patient and his/her relatives. The role of the family in treatment and care for acute and chronic diseases.
- Effective cooperation with patients. Means to improve compliance.
- The importance of prevention of disease.
- Team work in medicine.
- Overview of the scientific activity of the clinical department. Raising interest on joining to it.

**Application:** Péter Torzsa MD Phone: 355-8530 e-mail: torzsa.peter@med.semmelweis-univ.hu

**Application date:** 1st September

**Precondition:** Only for students in the 2nd year, following completion of Medical Profession
DEVELOPMENTAL BIOLOGY: from gene to newborn. I. -

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

Hamburger 1900-2001

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

Department of Human Morphology and Developmental Biology

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

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

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

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

Cell lineages
Fate map, stem cells, peripheral blood fibrocytes, cell specification, polarity in biological system

Neurogenesis
Origin of neural cells, switch between neuronal and glial fates, axonal specificity, synaptic plasticity

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

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

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

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

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

Embryonic induction
Spemann organization center, mosaic and regulative zygotes

Early embryonic development
Cleavage, neurulation, X-chromosome inactivation, parental imprinting

Gastrulation
Differentiation of mesoderm, primary tissue formation

Axis formations in birds and mammals
Symmetry breaking, left-right asymmetry formation.
ORGANOGENESIS

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

Department of Human Morphology and Developmental Biology

Axial and paraxial mesoderm Formation of axial skeleton, somitogenesis, clinical correlations
Segmentation and Homeobox genes Retinoic acid, gain of function, loss of function
Intermediate mesoderm I. Development of kidney, clinical correlations
Intermediate mesoderm II. Development of gonads, sex determination, clinical correlations
Lateral plate mesoderm, splanchnopleura I. Vasculogenesis, blood formation, hematopoietic stem cell.
Lateral plate mesoderm, splanchnopleura II. Early development of the heart. Cardiac anlage, cardiac jelly, cardiac skeleton, development of coronary vessels, contribution of neural crest cells, epicardial body, clinical correlations
Lateral plate mesoderm, somatopleura Development of the limb, evolutionary and ontogenetic aspects, clinical correlations
Branchiogenic arches and their derivatives Clinical correlations
Prechordal plate as head organizer, AVE-anterior ventral entoderm Cranial neural crest and head mesoderm, somatic and visceral head and neck, clinical correlations
Development of arteries Branchiogenic, parietal and visceral segmental arteries, clinical correlations
Epithelio-mesenchymal interactions Ecto-entoderm —— mesoderm, tooth and lung development, clinical correlations
Neurogenesis Antero-posterior, and craniosacral regionalization, axon guidance, growth, synapsis formation
Development of eye Retina, lens
Entoderm formation Foregut and its derivatives (thymus, thyroid, parathyroid), development of pancreas
Environmental regulation of development Developmental symbiosis, seasonality and sex, nutritional contribution
HUNGARIAN MEDICAL TERMINOLOGY III.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,
Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students' awareness of cultural differences is one of our top priorities.

Brief description of subject:
The first three modules are dedicated to learning basic general vocabulary and grammar. In the third module students acquire basic structures and the vocabulary for everyday topics / e.g. travelling in a city, travelling abroad, arranging accommodation etc. /, language for „survival.”. The course places special emphasis on phrases essential for everyday communications, e.g. past time activities, telephoning, buying/ordering tickets etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:
Lesson 1-2:  What was your weekend like?
Lesson 3-4:  What did you yesterday?
Lesson 5-6:  Did you like the city?
Lesson 7-8:  Have you ever been to England?
Lesson 9-10:  What did you do on Monday?
Lesson 11-12: Communication practice: What did you do?
Lesson 13-14:  What did your neighbour say?
Lesson 15-16: Practising past tense
Lesson 17-18: He didn’t know that we were there. –Past tense
Lesson 19-20: Communication practice- Practising past tense
Lesson 21-22: Consolidation
Lesson 23-24: Test 1 + situation
Lesson 25-26: I’d like a ticket to London.
Lesson 27-28: Travelling by train
Lesson 29-30: Travelling abroad
Lesson 31-32: Communication practice: travelling
Lesson 33-34: Accommodation
Lesson 35-36: Booking accommodation
Lesson 37-38: Booking accommodation- conversations
Lesson 39-40: At a hotel
Lesson 41-42: Communication practise: travelling and booking accommodation
Lesson 43-46: Customs and festivities – modal auxiliaries
Lesson 47-48: At the dentist
Lesson 49-50: Healthy lifestyle
Lesson 51-52: Consolidation
Lesson 53-54: Test – situation, communication practice
Lesson 55-56: Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)
HUNGARIAN MEDICAL TERMINOLOGY IV.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:
The fourth module is dedicated to learning basic medical vocabulary. Students acquire the skills needed in taking family, social, and medical history in internal medicine. They also learn how to address the patient during an examination and give advice for the treatment.

Course content of practical lessons:
Lesson 1-4: Revision
Lesson 5-6: Family history – asking for family members, names
Lesson 7-8: Family history – describing state
Lesson 9-10: Family history – communication practice
Lesson 11-12: Social history – habits
Lesson 13-16: Social history – expressing frequency
Lesson 17-18: Body parts, internal organs
Lesson 19-20: Symptoms
Lesson 21-22: Consolidation
Lesson 23-24: Test 1 + situation
Lesson 25-28: Asking the patient about the pain
Lesson 29-30: Describing pain and symptoms
Lesson 31-32: Names of diseases
Lesson 33-36: Taking medical history
Lesson 37-40: Medication
Lesson 41-48: Giving advice, doctor’s recommendations
Lesson 49-52: Consolidation
Lesson 53-54: Test – situation, communication practice
Lesson 55-56: Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)
PHYSICAL EDUCATION III.

Department of Physical Education
Subject: Physical Education III.
Type of Subject: Compulsory
Code of Subject: AOKTS1009_3A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year 1. semester:

1 – 2 weeks: General information
Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra-curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.

3 – 4 weeks: Stamina Development
Long-term (at least 45 – 60 minutes) running and skipping exercises.

5 – 6 weeks: Balls skill development
Practicing the fundamentals of volleyball (serves, over – and underhand touches, movements, etc.)

7 – 8 week: Strength development
Overall strength development using the circle-training method-setting up different stations working on different muscle groups.

9 – 10 weeks: Coordination enhancing exercises
Jumping rope exercises in place and in motion.

11 – 12 weeks: Posture correction
Stick exercises, in various position and motion.

13 – 14 weeks: Stretching – relaxation exercises
Stretching exercises using large medicine-balls in sitting, standing, kneeling and recumbent positions.

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!

Additional Resources:
PHYSICAL EDUCATION IV.

Type of Subject: Compulsory
Code of Subject: AOKTSI009_4A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year II. semester:

1 – 2 weeks: General information
Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra-curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.

3 – 4 weeks: Cardio – vascular system development
The floorball: Using the basic elements of the game dribbling, passing, shooting, etc. Playing against each other in the interval system on high intensity level.

5 – 6 weeks: Posture corrective exercises
Exercises on floor mats, focusing on the core muscles in various body-positions.

7 – 8 week: Coordination enhancing exercises
Special education and practice material for spatial vision, perception of body schema, right-left orientation, muscle development and perception of coordination at the technical skills of playing sports (tennis, badminton).

9 – 10 weeks: Strengthening exercises
Using manual and other exercises equipment (dumbbells, boxes, bench, wall bars, etc.)

11 – 12 weeks: Balls skill development
Exercise of basic technical elements of football. Learning and practicing tactical elements. During locomotion ball control exercises, skill development.

13 – 14 weeks: Stretching – relaxation exercises
Various stretching relaxing exercises after the meditative practices and knowledge (yoga, tai chi, etc.)

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!
PRE-CLINICAL MODULE
**STUDY PROGRAMME**

### Third year

#### 5th semester

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology and Pharmacotherapy I.</td>
<td>2</td>
<td>2.5</td>
<td>5</td>
<td>semi-final</td>
</tr>
<tr>
<td>Medical Microbiology II.</td>
<td>1.5</td>
<td>2</td>
<td>3</td>
<td>final</td>
</tr>
<tr>
<td>Pathology and Histopathology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
</tr>
<tr>
<td>Medical Statistics, Informatics and Telemedicine</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>ECG in Clinical Practice</td>
<td>1.5 (1+0.5)</td>
<td>1.5 (1+0.5)</td>
<td>3</td>
<td>semi-final</td>
</tr>
<tr>
<td>Translational Medicine and Pathophysiology I.</td>
<td>1.5</td>
<td>1.5</td>
<td>3</td>
<td>semi-final</td>
</tr>
<tr>
<td>Hungarian Medical Terminology V.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>final</td>
</tr>
<tr>
<td>Physical Education V.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10.5</strong></td>
<td><strong>17.5</strong></td>
<td><strong>25</strong></td>
<td></td>
</tr>
</tbody>
</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum

*The prerequisite is that registration has been done for the marked subject – corequisite – as well
### Third year
#### 6th Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology and Pharmacotheraphy II.</td>
<td>2</td>
<td>2.5</td>
<td>5</td>
<td>final</td>
<td>Pharmacology and Pharmacotherapy I., Medical Microbiology II., Propaedeutics of Internal Medicine*, Pathology I.</td>
</tr>
<tr>
<td>Pathology and Histopathology II.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>final</td>
<td>Pathology and Histopathology I.</td>
</tr>
<tr>
<td>Propaedeutics of Internal Medicine</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Microscopic Anatomy and Embryology II., Medical Physiology II., Medical Communication, Pathology I.</td>
</tr>
<tr>
<td>Translational Medicine and Pathophysiology II.</td>
<td>1.5</td>
<td>1.5</td>
<td>3</td>
<td>final</td>
<td>Translational Medicine and Pathophysiology I., Immunology, Pathology I.</td>
</tr>
<tr>
<td>Disaster Medicine</td>
<td>0.5</td>
<td>0</td>
<td>1</td>
<td>signature</td>
<td>Introduction to Clinical Medicine</td>
</tr>
<tr>
<td>Surgical Research and Techniques</td>
<td>0.5</td>
<td>1.5</td>
<td>2</td>
<td>semi-final</td>
<td>Microscopic Anatomy and Embryology II., Medical Physiology II.,</td>
</tr>
<tr>
<td>Medical Ethics – Bioethics</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Psychology, Medical Sociology</td>
</tr>
<tr>
<td>Internal Medicine Summer Practice</td>
<td></td>
<td>4 weeks (30 days without break)</td>
<td>1</td>
<td>signature (ends with a practical exam)</td>
<td>Semester signature in Propaedeutics of Internal Medicine</td>
</tr>
<tr>
<td>Physical Education VI.</td>
<td>–</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9.5</strong></td>
<td><strong>14.5</strong></td>
<td><strong>25</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum.

*The prerequisite is that registration has been done for the marked subject – corequisite – as well.*
LIST OF TEXTBOOKS (The list may change!)


Recommended textbooks:

16. Zalatnai A.: 500 Practice Questions about Pathology (Semmelweis University of Medicine)
18. Székely E.: Practice on Histopathology I-II. (Semmelweis University of Medicine) - video

180
PHARMACOLOGY AND PHARMACOTHERAPY I – II.

Tutor: Dr. Pál Riba

First and Second Semester

Department of Pharmacology and Pharmacotherapy
Total credits: 10
Course Director: Dr. Ferdinandy Péter

Thematics:
Pharmacology and Pharmacotherapy (two semesters)

Topics of Pharmacology and Pharmacotherapy I (Year 3, first semester):
1. Introduction into the Pharmacology (history of pharmacology, pharmacogenomics, general principles of toxicology). General Principles of Pharmacodynamics (drug receptors, signaling mechanisms and drug action, pharmacodynamic principles, dose-response curves and quantal dose-effect curves, therapeutic index, tolerance).
2. Pharmacokinetics (drug absorption, distribution, elimination). Clinical pharmacokinetic principles Drug interactions
4. Introduction to the Neurotransmission (central and autonomic system). General Anesthetics
8. Sedative-hypnotic and Anxiolytic Drugs.
11. Antiviral Agents. Pharmacotherapy of Viral Infection

Topic of Pharmacology and Pharmacotherapy II (Year 3, second semester):
1. Drugs Used in Coagulation Disorders. Agents Used in Cardiac Arrhythmias
3. Drugs Used in Heart Failure. Antihypertensive Agents.
11. Pharmacology of the Gastrointestinal System (agents for treatment of peptic ulcer, gastroesophageal reflux disease (GERD), irritable bowel syndrome and inflammatory bowel diseases (IBD)). Emetics and Antiemetics. Treatment strategy of peptic ulcer, GERD and IBD.
12. Cytotoxic and cytostatic anticancer drugs, other agents used within the frame of cancer chemotherapy. Treatment strategy of cancer.

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

Certifying absence from the lesson:
Medical certificate is accepted

In each semester two written midterms are arranged (in both semesters on the 6th and 10th week). The results of the midterm exams influence the marks of the semifinal and final exam. The topics of the midterms are the material discussed from the beginning of the semester or after the previous midterm.
The number of absences must not be more than 25 percent of the number of practices in the semester.
Grading: Written test: according to the scores. The semi-final exam is oral. If the result of both midterms in the first semester reaches 80% the student will be offered a third, oral midterm. According to the student’s knowledge in the 3rd midterm we can offer either 4 or 5 as the result of the semifinal exam in the last week of the first study period.
Final exam consists of three parts. The grade will be decided after the oral part of the exam (three questions), taken into consideration the results of the preceding two parts (see below).

Exam type:
1st semester. Semi-final, oral
2nd semester. Final exam has three parts. 1. Preceding exam from toxicology. 2. Written test from clinical pharmacology. 3. Oral exam.

Exam sign up:
Registration has to be done through the NEPTUN system for the days set by the department up to the limits.

Modifying:
Through the NEPTUN system, as it allows

Certifying absence from the exam:
Medical certificate is accepted.

Literature:
2. Materials discussed during lectures and seminars.
### MEDICAL MICROBIOLOGY II.

**Institute of Medical Microbiology**

Program Director: *Prof. Dr. Dóra Szabó*

Tutor: *Dr. Ágoston Ghidán*

#### First Semester

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

1st Dept. of Pathology and Experimental Cancer Research

Cancer Research

Tutor: Dr. Gergely Rácz

First Semester

Lectures (14 weeks): (all lectures for the whole class are held at the 2nd Dept. of Pathology).

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

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

14. Environmental and nutritional pathology
- Atherosclerosis of the aorta H&E (45)
- Benign nephrosclerosis H&E (46)
- Coronary-sclerosis H&E (47)
- Polyarteritis nodosa H&E (48)
- Giant cell arteritis H&E (49)
- Cystic medianecrosis of the aorta H&E (86)

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

16. Blood vessels
- Myocardial infarction, early H&E (42)
- Myocardial infarction, old H&E (43)
- Myocarditis H&E (44)
- Endocarditis H&E (96)

17. Heart
- IRDS H&E (50)

18. Heart
- Lobar pneumonia H&E (51)
- Bronchopneumonia H&E (52)
- Pneumoconiosis H&E (54)
- Pleuralfibrosis H&E (97)

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

20. Respiratory system
- Tubercolitic lymphadenitis H&E (56)
- Sarcoïdosis H&E (57)
- Oat cell carcinoma of the lung H&E (58)
- Mesothelioma H&E (59)
- Nasopharyngeal carcinoma (slide demonstration)

21. Respiratory system
- Mixed tumor of the parotid gland H&E (32)
- Warthin-tumor (slide demonstration)
- Mucosepidermoid carcinoma (slide demonstration)
- Adenoid cystic carcinoma (slide demonstration)
- Chronic peptic ulcer H&E (60)
- Chronic gastritis H&E (61), Giemsa (62)
- Signet ring cell carcinoma of the stomach H&E (63), PAS (64)
- Ventricular-lymphoma (slide demonstration)

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

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

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

25. Gastrointestinal tract
26. Gastrointestinal tract
27. Gastrointestinal tract
28. Pancreas

Histopathology practices
- Organ demonstration
PATHOLOGY AND HISTOPATHOLOGY II.

Second Semester

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<td>29. Liver and biliary system</td>
<td>Alcoholic hepatitis H&amp;E(70)</td>
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<td>30. Liver and biliary system</td>
<td>Chronic hepatitis H&amp;E (71)</td>
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<tr>
<td>31. Liver and biliary system</td>
<td>Liver cirrhosis H&amp;E(72)</td>
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<td>Hepatocellular carcinoma H&amp;E (73)</td>
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<td>Cavernous haemangioma of liver H&amp;E (35)</td>
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<tr>
<td>32. Kidney</td>
<td>Chronic cholecystitis H&amp;E(74)</td>
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<tr>
<td>33. Kidney</td>
<td>Chronic pancreatitis H&amp;E(75)</td>
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<td>Acute hemorrhagic necrotising pancreatitis H&amp;E(76)</td>
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<td>Pancreatic pseudocyst (slide demonstration)</td>
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<td></td>
<td>Adenocarcinoma of pancreas H&amp;E (77)</td>
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<td>Islet cell tumor of pancreas (slide demonstration)</td>
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<tr>
<td>34. Urinary tract</td>
<td>Diabetic nodular glomerulosclerosis</td>
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<td>(Kimmelstiel-Wilson) H&amp;E (78)</td>
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<td>35. Male genital syste</td>
<td>Glomerulonephritis H&amp;E (79)</td>
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<td>End stage kidney H&amp;E (80)</td>
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<td>Acute rejection in transplanted kidney H&amp;E (22)</td>
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<td>36. Gynecologic pathology</td>
<td>Acute pyelonephritis H&amp;E (81)</td>
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<tr>
<td>37. Gynecologic pathology</td>
<td>Chronic pyelonephritis H&amp;E (82)</td>
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<td>Renal cell carcinoma H&amp;E (83)</td>
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<td>Normal adrenal cortex (slide demonstration)</td>
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<td>Wilm’s tumor H&amp;E(84)</td>
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<td>Transitional cell carcinoma H&amp;E (28)</td>
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<td>38. Neonatology</td>
<td>Nodular hyperplasia of the prostate H&amp;E(85)</td>
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<tr>
<td>39. Breast</td>
<td>Adenocarcinoma of prostate H&amp;E(87)</td>
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<td>Seminoma H&amp;E (88)</td>
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<td>Embryonal carcinoma (slide demonstration)</td>
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<td>Teratoma H&amp;E(89)</td>
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<td>40. Blood and lymphoid organs</td>
<td>Placenta retention H&amp;E (90)</td>
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<td>41. Blood and lymphoid organs</td>
<td>Extraterine gravidity H&amp;E (91)</td>
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<td>Arias-Stella phenomenon (slide demonstration)</td>
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<td>Hydatiform mole H&amp;E (92)</td>
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<td>Choriocarcinoma H&amp;E (93)</td>
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<td>Endometrial hyperplasia H&amp;E (94)</td>
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<td>Endometriosis (slide demonstration)</td>
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<td>Endometrium carcinoma H&amp;E (95)</td>
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<td>42. Blood and lymphoid organs</td>
<td>Chronic cervicitis H&amp;E (123)</td>
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<tr>
<td>43. Blood and lymphoid organs</td>
<td>HPV infection in cervix H&amp;E (124)</td>
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<td>In situ hybridisation (slide demonstration)</td>
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<td>Condyloma acuminatum (slide demonstration)</td>
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<td>Follicular cyst of the ovary H&amp;E (125)</td>
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<td></td>
<td>Mucinous cystadenoma of the ovary H&amp;E(29)</td>
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<td>Mucinous cystadenocarcinoma (slide demonstration)</td>
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<td>Borderline serous papillary cystadenoma of the ovary H&amp;E (126)</td>
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<tr>
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<td>Serous papillary cystadenocarcinoma of the ovary (slide demo)</td>
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<td>Granulosa cell tumor (slide demonstration)</td>
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<tr>
<td>44. Endocrinology</td>
<td>Fibrocystic disease of the breast H&amp;E(101)</td>
</tr>
</tbody>
</table>
Lectures (3 hours per week)  Histopathology practices

45. Endocrinology  
Peri- and intracanalicular fibroadenoma of the breast H&E (33)  
Phylloid tumor (slide demonstration)  
Intraductal carcinoma H&E (102)  
Invasive ductal carcinoma H&E (103)  
Invasive lobular carcinoma H&E (104)  
FNAB of the breast (cytol. smear demonstration)  

46. Skin  
Normal bone marrow H&E (127)  

47. Skin  
Leukemic bone marrow H&E (128)  
Leukemic infiltration of parenchymal organs (slide demonstration)  
Multiple myeloma H&E (106)  
Amyloidosis Congo (21)  

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

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

50. Bones and joints  
Follicular adenoma of the thyroid gland H&E (112)  
Follicular carcinoma (slide demonstration)  
Papillary carcinoma of the thyroid gland H&E (113)  
Medullary carcinoma (slide demonstration)  
Adrenal cortical adenoma H&E (105)  
Parathyroid adenoma (slide demonstration)  

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

52. Eye  
Basocellular carcinoma H&E (27)  
Verruca vulgaris H&E (100)  
Naevus pigmentosus H&E (39)  
Malignant melanoma H&E (40)  
Metastatic melanoma (slide demonstration)  
Bowen’s disease (slide demonstration)  
Capillary haemangioma of the skin H&E (34)  

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

54. Nervous system  
Encephalitis H&E (118)  

55. Nervous system  
Meningeoma H&E (119)  
Glioblastoma multiforme H&E (120)  
Schwannoma H&E (121)  
Neuroblastoma H&E (122)  
Ganglioneuroblastoma (slide demonstration)  
Paraganglioma (slide demonstration)  

56. Nervous system  
Review  

57. Clinicopathologic conference

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

2nd Department of Pathology
Head of Department: Prof. Dr. András Kiss

Index

Lectures
List of textbooks
Histopathology practices - slides for the histopathology exam and slide demonstrations
General information - Lectures, practices, competition
Examinations: Semifinal
Examinations - Final
Schedule
Schedule for the academic year

1st SEMESTER

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<td><em>Introduction (Kiss)</em></td>
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<td><em>Cell injury (Kiss)</em></td>
<td><em>Teleconsultation</em></td>
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<tr>
<td>Reversible cell injury (hydropic swelling, atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia, intracellular storage).</td>
<td><em>E-school</em></td>
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<tr>
<td>Irreversible cell injury (necrosis, apoptosis, ischemic cell injury, external damaging agents, calcification, hyaline, aging).</td>
<td><em>Safety rules</em></td>
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| **Week 2** | **Practice 2-Hemodynamic disorders I.** |
| *Hemodynamic disorders I. (Madaras)* | *Acute congestion –* |
| Basic notions in hemodynamics. Hemorrhage, active and passive hyperemia. Disorders of water and electrolytes. Edema. | *Pulmonary edema* |
| *Hemodynamic disorders II. (Madaras)* | *Chronic congestion in lung* |
| Thrombosis, embolism. Infarction. Shock. | *Haemosiderin in alveolar macrophages* |
| *o (“heart failure cells”)* | *Chronic congestion in liver* |
| *o (“Nutmeg liver”)* | *Nutmeg liver with fibrosis* |
| | *Centrilobular necrosis* |

<p>| <strong>Week 3</strong> | <strong>Practice 3– Hemodynamic disorders II.</strong> |
| <em>Inflammation I. (Tímár)</em> | <em>Thrombus</em> |
| <em>Inflammation II. (Lotz)</em> | <em>Anemic infarction-kidney</em> |
| Chronic inflammation. Fibrosis, scar formation. Granulomatous inflammation: (tuberculosis, syphilis. etc.) | <em>Hemorrhagic infarction-lung</em> |</p>
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<td><strong>Neoplasia I. (Schaff)</strong>&lt;br&gt;Neoplasia-definition. Characteristics of benign and malignant tumours. Histological classification of tumours. Grading.</td>
<td>Practice 4 - Inflammation, repair&lt;br&gt;• Acute appendicitis&lt;br&gt;• Fibrinous pericarditis&lt;br&gt;• Granulation tissue&lt;br&gt;• Foreign body granuloma</td>
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<td><strong>Neoplasia III. (Timár)</strong>&lt;br&gt;Molecular mechanisms of tumour development: protooncogenes, oncogenes, tumor suppressor genes, growth factors.</td>
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<td><strong>Neoplasia IV. (Timár)</strong>&lt;br&gt;Tumor growth, tumor progression, metastasis. Familiar cancer</td>
<td>Practice 5 - Neoplasia I&lt;br&gt;• Squamous metaplasia&lt;br&gt;• Condyloma (LSIL)&lt;br&gt;• CIN 3 (HSIL)&lt;br&gt;• Invasive carcinoma</td>
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<td><strong>Neoplasia V. (Kulka) (Saturday)</strong>&lt;br&gt;Prognostic factors in tumour pathology. Staging and grading of tumours. TNM. Handling of surgical biopsy material.</td>
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<tr>
<td>Week 5</td>
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<td>** Childhood tumours (Halász)**&lt;br&gt;Genetic and developmental disorders. Gene pathology I. (Kiss)&lt;br&gt;Single-gene abnormalities. Autosomal dominant and recessive inheritance, sex-linked disorders. Lysosomal storage disease.</td>
<td>Practice 6-Midterm I (cell injury, hemodynamics, inflammation)&lt;br&gt;Neoplasia II. (Benign and malignant tumours)&lt;br&gt;• Squamous papilloma&lt;br&gt;• Squamous cell carcinoma&lt;br&gt;• Adenoma&lt;br&gt;• Adenocarcinoma&lt;br&gt;• Lymph node metastasis&lt;br&gt;• Liver metastasis</td>
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<td><strong>Childhood tumours (Halász)</strong>&lt;br&gt;Genetic and developmental disorders. Gene pathology II. (Kiss)&lt;br&gt;Chromosomal abnormalities. Morphogenic disorders, malformations, multifactorial inheritance. Prenatal diagnosis. Familiar diseases and symptoms.</td>
<td>Practice 7-Neoplasia III. (Soft tissue and childhood tumours)&lt;br&gt;• Leiomyoma&lt;br&gt;• Leiomyosarcoma&lt;br&gt;• Osteosarcoma&lt;br&gt;• Wilms tumour&lt;br&gt;• Neuroblastoma&lt;br&gt;• Teratoma maturum</td>
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<td>Week 6</td>
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<td><strong>Cardiovascular pathology I. (Glasz)</strong>&lt;br&gt;Structure of vessels. Atherosclerosis. Aneurysms. Hypertensive vascular disease. Inflammatory disorders of blood vessels. Microvascular disease. Diseases of veins and lymphatic vessels. Vascular tumours.</td>
<td>Practice 8 - Biopsy techniques, protein- and DNA-based diagnostics&lt;br&gt;• Cytology smear&lt;br&gt;• Core needle biopsy&lt;br&gt;• Biopsy by endoscopy&lt;br&gt;• Frozen section&lt;br&gt;• Special stains&lt;br&gt;• Immunohistochemistry&lt;br&gt;• FISH</td>
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<td><strong>Cardiovascular pathology II. (Glasz)</strong>&lt;br&gt;Endocarditis, myocarditis, pericarditis. Rheumatic heart disease. Ischemic heart disease.</td>
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<tr>
<td>Week 7</td>
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<td>Histopathology</td>
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<td><strong>Cardiovascular pathology III. (Glasz)</strong>&lt;br&gt;Congenital heart diseases. Cardiomyopathies. Heart failure. Systemic diseases involving the heart. Cardiac tumors.</td>
<td>Practice 9 - Cardiovascular diseases&lt;br&gt;• Arteriosclerosis&lt;br&gt;• Atherosclerosis&lt;br&gt;• Acut myocardial infarction&lt;br&gt;• Myocardial infarction-healing&lt;br&gt;• Endocarditis</td>
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<td><strong>Head and neck (Szekely E)</strong>&lt;br&gt;Neoplastic and non-neoplastic lesions of lips, oral cavity, tongue, teeth, salivary glands, sinuses, pharynx, larynx, ear.</td>
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<td>Week 10</td>
<td><strong>LECTURES</strong></td>
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<th><strong>Immunopathology (Kiss)</strong></th>
<th>Practice 11- Pulmonary pathology II- neoplastic</th>
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<td><strong>Constituents of the immune system</strong></td>
<td>Hypersensitive reactions. Allergy. Transplantation. Immunodeficiency. AIDS.</td>
<td>Small cell carcinoma</td>
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<tr>
<td><strong>Autoimmune diseases (Glasz)</strong></td>
<td>Etiology. Monosystemic diseases (e.g. chr. Atrophic gastritis, myasthenia gravis Basedow dis., Hashimoto thyroiditis, Addison dis., Insulin dependent diabetes mellitus, Sclerosis multiple) and Oligo- polysystemic diseases (e.g. SLE, Sjögren sy, RA, scleroderma, dermatomyositis)</td>
<td>Squamous cell carcinoma</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 12</th>
<th><strong>Infectious diseases (Lotz)</strong></th>
<th>Practice 12- Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bacterial infections</strong></td>
<td>Bacteria (tularaemia, pertussis, legionella, brucellosis, listeriosis, clostridial infections (tetanus, botulism), Streptococci) Actinomycosis. Mycobacteria (tbc, leprosy). Protozoa (malaria, toxoplasmosis, amebiasis)</td>
<td>Basal cell carcinoma</td>
</tr>
<tr>
<td><strong>Viral infections</strong></td>
<td>Viruses (tick-borne viruses, polio, variola, herpes, CMV, EBV, rubella, varicella, mumps, influenza), Rickettsiae, Spirochetes.</td>
<td>Melanocytic nevus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 13</th>
<th><strong>Environmental and nutritional pathology (Kerényi)</strong></th>
<th>Practical exam</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Smoke, alcohol, drugs</strong></td>
<td>Smoking, alcoholism, drugs. Iatrogenic injuries. Environmental chemical and physical factors. Obesity, protein malnutrition, vitamins.</td>
<td>Seborrheic keratosis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 14</th>
<th><strong>Clinical pathology I. (Székely E)</strong></th>
<th><strong>Clinical pathology II. (Kiss)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tumor Screening, Cytodiagnostics</strong></td>
<td>Basic cytopathological morphology of benign and malignant lesions. Case presentations.</td>
<td>Diagnostic parameters, requirements, which guide the clinical protocols. Molecular diagnostics of tumors. Targeted therapy</td>
</tr>
<tr>
<td>Week</td>
<td>Course</td>
<td>Topics</td>
</tr>
<tr>
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</tr>
<tr>
<td>1</td>
<td>Gastrointestinal tract I. (Kiss)</td>
<td>Esophagus (anatomy and developmental disorders, inflammation, trauma, tumors). Stomach- part I.</td>
</tr>
<tr>
<td></td>
<td>Practice 1</td>
<td>The pathology report</td>
</tr>
<tr>
<td>2</td>
<td>Gastrointestinal tract II. (Madaras)</td>
<td>Pathology of the stomach(part 2) and small bowel. Appendix.</td>
</tr>
<tr>
<td></td>
<td>Practice 2</td>
<td>Gastrointestinal pathology I.</td>
</tr>
<tr>
<td></td>
<td>Gastrointestinal tract III. (Madaras)</td>
<td>Colon (congenital disorders, infections, diverticular disease, inflammation, Crohn-disease, ulcerative colitis, vascular diseases, neoplasms, other disorders). Peritoneum.</td>
</tr>
<tr>
<td></td>
<td>Practice 3</td>
<td>Gastrointestinal pathology II.</td>
</tr>
<tr>
<td></td>
<td>Pathology of the liver II. (Schaff)</td>
<td>Celiac disease</td>
</tr>
<tr>
<td></td>
<td>Practice 4</td>
<td>Liver pathology</td>
</tr>
<tr>
<td>4</td>
<td>Pathology of the liver III. (Kiss)</td>
<td>Neoplasms. Gallbladder and bile ducts (congenital anomalies, cholecystitis, cholelithiasis, cholangitis, neoplasms).</td>
</tr>
<tr>
<td></td>
<td>Pathology of the exocrine pancreas (Szekely E)</td>
<td>Developmental abnormalities, inflammations, tumors of the exocrine pancreas.</td>
</tr>
<tr>
<td></td>
<td>Practice 5</td>
<td>Pathology of the pancreas</td>
</tr>
<tr>
<td></td>
<td>Practice 6</td>
<td>Endocrine pathology</td>
</tr>
<tr>
<td></td>
<td>Practice 7</td>
<td>Renal- and uropathology</td>
</tr>
<tr>
<td></td>
<td>Uropathology II. (Szekely E)</td>
<td>Diseases of the epididymis, testis, prostate, penis and scrotum.</td>
</tr>
<tr>
<td></td>
<td>Practice 8</td>
<td>Midterm III (GI, liver, pancreas, endocrine)</td>
</tr>
<tr>
<td></td>
<td>Practice 9</td>
<td>Uropathology- prostate, testis</td>
</tr>
<tr>
<td></td>
<td>Practice 10</td>
<td>Uropathology- prostate, testis</td>
</tr>
</tbody>
</table>
| Week 9 | **Gynecologic pathology III. (Kulka)**  
Pathology of the fallopian tube and ovarium. Pregnancy related pathology of the uterus.  
**Neonatology (Kiss)**  
- Ectopic pregnancy  
- Endometriosis  
- Endometrial hyperplasia (simple)  
- Endometrial carcinoma |
|---|---|---|
| Week 10 | **Breast pathology I. (Kulka)**  
Symptoms and diagnosis of breast diseases. Malformations. Benign symptomatic lesions (inflammations, fibrocystic disease, epithelial dysplasia and its significance, benign tumours)  
**Breast pathology II. (Kulka)**  
- Follicular cyst- ovary  
- Mucinous cystadenoma-ovary  
- Serous cystadenoma-ovary  
- Serous papillary (cystadeno-)carcinoma-ovary |
| Week 11 | Spring break | |
| Week 12 | **Easter-Public Holiday** | **Practice 11- Breast pathology**  
- Fibrocystic disease  
- Fibroepithelial tumours  
- Ductal carcinoma in situ (DCIS)  
- Invasive carcinoma (NOS, lobular)  
**COMPETITION- 1st round** |
| Week 13 | **Hematopathology I. (Székely E)**  
- Reactive lymphadenopathy  
- Hodgkin lymphoma  
- Nodal non-Hodgkin lymphoma  
- Extranodal non-Hodgkin lymphoma  
**Practice 13-Midterm IV (renal and uropathology, gynecologic pathology)**  
**CNS histopathology:**  
- Purulent meningitis  
- Meningeoma  
- Glioma  
- Brain metastasis  
**COMPETITION- 2nd round** |
| Week 14 | **Hematopathology II- (Székely E)**  
Acute myeloproliferative syndromes (acute leukaemias). Chronic myeloproliferative syndromes (CML, myelofibrosis, thrombocytopenia). Acute and chronic lymphocytic leukaemias. Disorders of the spleen | |
| Week 15 | **Hematopathology III. (Székely E)**  
Lymphomas (Hodgkin, non-Hodgkin). Metastatic tumors in bone marrow and lymph nodes. Clinicopathological case demonstrations  
**Central nervous system I. (Schaff)**  

**List of textbooks**
2. Szende B., Suba Zs: Introduction to Histopathology (Medicina, 1999)
Webpage www.path2.sote.hu
General Informations: www.path2.sote.hu
General information, downloads: www.semmelweis.hu/patologia2
Online available case center (digital slides): http://casecenter-korb2.sote.hu/casecenter/
User name and password for Java based version: student_jav
User name and password for Panoramic Viewer based usage: student_pv
The visit of the internet based Case Center and Practice Test on tuition and exam dates is allowed after 4 p.m. only!
Mr. Rúben Kis and Mr. Endre Kontsek shall be approached with technical problems regarding server availability:
e-mail: for Mr. Rúben Kis: kis.ruben@semmelweis-univ.hu
for Mr. Endre Kontsek: kontsek.endre@med.semmelweis-univ.hu
Panoramic Viewer free download at: http://www.3dhistech.com/
4D pathology and auxiliary materials at: www.4dpathology.hu
Panoramic Viewer free download: http://www.3dhistech.com/
Practice test: http://casecenter-korb2.sote.hu/espractice/

General information

Lectures

The topic of the lectures include both general and systemic pathology. Each lecture lasts 1 hour 10 minutes and is illustrated with macroscopic and microscopic photographs, radiologic images, illustrating the presented material. Occasionally interesting autopsy cases will be demonstrated during the lectures.

Attending the lectures is compulsory, since the semifinal and final exams are partly based on them. The 2nd Department of Pathology may record the absences and those students who skip more than 15% of the lectures may not be registered for examination.

Practices

There are 14 two + two hours practices in both semesters, which are divided into autopsy and histopathology. Not more than 2 autopsy practices and not more than 2 histopathology practices can be missed in each semester. Catch up is possible only for autopsy hall practices, students can join other groups and their presence should be registered and signed by the tutor of the autopsy hall practice attended. In case the absences exceed the allowed limit the student will not be accepted for examination.

The histopathology practices provide basic histopathology skills. The topic of the histopathology practices matches that of the lectures. Brief theoretical background for the presented slides will be discussed in the frame of the practice. The pathological lesions will be presented in form of digital slides and will be demonstrated by the tutor with the help of a computerized multidiscussion/teleconsultation system. The digitalized slides will be individually studied and analyzed by the students as well. The digital slides are also available for the students through the internet every day from 4 p.m. till 8 a.m. the next day.

During autopsy practices the students will learn the basic skills of autopsy and how to recognize what’s pathological and will gain skills to demonstrate and describe these lesions. The emphasis is on the clinicopathologic aspects of the discussed cases. If there is no autopsy available, organ demonstration will take place on plastinated organs. Alternatively, visit of the laboratories (Laboratory of Histopathology, Laboratory of Immunohistochemistry and Laboratory of Molecular Pathology) of the Department will be on the program.

The medical and patient information provided during autopsies, lectures and demonstrations is confidential. The requirement to maintain professional secrecy and preserve confidentiality also applies for medical students.

It is strictly forbidden to make any kind of record (photography, video, sound-record) of the material provided during the tuition and demonstrations in the facilities and building of the Department, especially during lectures and practices (including autopsy and histology practices). The material presented during the tuition is the intellectual property of the Department and their presentation is directly controlled by the Department. Therefore, it is not intended for the public and must not be published or arbitrarily recorded, alternatively taken away without
the permission of the Department. Violation of the rules mentioned above implies disciplinary action. Exception can be made only based on
the previous and written permission provided by the Head of the Department. The Department reserves the rights to completely control the
communication of the information about the Department.

**Midterm exams:** There are two midterm exams in each semester. The participation and successful absolvation (average result exceeding 60
%) of the midterm exam is compulsory. If a student can not attend one of the midterms or the average 60% is not achieved, the tutor should
assess the basic knowledge of the student (see list of definitions on our webpage).

**Pathology competition**

Pathology competition has two rounds: the first, during the 12th and the second, during the 14th week of the 2nd semester. Macroscopic pho-
tographs will be projected in the first round and diagnoses should be given. The students with the best results (up to 8-10 people, depending
on the number of participants) will enter the second round. The 2nd round has two parts: theoretical and histopathology parts. In the former,
participants should recognize and describe autopsy macrophotos (virtual autopsy). During the histopathology part, participants should rec-
ognize and describe a neoplastic and a non-neoplastic slide.

Students use pseudonyms in both rounds. Those students who enter the second round are exempt from test writing, those who recognize
both of the histopathology slides in the second round are exempt from histopathology in the final exam. The first three ranked students will
get only 2 theoretical questions in the final examination.

**Consultation**

Upon request there is a possibility for a consultation with the tutor. The students are welcome to autopsy practices of other groups for retake
or extra occasion as long as it does not disturb the ongoing practice. **There is no consultation during the exam period.**

**Examinations**

**SEMIFINAL:**

1. **Prerequisites:**
   - **Absences:** not more than 2 autopsy practices and not more than 2 histology practices (histology practice and autopsy hall practice counts
     separately) can be missed in each semester. Attending the lectures is compulsory. If one does not fullfill the above mentioned prerequisites
     the 2nd Department of Pathology has the right for not acknowledging the semester.
   - **Midterm exams:** Completion of the 2 midterm exams during each semester is compulsory.

2. **Autopsy demonstration** will be held during the last autopsy hall practice. One should be able to recognize the organ (complex), orientate
   it properly, precisely describe the pathological lesions and establish a macroscopical diagnosis. The performance is graded on a scale from
   1 to 5. In case the mark of autopsy demonstration would be 1 (failure) it should be retaken otherwise the student will not be examined at
   the semifinal. The score (1-5) of the autopsy demonstration will be added to the written exam’s result if the latter is over the passing limit.

3. **The semifinal exam is a written test!!**
   - The material for the examinations is based on the book, the lectures and practices as well. The questions are prepared based on the official
     pathological textbook, but the factual data of the lectures are also constituents of the written test.
   - The test consists of 80 questions. The students have 80 minutes for writing the test. The test is given in one session, there will be no break
during the examination. Your sitting order is determined by the actual supervisor. The written test will be held in the Histopathology
   practice room using the teleconsultation computerized system. Every student to be examined on a certain exam day will receive the same
   set of questions, however, in different order within one question and regarding the numbering of the questions as well. The actual set of
   questions will be randomly selected from a pool by the computer. Upon submission of the test for evaluation, the computer will evaluate
   it. The result is immediately available and will be recorded. Since there is no possibility of human error in the correction the result of the
   written test is not subject of personal consultation.
   - The test questions include simple choice (one correct answer out of 5), multiple choice (2 answers are correct), “true-false” analysis and
definitions should be given. Every correct answer of a multiple choice question will be awarded with one point, false statements of the
multiple choice questions will result in one point deduction in order to avoid randomly crossing every possible answer of the multiple choice questions. Altogether, the deductions can not conclude a negative score, the worst score for one question is 0. Before submitting the test for evaluation the answers might be changed. Copying the questions are not permitted. The results are posted at the same day, generally early afternoon.

**Evaluation:** The passing level is 60 %. Each correct answer is worth of 1 point.

- 0-59.99%: = 1
- 60-69.99%: = 2
- 70-79.99%: = 3
- 80-89.99%: = 4
- 90-100%: = 5

**Suspension:** If you have any problem during the test, ask the supervisor. In case of communicating, unacceptable behaviour, cheating (usage of mobile phone, books, notes, etc.,) your exam is immediately suspended and the exam will not be evaluated and counts as a failed exam. Written report of the incident will be prepared and signed by the teachers.

4. The exam for EM begins at 8.30 a.m. sharp at the 2nd Department of Pathology, meeting at the Histology practice room. The grade books are collected by the supervisor before starting the exam. Students without a grade book should provide a photo ID, otherwise they are not allowed to take the examination.

5. **Exam dates:** You will be notified about the dates offered by the Department before the exam period and they will be finalized at the Staff/Student meeting. Then these fixed days will figure in NEPTUN.

   Important! Taking examinations before the exam period is not permitted! (University Policy). In exceptional cases (such as near-delivery, etc.), you must have a written permission from the Dean’s Office.

6. **Registration** The internet based sign up system (NEPTUN) regarding pathology has been established for 3rd year students as well. The sign up procedure is controlled and regulated by the software and the institute can not interfere with the system. The officially signed up students will be scheduled for examination.

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

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

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

   At least 4 days should be passed between the day of the failed exam and the day of the retake exam (the days of the examinations are not included). One must also register on the NEPTUN system and indicate that this is the first, second, etc. retake exam. Without retake ticket and NEPTUN registration one is not allowed to take an examination.

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

The final exam consists of two practical and two theoretical parts. The practical parts are **histopathology** in the histology practice room and **organ demonstration** in the autopsy hall. The theoretical parts are: **written test** (60 questions – 60 minutes) and **oral exam about theoretical topics** – concerning not only the organ or organ complex to be demonstrated, but the complete material discussed in the official pathology books as well as the material presented in the lectures. **The written test is compulsory part of the exam! The passing limit is 60 %**. The test is given in one session, there will be no break during the examination. Your sitting order is determined by the actual supervisor.

**Written test**: The test questions include simple choice (one right answer out of 5), and multiple choice (2 correct answers are correct), “true-false” analysis. Every correct answers of multiple choice questions will be awarded with one point, false statements of the multiple choice questions will result in one point deduction on order to avoid randomly crossing every possible answers of the multiple choice questions. Every answer should be marked in the computer. Before submitting answers for evaluation the answers might be changed.

**Oral exam**: the 2 theoretical questions of the oral examination are from a list of theoretical questions. The list of these theoretical questions is on the website of the department.

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

The examination will take place at the **2nd Department of Pathology** starting with the written test in the Histology Practice Room. The final exam starts at 8.30 a.m. sharp!!!

**MEETING POINT**: In the Histology Practice Room at the 2nd Dept. of Pathology!!!

The students to be examined will be identified by picture ID cards by the supervisor before starting the exam. Tehrefore, students should present a picture ID, otherwise they are not allowed to take examination!

**Evaluation**: The passing level is 60 %. Each correct answer is worth of 1 point.

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-59,99%</td>
<td>1</td>
</tr>
<tr>
<td>60-69,99%</td>
<td>2</td>
</tr>
<tr>
<td>70-79,99%</td>
<td>3</td>
</tr>
<tr>
<td>80-89,99%</td>
<td>4</td>
</tr>
<tr>
<td>90-100%</td>
<td>5</td>
</tr>
</tbody>
</table>

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

After the test and histology, **organ demonstration** follows. During this part of the exam dissected organs or organ complexes are to be described. The student should be able to orientate the organ (or organ complex) properly, to describe it fully and evaluate the pathological alterations and establish diagnoses.

Finally, the **2 theoretical questions** are to be discussed.

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

It sould be kept in mind that the final mark is not merely the matemathical average of the given grades of different parts of the exam! Additional factors, for example your midterm results, your general performance during the academic year (evaluated by your tutor), the competition results, etc. are also taken into consideration. Serious mistakes or „clear spots” in your knowledge may significantly affect the final mark or even result in a failed exam.

**Retake exam**: In case of failure or for those who are unsatisfied with the result of the first exam a retake exam should be taken to improve the mark. If the student retakes the exam to improve the previous mark, the mark of the retake exam may be the same or worst than the previous mark.
At least 4 days should be passed between the day of the failed exam and the day of the retake exam (the days of the examinations are not included). The student must also register on the NEPTUN system and indicate that this is the first, second, etc. retake exam. Without retake ticket and NEPTUN registration the student is not allowed to take an examination.

**By retake examination in case of failure the written test or/and the histology exam should not be repeated in case it has reached at least grade 3 by the previous examination.**

In case of a retake exam that serves as improving the grade, the complete examination should be repeated, except if the written test/histology part was grade 5.

**Failure on any part of the exam excludes a result of 5!**

Announcement of the results is at the same day. Signed grade books can be obtained in the office of the Head of Department.

**Suspension:** If you have any problem during the test, ask the supervisor. In case of communicating, unacceptable behaviour, cheating (usage of mobile phone, books, notes, etc.), your exam is immediately suspended and the exam will not be evaluated and counts as failed exam. Written report of the incident will be prepared and signed by the teachers.

**Schedule**

<table>
<thead>
<tr>
<th>Lectures</th>
<th>1st semester</th>
<th>2nd semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>11:50 – 13:00</td>
<td>10:50 – 12:00*</td>
</tr>
<tr>
<td>Wednesday</td>
<td>8:00 – 9.10</td>
<td>8:00 – 9.10*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Practices</th>
<th>1st semester</th>
<th>2nd semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1-6</td>
<td>Wednesday</td>
<td>9:30 – 12:50</td>
</tr>
<tr>
<td>Group 7-8</td>
<td>Monday</td>
<td>15:20 – 16:50</td>
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<tr>
<td></td>
<td>Thursday</td>
<td>11:10 – 12:40</td>
</tr>
</tbody>
</table>

* preliminary data

**Tutors**

- Dr. Benedek GYÖNGYÖSI
- Dr. Judit HALÁSZ
- Dr. Dóra HARGITAI
- Dr. Ildikó ILLYÉS
- Dr. István KENESSEY
- Dr. Magdolna KARDOS
- Dr. András KISS
- Dr. Zsófia KRAMER
- Dr. Gábor LOTZ /
- Dr. Lilla MADARAS
- Dr Tekla KOVÁCS
- Dr. Márton SÁGHI
- Dr. Eszter SZÉKÁCS
- Dr. Ildikó SZIRTES
MEDICAL STATISTICS, INFORMATICS AND TELEMEDICINE

Lecture: 1 hour per week
Practice: 1 hour per week
Credit: 2
Examination: semi-final

ECG IN CLINICAL STUDIES

Lecture: 1,5 hours per week
Practice: 1,5 hours per week
Credit: 3
Examination: pract. mark

TRANSLATIONAL MEDICINE AND PTHOPHYSIOLOGY I-II.

I.
Lecture: 1,5 hours per week
Practice: 1,5 hours per week
Credit: 3
Examination: semi-final

II.
Lecture: 1,5 hours per week
Practice: 1,5 hours per week
Credit: 3
Examination: final
Second Semester

Course: Internal Medicine
Type: compulsory
Total weeks: lecture 14, seminar 0, practical 14
Hours per week: lecture 1, seminar 0, practical 3
Form of tuition: lecture, bedside practice
Mode of assessment: practical course grade (semi-final)
Aim: The teaching offers the essential information required in performing the most comprehensive and diagnostic type of patient history and physical examination (an introduction to internal medicine).
The syllabus: The course is concerned with the clinical approach to evaluation of the patient including history taking and bedside physical examination (inspection, palpation, percussion, auscultation, taking vital signs). General symptoms and signs of the respiratory and cardiovascular diseases, the most common abdominal syndromes.
SURGICAL RESEARCH AND TECHNIQUES

Department of Surgical Research and Techniques
Theoretical Block at Nagyvárad Square, Operating training center,
1089 Budapest, Nagyvárad sqr 4.
Lecturer: Professor Dr. György Wéber
Tutor: Dr. Györgyi Szabó

Credit: 2

Second Semester

Prerequisites: Pathology and Histopathology II., Surgery I.

The aim of the subject is to practice the basic surgical techniques, to present hygienic approach, which attainments are indispensable for clinical doctors working in manual field of medicine. This subject provide basics about special behavior in the operating theatre, preparation of the patent and surgical team before operation, surgical tools and instruments, wound management, laparoscopic instruments and techniques. Recommended for students interesting in manual fields of medicine.

Practices are held on every second week (7x135 minutes).
1. The operating room.
2. Knoting and suturing on in vitro models.
3. Knoting and suturing on in vivo models.
4. Operations on small animals I.
5. Operations on small animals II.

Attendance is obligatory on every practice. Because of limited capacity of operating theatre, absence cannot be repeated by joining another group. One missed practice can be repeated on 14th week of the semester.

Absence should be certified with medical or other official certificate. Absence from practices is not to exceed 25%.

Requirement: Practical exam (5 degree evaluation).
Textbook: Basic surgical techniques (textbook and video)
PROBLEM BASED MEDICAL PHYSIOLOGY

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

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

Credits: 4

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

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

Requirement and attendance

Requirement: Medical Physiology (AOKIKELT2A)

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

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

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

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

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

Mark: Weekly results plus the oral exam grade.

Exam sign up: On the last week, personal.

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

Institute of Behavioral Sciences
Tutor: Prof. Dr. József Kovács

Course Syllabus.

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

Lectures and Practices
1. week Principles of Medical Ethics
2. week Informed Consent I.
3. week Competence and Capacity to Make Health Care Decisions
4. week Informed Consent II. (Orsolya Peter)
5. week Information Disclosure to Terminally Ill Patients. Telling the Truth to Patients
6. week Confidentiality and Medical Records. Reportable Illnesses, HIV-Related Issues, Sexually Transmitted Diseases (STDs)
7. week Reproductive Issues
8. week End of Life Issues
9. week Organ and Tissue Transplantation
10. week The Rights of Patients
11. week Malpractice
12. week Doctor-Patient, Doctor-Doctor Relationship
13. week Doctor and Society
14. week Ethical Questions of Human Research

Course Faculty:
Prof. József Kovács, MD, PhD, (Head of the Department), 210-2930/56123;
Imre Szebik, MD, PhD: (Room 1914) (Tel: +36-20-824-3195)
Secretary: Jozefa Barreto

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

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

Textbook:
MHID 1-25-964121-X

Important:
To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. Doctor’s certificate is required to justify absence from the lessons and the exam.

Exam type: semi-final
Sign up for the exam: through the Neptun system.
MEDICAL ASPECTS OF DISASTER PREPAREDNESS AND RESPONSE

Directorate for Safety Technology
Department for Disaster Management and Education

Supervisor:  Pál Kocsik
Lecturer:  Csaba Csendes

Type of Course: indispensable
Credit value: 1

Second Semester

Purpose of the lecture:
The goal of the subject is to provide basic knowledge of the definition, mission, reasons and circumstances of establishment of civil protection/disaster management, on its place and role in the country’s defense/protection system; to provide information on the types of disasters and their features. Based on experience gained in real incidents, to provide information on the peculiarities of disaster management and the tasks of medical authorities in this context.

The syllabus:

(M1) Concept, mission, tasks and establishment of civil protection and disaster management in Hungary. Types and features of disasters, the disaster vulnerability of Hungary, the organizational system of the protection against disasters, command and control of protection, the role of medical authorities.

(M2) The early warning system and signals of disaster management. The elimination of the consequences of disasters, the staff work applied during protection. Features and activities of Hungarian disaster management organizations and authorities, international possibilities of disaster management and the lessons learnt, demonstrated by examples.

Requirements and the potential for absences to participate in the sessions:
The subject consists of 4 modules. Module 1 does not have any prerequisites; module 2 anticipates the fulfillment of module 1. Students must register to attend the course announced as required. Those who are unable to fulfill module 1 or 2 (do not attend), may participate in a supplementary lesson in the 1st semester of the following year.

The method of certificate for the workshops and the exam absences:
Certificate of absence: medical, official – court of justice, local government, Students’ Union, etc.

The mid-term controls’ (reports, midterm) number, topic and date, replacements and repairs:
Method of making up for the absence justified by certificate: participation in a supplementary lesson.

Requirements for the signature:
Students must participate in the lesson announced to acquire signature, or in case of absence justified by certificate, in a supplementary lesson. Only registered students may participate in a supplementary lesson announced.

The method of grading: signature
Type of examination: none
Requirements: none, students must fulfill the obligation to attend the lessons.
Application for exam: none
Changing procedure for exam application: none

Absence from the examination: none

BASIC CELL BIOLOGY – Department of Genetics, Cell- and Immunobiology

OBLIGATORY ELECTIVE COURSE FOR MEDICINE I. II. III. YEARS

Course Director: Dr. Valéria László Ph.D.

Prerequisite subject: Anatomy, Cell, Histology and Embryology I.

Credit: 3

Lectures (2 hours per week)

First semester

1. Intracellular transport mechanisms
2. Endoplasmic reticulum. Vesicular transport
3. Secretion and Golgi
4. Endocytosis. Endosomal – lysosomal system
5. Nuclear envelope and nuclear lamina. Nuclear pores and gated transport
6. Functions and malfunctions of some nuclear components
7. rRNA synthesis. Telomerase
8. Endosymbiotic cell organelles. Mitochondrion
9. Peroxisome
10. Cytoskeleton. Microtubules
11. Microfilaments and intermediate filaments
12. Cell – cell and cell – ECM adhesion and junction
13. Regulation of cell cycle I
14. Cell aging and death

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

Core text:

Lecture presentations are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)
CLINICAL CARDIOVASCULAR PHYSIOLOGY

AOVKIK102_1A

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

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

Program:

1. Investigation of blood pressure regulation by use of transgenic technologies
2. Cardiovascular effects of hypersensitivity reactions (CARPA). Modern methods for measuring and monitoring arterial blood pressure
3. Hemodynamic background of normal and pathological cardiovascular functions; “hemodynamic exercise” and prevention of diseases
4. Pathophysiology of chronic venous insufficiency
5. Physiological mechanisms supporting venous return of blood; orthostatic tolerance
6. Cardiovascular implications of the healthy and the diseased kidney
7. Coronary circulation. Physiological background of the treatment of myocardial ischemia
8. Interventional radiological procedures on arteries and veins
9. Age related changes in the vascular system, role of sexual hormones
10. Role of endothelial mechanisms in clinical symptoms
11. The cardiovascular risk and the protection of menopausal women. Alterations of the cardiovascular system in pregnancy and polycystic ovary syndrome
12. Biomechanical properties of cerebral aneurisms, their computer modeling
13. Visit to the MRI Cardiovascular Diagnostic Unit of the Semmelweis University Heart Center
14. Ultrasonic investigation of the human heart: theoretical background; 2D-, M-, Doppler-mode, color Doppler imaging, echocardiography; diagnostics of valve insufficiency and coronary diseases. Duplex ultrasonic investigation of large vessel function: measurement of vessel wall elasticity, Doppler-indexes

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

AOVKIK099_1A

Elective course for medical students in the 3rd, 4th and 5th years.
The aims of the course are to strengthen knowledge on basic physiological principles related to respiration, summarize the most important aspects of cardiorespiratory adaptation in sport activities and also its changes in respiratory diseases and to provide integrated information about the physiological and pathophysiological background of the most important respiratory disorders in light of results from cutting edge research.

Program:

1. Physiological function of the respiratory system
2. Smoking, e-cigs, supporting cessation
3. Lung development
4. Inhalation therapy
5. Sleep related respiratory disorders.
6. COPD and COPD exacerbation
7. The lung in systemic diseases
8. Cystic fibrosis
9. Pulmonary circulation
10. Bronchoscopy
11. Cardiovascular exercise testing, COPD
12. Asthma bronchiale
13. Non-invasive ventilation
14. Chest imaging

Acknowledgement of the course: regular attendance (maximum 3 absences) is required; signature in the Neptun, and 2 credit points will be provided after a successful written exam.
CARDIORESPIRATORIC AND NEUROPHYSIOLOGICAL MEASURING METHODS

Department of Clinical Experimental Research

**Type of course:** Elective course  
**Course code:** AOSKIK151_1A (credit value: 2)

**Course Tutors:** Dr. Zoltán Benyó, Full professor (Head of Dept.), Dr. Habil. László Dézsi, Adjunct professor (Course Director), SU.  
(Invited Tutors: Dr. Iván Füzes, Master tutor, SU; Dr. Ákos Jobbágy, Full professor, BTU; Dr. György Nádasy, Senior associate professor, SU)

**Academic year:** 2019/2020 1st Semester

**The purpose of the course:**  
To review the theory and practice of modern measuring methods in experimental and clinical medicine, and providing practical knowledge to medical students on cardiorespiratory and neurophysiological measurements. The course is based on, but further extends the material delivered during the course of Medical physiology. Throughout the lectures we put an emphasis on potential methodological errors of measurements and examinations, as well as how to avoid them.

**Detailed Program:**
1. Introduction. Biomedical Engineering. Design of biomedical equipments.
2. General metrology. Basics of measurement and control theory.
4. Computerized data acquisition and analysis. Telemetric measuring systems.
5. Clinical and laboratory blood pressure monitoring (invasive and noninvasive methods).
9. Determination of cardiac output and peripheral blood flow (direct and indirect methods).
11. Investigative methods in neurophysiology and audiology (action potentials, evoked potentials).
14. Experimental methods to study nociceptive function.

**Acknowledgement of the course:** Prerequisite of the course is the completion of the first 2 years (Theoretical module). Regular attendance (maximum 3 absences) is required. Students exceeding this allowance cannot take the exam and no credit points will be awarded. Presence of lectures will be recorded weekly. Signature in the Neptun and 2 credit points will be awarded after successful exam. Source: material of the lectures, supplementary literature if provided by the lecturers. Lecture slides will be uploaded onto the Dept. web-site.

**Order of the exam:** The exam will be held at last week of the semester. Eligible students are allowed to come, no application needed. The exam is based on minor essay type questions. All lectures are the subject of questions. Minimum level of success is 51% of total points. The 5-level grading system will be applied. Retake of absence (doctor’s note required) is allowed once in the exam period.

**List of textbooks and notes for preparation to the exam:**
1. Fonyó Attila: Az Orvosi élettan tankönyve 7. kiadás, Medicina Kiadó, Budapest, 2014
5. Általános Metrológia Egyetemi jegyzet, BME
9. Lecture notes and other materials provided by the Tutors.
INTRODUCTION TO THE METHODOLOGY OF CLINICAL RESEARCH I. – Observational studies

Obligatory elective course for medical students

Nowadays most physicians will inevitably get in contact with clinical studies either as active researchers or practitioners who utilize the products of clinical research via studying the literature or by interpreting new clinical guidelines. Therefore, at the time of graduation the physicians of the 21st century must possess skills which enable them to join research programs and critically interpret scientific evidence. The ultimate goal of the course is to prepare future doctors for these challenges by offering a curriculum which helps to acquire these skills prior to graduation. The course aims to give a comprehensive insight into the methodology of clinical research. The broad spectrum of methodological approaches will be presented in 2 separate courses built on each other. The course „Introduction to the Methodology of Clinical Research I.” will focus on observational studies. Accordingly, the course will describe the types of observational studies, the pros and cons of their application and give a deep insight into clinical epidemiology and into the ethical and legal concepts related to the planning and conduct of these studies. Beyond these, the course will introduce the students (without showing mathematical formulae) the statistical approaches which are closely related to the analyses of observational studies, and the practicums of the course will provide opportunity to apply the knowledge acquired on lectures to real-life situations.

Program:

1st week: Types of observational studies
2nd week: Introduction to biostatistics I.
3rd week: Introduction to biostatistics II.
4th week: Workshop lecture to introduce the biostatistical analysis software package (STATA)
5th week: Introduction to epidemiology
6th week: **PRACTICUM I.** Clinical epidemiology. Finding an epidemiology related research question based on a simulated patient dataset and answering the question by performing statistical analysis using STATA statistical software package.
7th week: Ethical and legal issues of observational studies.
8th week: Applied regression I.
9th week: Applied regression II.
10th week: Applied regression III.
11th week: **PRACTICUM II.** Steps of multivariate regression model building. The students will build regression models on a simulated patient dataset using STATA statistical analysis software package. They experience how the inclusion of different variables/confounders can affect results and data interpretation.
12th week: **PRACTICUM III.** Critical interpretation and discussion of a prereleased publication (original article)
13th week: Biomarker research, genomics. Screening tests.
14th week: Test exam.

**Acknowledgement of the course:** Attendance of at least 70% of lectures and all lab practices. Written test exam at the end of the semester. Two (2) credit points will be provided after a successful completion of the course.
CLIMATE CHANGE AND HEALTH IN SOCIOLOGICAL PERSPECTIVES

Institute of Behavioral Sciences
Lecturer: László Antal Z.
Credit: 2
Code: AOSMAG372_1A

Thematics:
1. week: The history of climate change science
2. week: Climate change and society, sociological perspectives
3. week: Animal and plant health impacts of climate change
4. week: Human health impacts of climate change
5. week: Consumer society and environmental boundaries
6. week: Demographic processes and environmental boundaries
7. week: Climate change and health care
8. week: Adaptation to climate change
9. week: Adaptation to heat waves and to UV radiation
10. week: Adaptation to climate change at local level
11. week: Civil society, social movement and climate change
12. week: Climate communication
13. week: Climate change and the social values
ULTRASONOGRAPHY IN OBSTETRICS AND GYNECOLOGY

(obligatory elective course – 6th semester)

AOVNO1554_1A
Course director: Prof. Dr. János Rigó
Lecturer: Dr. Gábor Szabó PhD
Department: First Department of Obstetrics and Gynecology
Study time: In every second week 2×45 minutes. Advised Semester: between 6. und 12. Semester
Exam: Written test and practical note
Credit: 1
Minimal/maximal participants: (1/5 person)
Application deadline: 1. December
Prerequisite: Completion of second year

The knowledge gained in theoretical basic subjects (anatomy, physiology) can be used by medical students as practical knowledge in the clinic. As a result of more than four decades of experience, ultrasound examination has a fundamental role in modern obstetrical and gynecological diagnostic. The course helps you to acquire skill in this field. Performing obstetrical-gynecological ultrasound tests and assessment of findings can only be learned through appropriate training. This non-invasive procedure is also safe for patients. The modern ultrasound equipment of the Department and the wide range of patients and diseases provide the opportunity for learning. Not only obstetricians and gynecologists, but also other associate colleagues such as clinical genetics, radiologists, gynecological cancer surgeons, anesthetists, and intensive therapists can utilize the knowledge provided by the subject.

Themes:
The Scalpel and the Paragraph: Special Issues of Medical Practice in Light of the Law – :

elective subject
Lecturer: Prof. Dr. József Kovács
Department of Behavioural Sciences

1st semester

2 hours / week
Within the framework of the course the participants, who have an affinity for Bioethics and Law, will gain insight into the special characteristics of the legal domain and certain fundamental legal concepts and methods that are relevant for a practicing physician, but cannot be sufficiently investigated into within the framework of other compulsory courses. The course considers the general part of medical law governing the legal relationship between medical practitioners and their patients, first by distinguishing between civil law and criminal law and explaining their respective characteristics. The legal position, the customary rights and obligations of physicians and patients are examined, together with the issues of informed consent. Topics will also include the civil and criminal liability of physicians and the issue of malpractice. Selected medico-legal issues over human life are also examined; these will include foetal rights, modern reproductive technologies, various aspects of human genetic research, and certain end-of-life issues such as advance directives and euthanasia. The foregoing topics will be discussed from the perspective of comparative law, by presenting various court cases from the countries of the European Union and the United States of America as well. Attending students will gain the ability to recognise and analyse legal health care issues by engaging in interactive discussions and informative research.

Attending students will gain insight into the special characteristics of the legal way of thinking, the basic concepts of civil and criminal law, and also the approach to the most controversial medico-legal issues in the European Union and the United States.

Students intending to practice in any field of medicine may find the course profitable.
Minimum number of participants: 10
Maximum number of participants: 20; applications are accepted through the „Neptun” system.
Students are to register through the „Neptun” system. No special achievement/prior completion of other course(s) is required.

Thematics:
1. Introduction: Aims and objectives of the course; presentation of the interdisciplinary method (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
2. The concept of „law”; the branches of law particularly relevant for medical practice (civil/private law; criminal law) (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
3. The human being and the law. Legal personhood and capacity to act. Man as a subject to fundamental human rights. (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
4. The parties to a medical legal relationship: doctor and patient. The legal position of the physician and the patient; their principal rights and obligations in the various legal systems (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
5. Creating a doctor-patient relationship: informed consent in the member countries of the European Union and in the USA (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
6. Various legal models of the doctor-patient relationship (mandate agreement, service agreement, treatment agreement etc.) (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
7. The physician and civil liability: malpractice/liability for damages in the member countries of the European Union and in the USA (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
8. The physician and criminal liability: specific criminal offences that can be committed by a physician/health care specialist (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer)
10. The beginnings of human life and the law: surrogacy and the legal issues generated by the recent developments in assisted human reproduction in Europe and in the world (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
11. The issues of medical research on humans: the framework set up by law (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).
12. End-of-life decisions and the law: the “living will” and other forms of advance directives in the various legal systems; the refusal of life-saving treatments (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).

13. End-of-life decisions and the law: euthanasia in the member countries of the European Union and in the USA (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).

14. Review of the semester; suggestions, observations and proposals (instructor: dr.iur. Orsolya Marta Peter PhD, Lecturer).

Participants will meet weekly (2 hours/week) as a discussion/seminary group. Participating students are required to prepare and hold an oral presentation (15-20 mins) about a preferred medical legal issue, to be previously approved by the instructor. A suitable schedule for such presentations will be worked out together with the students. Students are required to attend at least 75% of the meetings; a maximum of 4 (four) absences is acceptable. Attendance will be verified at the beginning of each meeting. In the event of more than 4 (four) absences an additional oral presentation or an essay will be required, provided such excessive absence is unjustified.

No medical certificate/other proof is required up to the maximum number (4) of excused absences. In the event of more than 4 (four) absences an authentic proof of justifiable absence is accepted.

„Aláírás” (the instructor’s „signature” indicating the fulfilment of the term requirements) will be granted as follows:
1. Preparation and actual holding of an oral presentation.
2. Proper attendance (max. 4 absences; proper justification or additional work in the event of more than 4 absences)

The performance of participating students will be graded as follows:
1. Excellent (5): less than four absences; active and constructive participation in group discussions; an oral presentation of outstanding quality.
2. Satisfactory (3): regular attendance; an oral presentation of good quality.
3. Insufficient (1): more than four absences without proper justification; no presentation or presentation of an inferior quality.

Participants will be given a „gyakorlati jegy” (term mark) at the end of the semester; no further examination is required.

**Recommended reading materials:**
See also the extensive bibliography in Kuhse-Singer
HUNGARIAN MEDICAL TERMINOLOGY V.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits

Assessment: midterm (written) and endterm (written and oral) tests and a final examination

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:
The last module covers the terminology of the main body systems and provides further training in taking history. The symptoms, diseases and common treatments of the diverse body systems (respiratory, cardiovascular, urinary, digestive and endocrine) are discussed during the semester.

Course content of practical lessons:
Lesson 1-4: Communication practice (family and social history)
Lesson 5-6: Communication practice (internal medicine – medical history)
Lesson 7-8: Communication practice (treatments, medication)
Lesson 9-10: Common illnesses - symptoms
Lesson 11-16: The respiratory system
Lesson 17-22: The cardiovascular system
Lesson 23-24: Consolidation
Lesson 25-26: Test 1 + situation
Lesson 27-32: The urinary system
Lesson 33-38: The digestive system
Lesson 39-44: The Endocrine system
Lesson 45-50: Consolidation
Lesson 51-52: Test – situation, communication practice
Lesson 53-56: Mock final exam (oral part), assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

PHYSICAL EDUCATION V-VI.

Practice: 1 hour per week
COMPULSORY SUMMER PRACTICE

Internal Medicine – 4 weeks (30 days without break)
Ends with a practical exam.

Proof of completion (Certification of completed famulus practice) must be submitted prior to registration to the next academic year. Students who do not submit the certificate of completion on time will have their registration placed on hold until the proof of completion is received by the English Secretariat. Certificates can be downloaded at http://www.semmelweis-english-program.org/index.php?option=com_content&task=view&id=79&Itemid=101

Please read more about the rules concerning the criteria of selecting the foreign clinical practice positions and accepting the practice period spent abroad: http://www.semmelweis-english-program.org

Practical syllabus of the famulation

Cognition of the department of internal medicine, and the hospital.
Examination of patients, especially physical examination, and the examination of patients suffering cardiovascular and respiratory diseases.
Attendance of patients as an assistant physician assigned by the Head of the Department of Internal Medicine, under the supervision of the Head of Department, on the level of a 3rd year student without any pharmacology training.

Practice of the most important medical interventions.
Dosage of medicines. (Methods)
Examination of the pulse, blood pressure measurement, body temperature measurement, weight-measurement, height-measurement.

Technique of cupping, learning and applying of injecting (i.m., i.v., s.c. insulin).
Knowledge of instruments (ECG, Doppler and/or oscillometry, monitors, supply of oxygen – according to the local possibilities.)
Compilation of infusion and the technique of infusion wiring (under supervision). Transfusions (under supervision).

Cognition of the patient documentation and independent documenting.
Learning of contacting patients and their relatives, especially informing patients and the medical confidentiality.

Practising the so-called small laboratory tests.
Participation in medical consultation, especially if it is about their patient.

Participation in the meetings of the institution.
On-call service.
# OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE BASIC AND PRE-CLINICAL MODULES (1st, 2nd & 3rd year) – Find detailed curricula after the 5th year

## OBLIGATORY ELECTIVE SUBJECTS

### 1st semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVNEI263_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVANT457_1A</td>
<td>Developmental Biology I.</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>Anatomy, Cell, Histology and Embryology II.</td>
</tr>
<tr>
<td>AOVKPK088_1A</td>
<td>Library Informatics</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVKIK099_1A</td>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOVGEN083_1A</td>
<td>Basic Cell Biology</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>Anatomy, Cell, Histology and Embryology I.</td>
</tr>
<tr>
<td>AOVDEM156G1A</td>
<td>Teaching assistance (Demonstrator)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>Only 2nd year students and up with an average of 3.51 from the previous school year and having achieved a final grade of “good” (4) or better in the course related to the teaching assistant work</td>
</tr>
<tr>
<td>AOVDEM215G1A</td>
<td>Teaching assistance II. (Demonstrator)*</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVTDK158G1A</td>
<td>Work within the union of research students (TDK munka)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVCSA249_1A</td>
<td>Introduction to Clinical Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Profession</td>
</tr>
<tr>
<td>AOVCSA248_1A</td>
<td>Medical Profession</td>
<td>0.67</td>
<td>1.33</td>
<td>2</td>
<td>pract. mark</td>
<td>–</td>
</tr>
<tr>
<td>AOVFIZ475_1A</td>
<td>Mathematical and Physical Basis of Medical Biophysics</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>–</td>
</tr>
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</table>

### 2nd semester

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVNEI263_1A</td>
<td>History of Medicine</td>
<td>2</td>
<td>–</td>
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<td>AOVANT458_1A</td>
<td>Clinical anatomy – propedeutics</td>
<td>2</td>
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<td>Anatomy, Cell, Histology and Embryology III.</td>
</tr>
<tr>
<td>AOVANT457_2A</td>
<td>Developmental Biology II.</td>
<td>2</td>
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<td>Developmental Biology I.</td>
</tr>
<tr>
<td>AOVKIK102_1A</td>
<td>Clinical cardiovascular physiology</td>
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</tr>
<tr>
<td>AOVINF244_1A</td>
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<td>Medical Profession</td>
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<tr>
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<td>Med. Fac.: Medical Physiology II. Dent. Fac.: Medical and Dental Physiology I.</td>
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<tr>
<td>AOVDEM156H1A</td>
<td>Teaching assistance (Demonstrator)</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>Only 2nd year students and up with an average of 3.51 from the previous school year and having achieved a final grade of “good” (4) or better in the course related to the teaching assistant work</td>
</tr>
<tr>
<td>AOVDEM215H1A</td>
<td>Teaching assistance II. (Demonstrator)*</td>
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<td>pract. mark</td>
<td>–</td>
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<tr>
<td>AOVTDK158H1A</td>
<td>Work within the union of research students (TDK munka)</td>
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<td>pract. mark</td>
<td>–</td>
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<tr>
<td>AOVGYH198_1A</td>
<td>Preclinical and clinical neuropsychopharmacology and psychopharmacogenetics</td>
<td>1</td>
<td>–</td>
<td>1</td>
<td>pract. mark</td>
<td>Previous attendance of courses in Biology, Physiology and Biochemistry</td>
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<tr>
<td>AOVNO1554_1A</td>
<td>Ultrasonography in obstetrics and gynaecology</td>
<td>1</td>
<td>–</td>
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<td>completion of second year</td>
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</tbody>
</table>

* 2nd TDK research and/or demonstrator activity
## ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tr>
<td>AOSMAG392_1A</td>
<td>Art of Learning</td>
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<td>AOSMAG318_1A</td>
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<td>AOSMAG505_1A</td>
<td>The theory and the practice of Mindfulness Based Stress Reduction</td>
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<td>AOSMAG506_1A</td>
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<td>Subject Code</td>
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<td>Credit Points</td>
<td>Examination</td>
<td>Prerequisite</td>
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<tr>
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<td>AOSMMS174_1A</td>
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<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>basic module</td>
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<tr>
<td>AOSMAG336_1A</td>
<td>Culture in Medicine, Culture of Medicine</td>
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<td>–</td>
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<td>AOVELT101_1A</td>
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<td>–</td>
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<td>Chemotaxis – Its significance in biology and clinical sciences</td>
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<td>AOSFRM394_1A</td>
<td>Introduction to Pharmacological Research</td>
<td>2</td>
<td>–</td>
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<td></td>
<td>Clinical Gastroenterology</td>
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<td>3</td>
<td>pract. mark</td>
<td>Internal Medicine – Propedeutics</td>
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<tr>
<td>AOSMAG372_1A</td>
<td>Climate Change and Health in Sociological Perspectives</td>
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<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Biochemistry, Molecular and Cell Biology II.</td>
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</table>
STUDY PROGRAMME

Fourth Year
4th and 5th Years (7th-10th semesters)

Teaching is done in “clean” blocks: Theory + Practice + Exam. (Practices are taught by “shadowing”)
The time span of each block depends on the credit value of the subjects: 1 to 5 weeks

For example: based on a subject of 2 credits:
- 2 credits × 14 lessons = 28 lessons (1 semester consists of 14 weeks. The number of credits are equal with the lessons in a week)
- Education is provided as 8 lessons in a day: 4 days x 8 lessons = 32 lessons
- the training and the exam must be completed in 2 weeks
- approx. 40 students will be trained by providing 4 days of training and 2 days of exams within 10 working days.

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit</th>
<th>Number of lessons</th>
<th>Number of weeks</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tr>
<td>Internal Medicine I. (Metabolism, Endocrinology, Nephrology, Gastroenterology)</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>98</td>
<td>5</td>
<td>semi-final</td>
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<tr>
<td>Cardiology-Cardiac Surgery, Angiology-Vascular Surgery</td>
<td>2</td>
<td>4.5</td>
<td>6.5</td>
<td>91</td>
<td>4</td>
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<tr>
<td>Surgery I-II.</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>84</td>
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<tr>
<td>Traumatology</td>
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<td>2</td>
<td>3</td>
<td>42</td>
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<td>semi-final</td>
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<tr>
<td>Orthopedics</td>
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<td>3.5</td>
<td>49</td>
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<td>semi-final</td>
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<tr>
<td>Medical Imaging</td>
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<tr>
<td>Otorhinolaryngology</td>
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<td>42</td>
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<td>56</td>
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<td>Subject</td>
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<td>Practicals</td>
<td>Credit</td>
<td>Number of lessons</td>
<td>Number of weeks</td>
<td>Examination</td>
</tr>
<tr>
<td>--------------------------------</td>
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<tr>
<td>Oral Surgery and Dentistry</td>
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<td>1</td>
<td>2</td>
<td>28</td>
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<td>semi-final</td>
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<tr>
<td>Pulmonology - Thoracic Surgery</td>
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<td>2</td>
<td>3</td>
<td>42</td>
<td>2</td>
<td>semi-final</td>
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<tr>
<td>Oncology-Plastic Surgery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Laboratory Medicine</td>
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<td>2.5</td>
<td>21+14</td>
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<td>1.5</td>
<td>2.5</td>
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<td>Clinical Pharmacology</td>
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<td>2.5</td>
<td>35</td>
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<tr>
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<td>1</td>
<td>2</td>
<td>28</td>
<td>1</td>
<td>semi-final</td>
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<tr>
<td>Surgery Summer Practice</td>
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<td>4 weeks (30 days without break)</td>
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<td>signature (ends with a practical exam)</td>
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<td>Physical Education VII.</td>
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<td><strong>Total</strong></td>
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<td>32</td>
<td>54.5</td>
<td>728</td>
<td>37</td>
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4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum.

*The prerequisite is that registration has been done for the marked subject – corequisite – as well
LIST OF TEXTBOOKS (The list may change!)

Recommended textbooks:
2. Lynn S. Bickley: Bates’ Guide to Physical examination and history taking
3. Tulassay Z. (Ed): A belgyógyászat alapjai (I.-II.)
4. Internet links for Internal Medicine
8. Davis-Christopher: Textbook of Surgery / Synopsys for students (Sabiston)
9. Clive R. G. Quick, Joanna B. Reed et all.: Essential SURGERY(5th Edit.) Churchill Livingston
11. Semmelweis Egyetem e-learning rendszere Ortopédia fejezet – Semmelweis University e-learning system: Orthopaedics
17. Shimizu’s Textbook of Dermatology – accessible online also
INTERNAL MEDICINE I. – Metabolism, Endocrinology, Nephrology, Gastroenterology

Lecture: 1 hour per week  
Practice: 2 hours per week  
Credit: 7  
Examination: semi-final

CARDIOLOGY – Cardiac Surgery, Angiology-vascular Surgery

Heart Center Department of Cardiology  
Tutor: Dr. György Bárczi

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

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

Students are strongly recommended to visit regularly our website where updated informations are available: http://vszek.semmelweis.hu/education-cardiology
SURGERY I-II.

I. Department of Surgery
Department of Transplantation and Surgery

Tutors: Dr. Ákos Szűcs
Dr. Gábor Telkes

Lectures (3 hours per week)
History of Surgery. - Developments. Recent trends and perspectives.
General Anesthesia.
The resuscitation. (CPR). The Shock.
Fluid, electrolyte and metabolic disturbances. Artificial nutrition.
Surgical infections I. -Pyogenic infections, wound infections. Anaerob infections.
Tetanus and gas gangrene. -Artificial nutrition of septic patient.
Surgical infections II. -Hepatitis. Aids, etc.
The role of antibiotics in surgery.
Asepsis, antisepsis. - Prevention of Surgical infections.
Surgical complications. Preparation of the patients and problems of the perioperative period.
Principles of operative surgery. Basic technics, sutures etc.
Bleeding and blood clotting. Technics of haernostasis.
Plastic surgery.
Surgical oncology.
Tissue and organ transplantation.
Consultation. Questions/Answers.

Practice (3 hours per week)
Introduction of the Department. The OP, the instruments of OP. The organization. The wards, etc. The central sterilization station.
The admission system of the patients.
The preoperative wash-up. Asepsis, antisepsis, Get dressed for OP. The practical preparation of the skin.
The surgical instruments. What and when.
The treatment of wounds. The wound healing. The type of wounds. Bandaging procedures.
Injections. - Hypodermic, intracutan, intra muscular etc.,-
The suture technics. Sutures, knots, clips, etc.-
Laparoscopic technics.
Transfusion. The blood groups. Possible reactions and complications.
Anaesthesiology. - General anaesthesia. Narcosis systems. The intensive care unit.
The post operative treatments.
The resuscitation. - The CPR. - The latest pharmaceutical aspects of the CPR.
- Demonstration on AMBU unit.
Ward practices. (5x) - Investigate the surgical patients. The method of physical examinations. The evaluation of the findings.

Form of EXAM:
 a) Semester Closing Written Test (demonstration): for all students
 b) Oral exam (final result is calculated on the result of the test and the oral presentation)
SURGERY I-II.

II. Department of Surgery

The course leader is the director of the clinic: Dr. Gábor István
Study Responsible: Dr. György Ledniczky clinical chief physician
All educators in the clinic participate in the education.
ÁOK IV class block study

Surgery I.

Students will be introduced to the basics of general surgery.
The training builds on the curriculum and courses of the Department of Experimental Surgery.
Within the framework (35 contact lessons), we train the students in two-week turnovers.
The 35 lessons are divided by the timetable.

Eight lectures will be held in the field of general surgery.

1. The concept, types and indications of surgery. Legal issues, Surgery.
2. Types of wounds, principles of wound treatment
3. Surgical infections
4. Bleeding, haemostasis, thrombosis prophylaxis
5. Intraoperative and postoperative complications
6. Diagnosis and care of severe abdominal injuries
7. Basic principles of surgical oncology
8. Laparoscopic surgical technique, video presentation

In the course of the practicals we recommend and expect each student to hold a 20 minutes presentation on the following topics:

1. Surgical infections of the hand
2. Leg ulcer, diabetic foot, decubitus
3. Medical aids in surgical practice
4. Wrapping, modern dressings
5. Forms of soft tissue infection and their treatment
6. Intraoperative Diagnostics
7. Precancerosis, oncological screening
8. Risk factors, thrombosis prophylaxis

Recommended Practical Activities:

1. investigating an acute patient,
2. Investigating a surgical patient
3. wound treatment, dressings
4. participation in the work of the surgical ambulance
5. surgical assistance, visiting the OR
6. case reports
7. surgical administration
8. postoperative treatment, medication
In the framework of block education, because of its strict themes, we will be able to replace the absences in one of the next rounds. On an individual basis, we offer students an opportunity to participate in acute care. This is possible every Sundays and Mondays.
Participation in fire and safety training is mandatory at the beginning of education.
After the term of study, during the exam period, only students who are taught by our clinic are eligible to sit for an oral exam (colloquium).
The exam items are published on our website and in the Neptun system at the beginning of the study period.
The items will be compiled from the themes of lectures and presentations.
With regard to the new form of education, there will also be items missing from lectures and presentations. Students can prepare themselves from textbooks and from other sources.
The course leader is the director of the clinic, Dr. Gábor István
Study Responsible: Dr. György Ledniczky clinical chief physician
All educators in the clinic participate in the education.

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

Site of lectures: (előadások helye): lecture hall

PRACTICALS: all in wards

Form of EXAM: semi-final
Dear 5th Year Students,
The Traumatology Department will not require an occupational health examination certificate nor certification of Hepatitis B vaccination for you 5th year Traumatology practice. For 6th year students, the occupational health examination certificate is obligatory in order to begin your practice in Hungary.

Purpose of subject:
Traumatology as a specialty deals with the treatment of injured patients, independent of the injured organ, patient’s age or previous diseases. In developed countries, the 4-5th leading cause of death is injury, while in the actively working population, the rate of death is even higher. Morbidity in children and in the elderly is also high. For this reason, the understanding of anatomy, physics, general surgery, neurology, radiology, and the clinical subjects (ENT, ophthalmology, urology), as well as physiology are prerequisites for the foundation of this subject. Traumatology treatment for the most part deals with extremity surgery in correlation to orthopedics, however cranial, thoracic, abdominal, spinal and pelvic injuries as well as the treatment of polytraumatized patients also belong to the field of trauma care.

Lectures

Traumatology lectures are available on Semmelweis University’s E-learning portal (moodle)

1. „General Traumatology. Soft tissue injuries.
2. Thermal injuries. Wound management.”
3. Fracture management. Bone healing
4. „Immediate care and major accidents.
5. (Multiple injuries, shock, major disasters)”
6. Thoracic and abdominal trauma
8. „Pelvic injuries. Femoral fractures
9. (proximal femur and shaft)”
10. „Fractures of the tibia and fibula
11. Injuries of the ankle, talus, calcaneus and the foot ”
12. „Knee Injuries
13. Cartilage repair, ligament surgeries ”
14. Injuries of the upper extremity
15. Hand injuries
16. Pediatric trauma
17. „Management of open fractures.
18. Septic and non-septic complications in Traumatology. ”
19. „Endoprosthetic replacement possibilities in
20. Traumatology. Periprosthetic fractures and
21. complication”
### Traumatology block schedule for 5th year medical students

(weekly)

| Day 1. | Introduction to the Traumatology Department  
Polytrauma  
Bone healing, fracture management  
Practice: Trauma radiographs demonstration  
Practice at OPD – 4 students – 1 teacher (7 X 45’ classes + 2 X 15’ breaks) |
| --- | --- |
| Day 2. | Femoral fractures  
Arthroscopy, cartilage and ligament injuries of the knee, sport surgery  
Fractures of the knee  
Practice rotation: Suturing / Physical therapy  
Practice rotation: Suturing/Physical therapy  
Practice at OPD – 4 students – 1 teacher (7 X 45’ classes + 2 X 15’ breaks) |
| Day 3. | Injuries of the upper extremity  
Hand surgery  
Fractures of the tibia, ankle and the foot  
Practice: Wound dressing  
Practice at OPD – 4 students – 1 teacher (7 X 45’ classes + 2 X 15’ breaks) |
| Day 4. | Postoperative infections, septic complications  
Practice: Traumatology implants  
Paediatric trauma  
Practice rotation: Cast splinting / Ward/OPD  
Practice rotation: Cast splinting / Ward/OPD  
Practice at OPD – 4 students – 1 teacher (7 X 45’ classes + 2 X 15’ breaks) |
| Day 5. | Pract. rot.: Op / Septic compl. treatment  
Pract. rot.: Ward/OPD / Septic ward  
Pract. rot.: Ward/OPD / Septic ward  
Practice at OPD – 4 students – 1 teacher (7 X 45’ classes + 2 X 15’ breaks)  
During practice, students will have the opportunity to learn the following: physical examination of injured patients, bandaging, suturing, casting techniques, and the uses of ortheses and splints. Consultation of typical and the more frequent trauma cases, radiologic diagnostics, as well as videos in the operative theater are also part of the curriculum. During on duty shifts, students will have an opportunity to examine and participate in the trauma care of patients under supervision. |

### Attendance criteria and absences:

During the course of the block practices, a maximum of 25% absence is allowed, excluding the on duty shift, where attendance is mandatory. If the student is absent from 40% or more practices, he/she will not be allowed to take the exam, the subject will have to be repeated the following year. Absences between 25-40% must be repeated in the following manner: on-duty shift at the Traumatology Department. In this case, the student’s must previously coordinate their attendance for this on-duty shift 2 weeks in advance with the secretary.

### Verification of absences from lectures, practices or from the exam:

We can only accept hospital discharge papers for verification of more than 25% absences from practices or the absence from the exam, proving the student was continuously hospitalized during that time period.

### Mid-semester test and quiz topics, dates, absences and retaking of these tests:

There will be no tests or quizzes during the semester. During practices the lectures material will be discussed.

### Criteria for the signature at the end of the semester:

Students must open and read through all the lecture material available on Semmelweis University’s E-learning portal. Attendance of consultations and practices or repeating of unattended practices and the written exam result is required. We cannot verify the semester, or allow the student to take the midterm if the student did not attend at least 75% of practices during the semester.

Only those students will be allowed to take the exam, who have opened and read through the lecture material and have met the practice attendance minimal requirements.
Grading:
Written electronic exam (single answer and multiple choice test), on Semmelweis University’s E-learning portal (moodle)
(Several exam dates are available in Neptun)

Type of exam:
Written electronic exam (single answer and multiple choice test), on Semmelweis University’s E-learning portal (moodle)

Exam requirements:
The knowledge of the given textbook, electronic lecture and practice material.

Exam registration:
Neptun program

Modification of exam registration:
Neptun program

Absence from the exam: -

List of textbooks, notes, study-aids and references:
The Trauma Manual: TRAUMA AND ACUTE CARE SURGERY Third edition
Editors: Andrew B. Peitzman, Michael Rhodes, C. William Schwab, Donald M. Yealy, Timothy C. Fabian
Publisher: Wolters Kluwer / Lippincott Williams & Wilkins

Internet: The lecture material can be downloaded from Semmelweis University’s E-learning portal https://itc.semmelweis.hu/moodle/?lang=en
# OTORHINOLARYNGEOLOGY

**Tutor:** *Dr. Beáta Bencsik*

<table>
<thead>
<tr>
<th>Lecture (1 hour per week)</th>
<th>Practice (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute and chronic otitis media I. (etiology, diagnosis, pathology).</td>
<td>Diagnostical methods of the ear.</td>
</tr>
<tr>
<td>Acute and chronic otitis media II. (Complications and therapy)</td>
<td>Evaluation of different types of perforations of the tympanic membrane. Cadaver bone practice.</td>
</tr>
<tr>
<td>Physiology and lesions of the vestibular system.</td>
<td>Examination of the vestibular system. ENG, CCPG.</td>
</tr>
<tr>
<td>Neurological and ophthalmological aspects of ear diseases. Prevention and rehabilitation.</td>
<td>Evaluation of different otological cases.</td>
</tr>
<tr>
<td>Clinical anatomy, physiology and diseases of the pharynx.</td>
<td>Advanced examination of the pharynx. Directoscopy, fiberoscopy.</td>
</tr>
<tr>
<td>Dyspnoe and suffocation with upper airway origin. Conicotomy and tracheotomy.</td>
<td>Emergency management of suffocation.</td>
</tr>
</tbody>
</table>
ORAL SURGERY AND DENTISTRY

Tutor: Dr. Zsolt Németh

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

1. Oral diagnostic methods
2. Developmental disorders
3. (Cleft lip and palate, craniofacial developmental disorders. Dysgnathia)
4. Conservative dentistry and endodontics
5. Benign tumors
6. Praecancerous lesions and conditions
7. Anaesthesia – tooth extraction. Dentoalveolar surgery
8. Periodontology
9. Complex therapy of malignant tumors
10. Maxillofacial traumatology
11. Reconstructive surgery
12. Paediatric dentistry. Orthodontics
13. Dental rehabilitation. Prosthetic dentistry
14. Odontogenic inflammation

Note: The maximum number of absences from practices is 8 practice hours (45 minutes), from lectures is 4 hours (45 minutes) in a semester.

More than these absences invalidate the semester. Final examination.
DERMATOLOGY

Department of Dermatology-Venerology and Dermatooncology

Head of the Department: Dr. Miklós Sárdy
Tutor: Dr. Béla Tóth

Credits: 4

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

Objectives of the course:

The goal of the training:
   a. Knowledge of diagnostics, ethiopathogenesis and treatment of skin diseases concerning the competency of general practitioners.
   b. Problem-oriented assessment of skin symptoms and the knowledge of their connections to general medicine.

1,5 hours every week. Half of the fourth year students takes the subject in the first semester, the other half in the second semester. The curriculum contains the following topics: anatomy and functions of the skin, dermatoinfectology, oncodermatology, atopic dermatitis, ekzema, drug eruptions, bullous diseases, allergic skin diseases, autoimmune skin disorders, sexually transmitted diseases.

2,5 hours every week. Half of the fourth year students takes the subject in the first semester, the other half in the second semester. Students examine patients, master the description of skin symptoms, evaluation of symptoms and dermatological treatment options.
Fungal infections are discussed during a special practice.

Important notes:
All preclinical modules are required. Registration in the Neptun system is imperative at the beginning of the semester.

Attendance of the lectures and practices is compulsory. Three absences are accepted.
Lectures are compulsory. Each student should attend the practice of one particular teacher. Attendance of a practice at another teacher is accepted for the missed practices. The deputy teacher’s signature is required.

Semester requirement: One mid-term exam (written test) – around the 10th week of the semester. Optional: at the end of semester a competition for clinical examination (a written quiz with projected clinical cases) is announced. The best students are dispensed from taking the practical part of the semi-final examination.
Sign up in the Neptun system is imperative.

Evaluation: Practical part (clinical examination and discussion of one patient) and theoretical part with randomly selected three main topics compose the semi-final examination.

Exam: Semi-final examination.

Sign up and modifying exam: Via Neptun.

Absence from the exam: Only an official medical certificate is accepted within 3 working days.
PULMONOLOGY

Department of Pulmonology
Tömő str. 25-29., Budapest, Hungary 1083
http://semmelweis.hu/pulmonologia/english/

Course director: Prof. Dr. Veronika Muller
Course tutor: Dr. Gabor Horvath

Subject code: AOKPUL047_1A
Credits: 3
Hours: 42 hours/2-week course

Lectures (14 hours)
• Lung cancer
• Chronic obstructive pulmonary disease
• Pneumonia. Tuberculosis
• Respiratory insufficiency. Non-invasive mechanical ventilation
• Bronchial asthma
• Pulmonary rehabilitation. Smoking cessation
• Lung transplantation. Cystic fibrosis
• Pulmonary embolism
• Sleep related breathing disorders
• Chest surgery: lung cancer, pneumothorax, pleural effusion, lung transplantation

Practices (28 hours)
Practical demonstrations/laboratory visits:
• Lung function measurement laboratory techniques
• Pulmonary diagnostics
• Non-invasive ventilation methods
• Oxygen therapy methods
• Inhalation therapy methods
• Pulmonary hypertension

Interactive demonstrations/skill development:
• Bronchology/skill laboratory examinations
• Non-invasive ventilation patient care
• Allergology tests
• Sleep laboratory tools/methods
• Pulmonary rehabilitation procedures
• Chest drainage

General/specific patient examinations:
• Pulmonary dept.
• Pulmonary- oncology dept.
• Transplantation dept.
• Chest surgery dept.

Attendance: lectures and practices are compulsory. Absence hours less than 25% of total are accepted.
Exam type: oral
Exam sign up: Neptun system

Textbook:
ONCOLOGY – PLASTIC SURGERY

Lecture: 1 hour per week
Practice: 2 hours per week
Credit: 3
Examination: semi-final

ORTHOPEDICS

Tutor: Dr. Gergely Holnapy

Lectures
- Subject of Orthopedic Education. Organization.
- Orthopedic care in Hungary. Possibilities of prophylaxis.
- Inflammatory diseases in orthopaedics.
- Anatomy and biomechanics of the spine. Mai posture.
- Spondylolysis and spondylolisthesis. Lumbalization and Sacralization.
- Deformities and diseases of the neck and the upper extremity.
- Madelung deformity. Sudeck dystrophy of the upper extremity.
- Osteoarthritis of the hip. Etiology, pathology, clinical and radiological symptoms.
- Methods of conservative and operative Treatment.
- Diseases of the knee. Recurrent dislocation of the patella.
- Bone disorders. Osteoporosis, osteomalacia, osteogenesis imperfecta, Paget disease.
- Developmental anomalies. Congenital anomalies of the extremities.

Consultation.
Practices
- Instruction of correct behaviour in the Hospital and during practicals. Introduction to the Hospital. Therapeutic aims of Orthopedics. 
  Methods of the clinical practicals.
- Methodology of learning Orthopedics.
- Fixation, relief of weight bearing, plaster splints, plaster bandages. Examination of patients. Examination of the diseases and deformities of the spine, malposture (Calves deformity, spondylarthrosis).
- Preparation of plaster splints, bandages. Examination of patients with lumbago, ischias syndrome, spondylolysis, spondylolisthesis. Demonstration of Roentgenograms.
- Examination of scoliotic patients. Preparation of plaster and other corsets.
- Examination of patients. Tuberculous spondylitis. Demonstration of Roentgenograms.
- Preparation of plaster beds.
- Examination of patients with congenital dislocation of the hip. Early and late symptoms of this disease. Demonstration of Roentgenograms.
- Examination of patients with congenital dislocation of the hip. Demonstration of the means and methods of therapy and their application.
- Examination of patients with juvenile osteochondritis of the hip. Epiphyseolysis.
- Preparation of hip spica.
- Examination of patients with osteoarthritis of the hip. Examination of contractures of the hip. Demonstration of Roentgenograms.
- Examination of patients with recurrent dislocation of the patella. Osteoarthritis, tuberculous arthritis of the knee. Punction of the knee joint. Methods of fixation of this joint, preparation of plaster bandage.
- Examination of patients with diseases and deformations of the neck, upper extremity. Torticollis, cervicobrachial syndrome, periarthritis of the shoulder, tuberculosis of the shoulder joint. Demonstration of Roentgenograms. Application of the methods of hand and arm fixation.
- Examination of patients with congenital clubfoot and flatfoot. Therapy. Application of the methods of foot and lower leg fixation.
- Demonstration of the methods of gymnastics and physiotherapy.
- The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester.
- Exam: Practical exam at the time of last practice.
- Semester Closing exam registration has to be done through the NEPTUN system for the days set by the department up to the limits.
- Students have to fill -during semester- the trial test on Semmelweis University’s e-learning system. Modifying of exam dates through the NEPTUN system, as it allows.
- Semester Closing exam is a written test. The material for examination is based on the lectures.
- Test results of exam are available within one day.
MEDICAL IMAGING

Department of Radiology
www.semmelweis.hu/radiologia
Tutor: Dávid László Tárnoki MD, PhD associate professor

Course Director: Prof. Dr. Viktor Bérczi med. habil. PhD, department chair

Lectures (1 hour)
Practices (2 hours)
Credit: 3

Course topics (order of lectures could change)

Practices
Demonstration of imaging methods. Clinical radiology by interactive case reviews. Ultrasound practice (skill centre). Consultation. (Must-see-images: image collection on our website)

Useful and update information about the Institute and the subject can be found at home page: www.semmelweis.hu/radiologia.
LABORATORY MEDICINE

Department of Laboratory Medicine

Address
H-1089 Budapest, Nagyvárad sq 4. Floor XIV
Phone +36-1-210-0278 ext: 56318

Acting Directors
General: Prof. Barna VÁSÁRHELYI MD., PhD., DSc. (vasarhelyi.barna@med.semmelweis-univ.hu)
Education: Prof. Antal SZABÓ PhD., DSc. (szabo.antal@med.semmelweis-univ.hu)

Background
The Department of Laboratory Medicine was founded in 2010 with missions on the following areas:
Education. The main goal is the introduction of basic principles of Laboratory Medicine to graduate medical students. The Department also provides post-graduate education for health-care specialists including physicians and clinical biochemists.
Diagnostics. It coordinates laboratory tests at the majority of University and provides professional support for clinical decision making.
Research. The Department actively participates in research studies involving laboratory tests; it also manages research projects of its own. The Department manages its own PhD program.

Education
The Laboratory Medicine curriculum is based on knowledge acquired during studies of Pathophysiology and Clinical Laboratory Diagnostic obtained during the third year. The major goal is to present some approach and diagnostic algorithms that are required for efficient test ordering and evaluation of lab test results. As part of education the students obtain information regarding:
the procedure that generates laboratory test results (from test ordering to laboratory reports)
laboratory tests needed to establish a diagnosis
the major aspects that the medical doctors should take into account when they evaluate a laboratory report
novel techniques used in general laboratory (with their drawbacks and benefits).

Classroom lectures “Laboratory Medicine” for 4th year medical students

The participation in the tuition is obligatory.
The digital slides are available for the students via our website (www.labmed.usn.hu). The participation on lectures is highly recommended, since the exam is partly based on them.
The topics of the lectures include the elements of general and practical clinical laboratory.
The areas to be covered by the planned lectures:

1. Introduction in Laboratory Medicine (Specimen collection and processing. Preanalytical variables. To identify the major factors interfering with laboratory tests. Establishment and use of reference values/intervals.)
2. Concepts in Laboratory Medicine (Interpretation of laboratory test results: sensitivity and specificity of a laboratory test, predictive values. Quality control, quality assurance in clinical laboratories.)
3. Laboratory investigations of hematology diseases. (To understand the basic principles of modern hematology analyzers in clinical laboratories.)
4. Laboratory investigations of hemostatic disorders. (Identify the appropriate laboratory tests for evaluation of the bleeding patient and the thrombotic patient.)
5. Laboratory investigations of inflammation and tissue damage. (To understand how cell injury and inflammation can be tracked through plasma markers.)
6. Immunological investigations in laboratory medicine. (Learn the diagnostic tests required to the assessment of autoimmune disorders.)
7. Laboratory enzyme diagnostics
8. **Endocrine investigations in laboratory medicine** (Understand the laboratory tests used in the diagnosis of the more commonly encountered endocrine disorders.)

9. **Molecular genetics investigation in laboratory medicine**

10. **Therapeutic drug monitoring** (To learn when therapeutic drug monitoring is required and how it is performed for commonly monitored drugs. To identify the common drugs of abuse and learn how they are detected.)

11. **Laboratory investigations of tumor markers**

12. **Laboratory investigations of cerebrospinal fluid and ascites, pleural fluid**

13. **To learn the laboratory tests used near patients (Point of care testing)**

14. **To learn the rationale for selection of laboratory tests in pediatrics including neonatal screening programs.**

We provide consultation and laboratory visit during the semester.

**Exam**

The exam is a written test. The material for examination is based on the lectures. The questions are prepared by lectures.

The exam consists of 50 questions. The students have 60 minutes for writing test.

The test questions include simple choice (one correct answer out of 4 or 5 options).

Test results of exam are available within one day.

**Evaluation:**

- 0- 60%  =  1 (Failed)
- 61- 70%  =  2
- 71- 80%  =  3
- 81- 90%  =  4
- 91-100%  =  5

Exam dates: You will be notified about the dates offered by the Department before the exam period and they will be finalized at the Staff-Student meeting.

**Taking examination before the exam period is not allowed.**

The sign up procedure is controlled and regulated by the NEPTUN software and the Department cannot interfere with system. The officially signed up student will be scheduled for examination. The list of examinees is completed 2 days before the date of exam; then NEPTUN system automatically closes the sign up list.

**Diagnostic profile of the Department**

The Central Laboratory at Semmelweis University forms the basis of the Department. It performs more than 400 different tests in the field of clinical chemistry, hematology, hemostasis, serology, endocrinology, therapeutic drug level monitoring and clinical microbiology with an annual number over 3 million. The laboratory is classified as FJ-3 meaning that it provides a 24 hour service for 7 days a week. Laboratory reports are provided through GLIMS lab informatics system integrated to eMedSolution.

**Research at the Department**

Laboratory tests are performed in the majority of clinical studies and drug research. In order to use the results more efficiently the colleague who is directly involved in performing the lab tests also participates in study design and evaluation. Therefore, clinical laboratories at the University are active partners of researchers and medical doctors. The major research profile of the Institute is to characterize specific patterns of biomarkers predictive for specific disorders. Characteristic examples are the determination of immune phenotype and analysis of kinetic alteration of intracellular analytes with flow cytometry, measurement of cytokine levels with biochips, genomic analyses (genotyping and gene expression arrays). These instruments and the professional knowledge are also available for research purposes. Medical students are welcome to do research in any of the fields listed above.

**Useful and update information about the Institute and the subject of Laboratory Medicine can be found at home page: Semmelweis.hu/laboratorium**
OXYOLOGY

Dept. of Anesthesiology and Intensive Therapy
Division of Emergency Medicine and Oxyology
Tutor: Peter Vass MD, (Tel: +36 1 459-1500/62037, 62038, E-mail: seemgrad@gmail.com)

Compulsory subject: Emergency Medicine and Oxyology (EMO)-- program and topics

2 credits

<table>
<thead>
<tr>
<th>Lectures</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain syndromes. As long as it hurts you know that you are alive.</td>
<td>Headache, chest and abdominal pain, backpain. The basics of pain management.</td>
</tr>
<tr>
<td>Environmental accidents.</td>
<td>Electrocution, drowning, near-drowning, heat exhaustion, heat stroke, hypothermia. What to do on the scene and in the ED.</td>
</tr>
<tr>
<td>Group of symptoms in emergency</td>
<td>Dyspnoe, vertigo, syncope, nausea and vomiting, diarrhoea, weakness. Allergic reactions.</td>
</tr>
<tr>
<td>Prehospital emergency services as integral parts of emergency care.</td>
<td>First aid, primary emegency systems, levels of rescue, connection of ambulance with hospital care.</td>
</tr>
<tr>
<td>Perfuse it or lose it.</td>
<td>Things you’ve missed from pathophys but will surprise you in acute situations.</td>
</tr>
<tr>
<td>Emergency cardiac care. From the sliding door to the PCI.</td>
<td>Syncope, heart failure, ACS.</td>
</tr>
<tr>
<td>Acute neurological deficit. Time is brain.</td>
<td>Stroke, altered mental states, convulsions.</td>
</tr>
<tr>
<td>Paediatric emergencies. The same but downsized?</td>
<td>The most requent emergency situations in kids. Special view of paediatric emergency care.</td>
</tr>
<tr>
<td>The severely injured patient.</td>
<td>Trauma, burns, compartment syndromes.Integration, teamwork, damage control.</td>
</tr>
<tr>
<td>The future: Die Hard 6.</td>
<td>How to deal with bleeding patients?</td>
</tr>
<tr>
<td>Toxicology. Alle Ding sind Gift-any stuff is a poison. Two steps above earth.</td>
<td>Severe heat imbalance, the emergency aspects of sepsis.</td>
</tr>
<tr>
<td>Fever, infections, sepsis. „Blood poisoning” in the 20th century.</td>
<td></td>
</tr>
</tbody>
</table>

Types of practices in Emergency Medicine - Oxyology:

**OMV-OV-NOT-Compulsory: (2x45 min)** The basic rules of treatment of a critical ill patient during simulation. Basic airway skills during simulation. Oxygen therapy workshop. IV access or alternative ways in critical ill patient during simulation. **OMV-M-RF-1-NOT-Compulsory (2x45 Min):** Monitorising, basics of red flag treatment and team skills. Diagnostic and therapeutic approach of critical ill patient with basic technical and non technical skills. Basic monitorising technics in treatment of emergency patient during simulation. Presentation and practice during simulations of non-technical skills to make teamwork better. Team member non-technical skills presentation and practice during simulations.

**OMV-M-RF-2-NOT-Compulsory (2x45 Min):** Monitorising, basics of red flag treatment and team skills. Diagnostic and therapeutic approach of critical ill patient with basic technical and non technical skills. Basic monitorising technics in treatment of emergency patient during simulation. Presentation and practice during simulations of non-technical skills to make teamwork better. Team member non-technical skills presentation and practice during simulations.
PBL-SBAR-Compulsory: Problem Based Learning SBAR communication practice (2x45 min) Acquaintance and practice of SBAR-communication method in emergency situations. Communication with patient and relatives in critical situations and during end of life care procedure. Communication practice between dispatch and HCP on the scene.

PBL-Triage-Compulsory: Problem Based Learning – Priorisation practice (2x45 min) Basic technics to solve different problems, with prioritisation techniques and the usefulness of different early warning scores. How to organize and prioritize to maintain Patient safety.


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**CLINICAL PHARMACOLOGY**

Lecture: 0
Practice: 2,5 hours per week
Credit: 2
Examination: semi-final
FAMILY MEDICINE

Tutor: Péter Torzsa MD  
Tel: 355-8530,  
e-mail: torzsa.peter@med.semmelweis-univ.hu  

Lectures  
Exam: Test exam  

Credit value: 1 credit point  
Minimum/maximum group size: 55/210  

Key elements of these seminars include:  
– The structure and functioning of the Hungarian Primary Health Care System. Activity of the general practitioners.  
– The ranges of normality as they will assist in recognizing and anticipating deviations from normal and the earliest manifestations of disease  
– Quick diagnoses. Applying the best available evidence in investigations and and management of common family medicine conditions.  
– The different roles of the physician and awareness of their own personal strengths and weaknesses and how it affects the Patient-Doctor relationship.  
– The appropriate selection and use of screening methods for the early detection of disease. The principles of preventative care and methods to implement appropriate screening and patient education programs  
– Assessing patients’ illness experience within their family and social context  
– Learn to manage in-hospital urgent and emergency situations in primary care.  
– Management/treatment approaches of commonly presenting conditions  
– Rural medicine  
– Arrangement for the 1 week practice (rotation)

PHYSICAL EDUCATION VII.

Practice: 1 hour per week

ELECTIVE SUBJECTS

Detailed programs see in the 5th year Study Program of Medicine!
There is no image provided, but the text appears to be related to a syllabus or a list of tasks and responsibilities. The text includes a section titled "Practical syllabus of the famulation" with various tasks and responsibilities listed under different headings such as "General Surgery - 4 weeks (30 days without break)", "Practical syllabus of the famulation" with bullet points detailing specific tasks, and a section on "Compulsory Summer Practice" with details about the requirements and expectations for the practice period.

The text mentions the need for participation in various medical procedures and consultations, such as surgery, anesthesia, and patient care. It also includes references to specific medical techniques and procedures, such as injection, suturing, and monitoring of medical equipment. There is a mention of a "24 hour-on-call service once a week" and the importance of "continuous monitoring and recording of the patient's condition".

Additionally, there is a reference to "Proof of completion (Certification of completed famulus practice) must be submitted prior to registration to the next academic year" and "Students who do not submit the certificate of completion on time will have their registration placed on hold until the proof of completion is received by the English Secretariat." Certificates can be downloaded at http://www.semmelweis-english-program.org/index.php?option=com_content&task=view&id=79&Itemid=101.

The text also includes a note about "Please read more about the rules concerning the criteria of selecting the foreign clinical practice positions and accepting the practice period spent abroad: http://www.semmelweis-english-program.org".

Overall, the text appears to be a detailed guide for medical students or residents, outlining the expectations and responsibilities for a specific period of clinical practice.
CLINICAL MODULE
STUDY PROGRAMME

Fifth Year

4th and 5th Years (7th-10th semesters)

Teaching is done in “clean” blocks: Theory + Practice + Exam. (Practices are taught by “shadowing”)
The time span of each block depends on the credit value of the subjects: 1 to 5 weeks
For example: based on a subject of 2 credits:

- 2 credits × 14 lessons = 28 lessons (1 semester consists of 14 weeks. The number of credits are equal with the lessons in a week)
- Education is provided as 8 lessons in a day: 4 days x 8 lessons = 32 lessons
- the training and the exam must be completed in 2 weeks
- approx. 40 students will be trained by providing 4 days of training and 2 days of exams within 10 working days.

<table>
<thead>
<tr>
<th>Course</th>
<th>Lecture</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Number of lessons</th>
<th>Number of weeks</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine II. (Hematology, Infectology, Immunology, Rheumatology)</td>
<td>1</td>
<td>2</td>
<td>7.5</td>
<td>105</td>
<td>5</td>
<td>final</td>
<td>Internal Medicine I., Cardiology-Cardiac Surgery, Angiology-Vascular Surgery, Clinical Pharmacology, Medical Imaging, Neurology-Neurosurgery*, Forensic Medicine*</td>
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<tr>
<td>Forensic Medicine</td>
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<td>2.5</td>
<td>35</td>
<td>2</td>
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<tr>
<td>Obstetrics-Gynecology</td>
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<td>4</td>
<td>6</td>
<td>84</td>
<td>4</td>
<td>semi-final</td>
<td>Pathology II., Translational Medicine and Pathophysiology II., Surgery I-II.</td>
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<tr>
<td>Pediatrics</td>
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<td>8</td>
<td>112</td>
<td>5</td>
<td>semi-final</td>
<td>Pathology II., Clinical Pharmacology, Internal Medicine I., Cardiology-Cardiac Surgery, Angiology-Vascular Surgery</td>
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<tr>
<td>Urology</td>
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<td>3</td>
<td>42</td>
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<td>Surgery I-II., Medical Imaging</td>
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<tr>
<td>Anesthesiology and Intensive Therapy (ITO)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
<td>semi-final</td>
<td>Surgery I-II., Clinical Pharmacology, Internal Medicine I., Cardiology-Cardiac Surgery, Angiology-Vascular Surgery</td>
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</table>


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<thead>
<tr>
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<th>Examination</th>
<th>Prerequisite</th>
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<tbody>
<tr>
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<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
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<tr>
<td>Neurology-Neurosurgery</td>
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<td>4.5</td>
<td>6.5</td>
<td>91</td>
<td>4</td>
<td>semi-final</td>
<td>Microscopic Anatomy and Embryology II., Internal Medicine I., Cardiology-Cardiac Surgery, Angiology-Vascular Surgery, Surgery I-II.</td>
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<tr>
<td>Psychiatry, Psychotherapy</td>
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<td>4</td>
<td>7</td>
<td>98</td>
<td>4</td>
<td>semi-final</td>
<td>Medical Psychology, Clinical Pharmacology, Propaedeutics of Internal Medicine, Neurology-Neurosurgery*</td>
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<tr>
<td>Sports Medicine</td>
<td>–</td>
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<td>2</td>
<td>28</td>
<td>1</td>
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<tr>
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<td>Genetics and Genomics</td>
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<tr>
<td>Rehabilitation</td>
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<td>2</td>
<td>2</td>
<td>28</td>
<td>1</td>
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<td>Pathology II., Translational Medicine and Pathophysiology II., Medical Microbiology II.</td>
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<tr>
<td>Public Health</td>
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<td>70</td>
<td>3</td>
<td>semi-final</td>
<td>–</td>
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<td>Physical Education VIII.</td>
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<td>59</td>
<td>826</td>
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</table>

4 credit points from obligatory elective/elective subjects must be collected in each semester. See the detailed list of obligatory elective subjects and elective subjects after the 3rd and 5th year curriculum.

*The prerequisite is that registration has been done for the marked subject – corequisite - as well.
LIST OF TEXTBOOKS (The list may change!)

2. Lecture Notes of Forensic Medicine Ed. by Péter Sótonyi, Éva Keller, Semmelweis Publisher, 2008.
12. Lindsay, Bone, Callender: Neurology and Neurosurgery Illustrated. Churchill Livingstone

Recommended textbooks:

4. Silver, Kempe Bryn and Fulginiti’s Handbook of Pediatrics. Appleton and Lange. ISSN 0440-192
10. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
INTERNAL MEDICINE II. – Hematology, Infectolotgy, Immunology, Rheumatology

Lecture: 1 hour per week
Practice: 2 hours per week
Credit: 7.5
Examination: final

OBSTETRICS AND GYNECOLOGY

Dept. of Obstetrics and Gynecology
Tutor: Dr. Gyula Richárd Nagy

Lectures (2 hours/week) Practices (4 hours per week)

- Normal labor and delivery. Obstetrical examinations.
- Changes in maternal anatomy and physiology during pregnancy.
- Prenatal care. Symptoms and signs of pregnancy.
- Abnormalities of pregnancy.
- Abnormalities of labor and delivery.
- Monitoring of the fetus.
- Hypertensive disorders in pregnancy.
- Premature delivery. Intrauterine growth retardation (IUGR).
- Neonatology.
- Twin pregnancy. Operative delivery.
- Normal and abnormal puerperium.
- Major issues in current obstetrics.
- Gynecological endocrinology. Menstrual disorders.
- Inflammatory diseases in obstetrics and gynecology.
- Sterility, infertilty. Assisted reproduction.
- Cervical cancer.
- Cervical Cancer.
- Tumors of the ovary.
- Tumors of the vulva, vagina and corpus uteri.
- Principles of cancer therapy.
- Endometriosis. Polycistic ovary syndrome (PCOS).
- Genetic Counseling.
- Prenatal genetic diagnosis.
- Fetal anomalies. Dysmorphology.
- Perimenopause.
- Genital prolapse. Urogynecology.
- Vital statistics. Medical legal problems in obstetrics and gynecology.
- Occasionally the topics are interchangeable.
- Practical education will be in groups of ten students. They spend a week in the Department rotating between major divisions and special outpatient clinics. They will take part in the night duties twice during the week.
PEDiatrics

1st Dept. Tutor:  Dr. Dóra Krikovszky
2nd Dept. Tutor: Dr. Péter Hauser

LECTURES IN PEDiATRICS FOR 5th GRADE MEDiCAL STUDENTS

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

TOpIC

- The care of newborns and preterm babies.
- Fever of infants and children. Congenital malformations
  - Introduction to paediatrics. Newborn physiology
- Nutrition of infants. The care of the healthy baby
- Presenting symptoms. Methods of paediatric diagnosis Inborn errors of metabolism
- Diseases of the respiratory tract
- Renal diseases in childhood
- Psychomotor development of the child.
- Mental retardation
- Fluid and electrolyte disturbances.
  - Care of the child with diarrhea
- Malnutrition. Chronic malabsorption disorders
- SIDS
- Seizures during infancy and childhood.
- Status epilepticus
- Congenital heart diseases
- Disturbances of the lipid metabolism
- Collagen-vascular (autoimmune) diseases
- Leukemia. Haemophilia. Malignant tumors
- Diseases of the neuromuscular and skeletal systems
- Surgical diseases of childhood. Acute and recurrent abdominal pain
- Infectious diseases immunization
- Meningitis, encephalitis. Differential diagnosis of the headache
- Urinary malformations/infections. Urolithiasis.
- Hypertension
- Obstructive (wheezing) bronchitis. Bronchial asthma
- Immunology
- Endocrinology I.
- Genetic counselling. Screening programs
- Methods for clinical investigation of infants with perinatal brain damage
- Laboratory investigations in paediatrics
- Endocrinology II.

Location:  I. Department of Pediatrics, Budapest VIII, Bokay J. u. 53−54.
           II. Department of Pediatrics, Budapest IX, Tűzoltó u. 7-9.
Practice

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

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

Announcement of the 1st Department of Pediatrics – Regarding the exam for the 5th year English speaking students:
1. The first part is a practical exam at the patients bedside on the last day of your 2 week practice in the clinic. Paediatric patient examination.
2. The second part is a written exam at the end of the semester, based on our paediatric lectures. Your final mark is the mean of these two exams, with the written test exam having the bigger impact.

Note concerning the 6th year’s rotations: Only legibly, completely and accurately filled out, institutionally sealed, original acceptance letters are recognized by the I. Department of Pediatrics!
PSYCHIATRY, PSYCHOTHERAPY

Tutor: Dr. Attila Pulay

Lectures

- Introductory lecture: curriculum, objectives, exams
- Gene-environment interactions in psychiatry.
- Stress and psychiatric disorders
- Classification of mental disorders
- Organic mental disorders: diagnosis and treatment
- EEG and event related potentials in Psychiatry
- Substance abuse: diagnosis and treatment
- Alcohol abuse and dependence: diagnosis and treatment
- Consultation and liaison psychiatry
- Somatoform disorders, Somatization and Conversion disorders, Hypochondriasis
- Psychosomatic and Eating Disorders: diagnosis and treatment
- Schizophrenia and other psychotic disorders
- Personality Disorders
- Posttraumatic stress Disorder
- Sleep disorders: diagnosis and treatment
- Child and adolescent psychiatry (ADHD, autism, tick disorders)
- Suicide
- Affective disorders: diagnosis
- Affective disorders: treatment
- Geriatric psychiatry
- Pharmacotherapy in psychiatry
- Adult ADHD (symptoms, comorbidity, disease course, therapy)
- Psychotherapy I: Cognitive and behavioural therapy
- Psychotherapy II: Family therapy, autogenic training, hypnosis
- Community psychiatry, rehabilitation of psychiatric patients
- Anxiety disorders: diagnosis and treatment
- Emergency Psychiatry
- Legal and ethical issues in psychiatry

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

Practice

- The psychiatric examination
- Stress-related and somatoform disorders
- Eating disorders
- Mood (affective) disorders (incl. suicide)
- Organic mental disorders (incl. mental retardation)
- Schizophrenia, schizotypal and delusional disorders
- Personality disorders
- Alcohol/substance abuse and dependency
- Gerontopsychiatry
- Clinical psychology in psychiatry
- Emergency psychiatry/crisis intervention
- Cognitive and behaviour therapy
- Consultation /Questions and answers/; one/semester

The semi-final exam of Psychiatry I. is a written test of 50 items comprising three types of questions: i.e. multiple choice, true and false, questions related to psychiatric cases.
FORENSIC MEDICINE

Tutor: Dr. Zoltán Szőlősi

Lectures

- The forensic medicine and its connection with law
- The scene of death, suspicion of accident, suicide and homicide
- Hurts and injuries I.
- Hurts and injuries II.
- Sudden death
- The SIDS syndrome
- Traffic medicine I.
- Traffic medicine II.
- Toxicology I.
- Toxicology II.
- Alcohol, alcoholism
- Narcotics, narcomania
- Asphyxia
- Identification
- Test writing
- Forensic Pediatrics
- Forensic gynecology and obstetrics
- Forensic traumatology
- Forensic neurotraumatology
- Forensic points of internal medicine I.
- Forensic points of internal medicine II.
- Forensic psychology and psychiatry
- Environmental damages, occupational diseases
- Medical risk, diagnostic problems
- Genetics, serology
- Transplantation, euthanasia

Practice

- 50 per cent of the practical lessons will be interpreted in the autopsy room.
- Once a semester each student has to make a written test in the framework of the consultation lessons.
- 50 per cent of the practical lessons will be “consultative lessons”.
- The role of the medical expert in the legal procedures.
- Forensic autopsy and forensic autopsy report.
- Expert patient connection, general rules of forensic examination.
- Expert in front of the court (ethical, legal rules, the interpretation of the expert’s opinion, the controversial reports, expert witness).
- Legal points of medicine, patients’ rights.
- Examination of hurts and wounds, the first documentation.
- Special points of examining different wounds.
- Forensic examination of children and adolescents.
- Forensic obstetrical and gynecological examinations.
- Forensic psychological and psychiatric examinations.
- Social and medical insurance, the medical risk, malpractice.
- Paternity problems serological identification.
- Rules and ethics of human clinical experiments.
- Consultation (topic chosen by the students).
UROLOGY

Tutor: Dr. András Horváth

UROLOGY
Head of Department: Prof. Dr. Péter Nyirády
Tutor: Dr. András Horváth

Aim of education: Our aim is to teach our students for a basic knowledge in urology (the most important differential diagnostic steps, urological physical examination, imaging techniques, different treatment options) and also to educate them to perform the most important, minor urological procedures (like urethral and suprapubic catheterization).

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

Attendance
Lectures: 1 lecture weekly
Practice: 2 weeks course in rotation system at the Department of Urology.
During practices all parts of urology are covered and as many as possible physical examinations and procedures are shown.
Absence from practice: 20% absence is accepted, in case of more absence it has to be compensated by joining another group’s practices.
Exam: oral exam, topics are available at our website.
The mark depends on the practice score given by the tutor of the student and also on the oral exam result.
Absence from the exam: Only an official medical certificate is accepted.
Exam sign up: Through the Neptun system.
ANESTHESIOLOGY AND INTENSIVE THERAPY (ITO)

Tutor:  Dr. András Kállai
        Dr. Dóra Konczig

Lectures:

1. Introduction
   Cardiopulmonary resuscitation (CPR, BLS, ALS), the periarrest period and the Post Cardiac Arrest Syndrome (PCAS). Chain of survival. In-hospital BLS and ABCDE-approach. Managing ALS (defibrillation, 4H-4T, iv./io., drugs) and PCAS. Importance of non-technical skills (task management, team work, situation awareness, decision making, communication). Organizing CPR. CPR on CPR-Bas and CPR-Sim practices
3. Disorders of salt - water homeostasis. Disorders of electrolyte homeostasis, hypokalaemia and hyperkalaemia. Enteral and parenteral nutrition
5. Principles of ventilatory support. Postoperative respiratory failure. Weaning
6. Shock states: pathophysiology, classification, diagnosis and therapy
7. SIRS, sepsis and septic shock
11. Acute renal failure, acute kidney injury. Hepatic failure
14. Regional (spinal and epidural) anesthesia: anatomy, techniques, indications, practice and complications. Local anesthetics. Pain management

Lecture attendance:
Recommended. Attendance will not be taken.

Practices:

ICU bed side practices:
1. Introduction, ABCDE-approach (BEV)
2. Respiratory intensive care practice (RespInt)
3. Shock practice (Shock)
4. Anesthesiology practice (ANE)
5. Anesthesiology and intensive care of trauma patients (TraumIA)

Simulation practices:
1. CPR-Basic
2. ALS-Sim1 (CPR Simulation 1)
3. ALS-Sim2 (CPR Simulation 2)
4. HiFi-Sim (High Fidelity Simulation)
Attendance criteria and absences:
In order to complete Intensive Therapy and Anesthesiology you need to be present **on 7 out of 9 practises (CPR Basic, CPR Simulation 1 or 2, High Fidelity Simulation are compulsory!)**. Also you need to pass a practical exam in In-Hospital Basic Life Support (CPR) that is built in the one-week rotation.
Bed-side practices will be held at the Intensive Care Unit of the new building “Központi Betegellátó Épület” (Klinikák metro station, Bp. 1082 Úllői út 78., building section “B”, 4th Floor). TraumIA practices will be at the Trauma-ICU of OBSI (“Országos Baleseti Sebészeti Intézet”, 1081. Budapest, Fiumei út 17., 7th floor). Simulation practices will take place at Simulation Center (Nagyvárad tér metro station, Bp. IX. Ernő u. 7.) Practice schedule will be uploaded in Moodle.
Keep in mind that before the HiFi-sim and CPR-sim practices you need to pass a 5-minute “pre-practice test” in order to attend.
For bed-side practices we kindly ask you to wear a white coat and have a stethoscope on you. For changing clothes please use the wardrobe located under the escalator at the enterance of the 2nd Dept. of Gyne/Obs. (In the case of TraumIA practices our colleagues on the 7th floor of OBSI will give you coats for the practice.)
In case of a missed practice you have two options. You can find another group (on a different week) in Moodle with the same theme as the practice you have missed and join them (please note that the group limit is 7 students). Or at the end of the semester you can join the extra practices we will hold, but please note that the capacity of these practices will be limited to 7 person just like the ones during the semester.

Grading:
1. Written (multiple choice test)
2. Retaking of the written exam is also possible. Repeating of the examination can be taken in the form of oral exam.

**Type of exam:** written (multiple choice test)
**Make-up exam:** written or oral

**Exam requirements:**
The knowledge of the given textbook, lecture and practice material.

If there is anything we can help you with feel free to contact us via int.ane.edu@gmail.com.
OPHTHALMOLOGY

Dept. of Ophthalmology
Tutor: Dr. Miklós Resch

Lectures:

- Introduction. History of ophthalmology.
- Ophthalmology in medicine.
- Functions of the eye. Optics.
- The conjunctiva. Ocular surface diseases. The “red eye”.
- Diseases of the eyelids.
- The lacrimal system - function and diseases.
- The cornea – keratitis, degenerations, dystrophies.
- Keratoplasty. Refractive surgery.
- Diseases of the sclera.
- The cristalline lens. Aetiology of cataract.
- Management of infantile and adult cataract.
- The orbit. Signs and symptoms of orbital diseases. Thyroid ophthalmopathy.
- The conjunctiva. Ocular surface diseases. The “red eye”.
- Diseases of the eyelids.
- The lacrimal system - function and diseases.
- The cornea – keratitis, degenerations, dystrophies.
- Keratoplasty. Refractive surgery.
- Diseases of the sclera.
- The cristalline lens. Aetiology of cataract.
- Management of infantile and adult cataract.
- The orbit. Signs and symptoms of orbital diseases. Thyroid ophthalmopathy.
- Lacrimal gland diseases.
- The uvea and its diseases.
- Disturbances of ocular circulation.
- “Medical”, retina (vascular diseases, macular disorders) and “surgical” retina (retinal detachment).
- Ocular manifestations of systemic diseases. The vitreous and its disorders.
- Pediatric ophthalmology. Strabismus, amblyopia.
- Diseases of the optic nerve and optic pathways.
- Pupillary reactions.
- Tumours of the eye.
- Modern diagnostic and imaging techniques in ophthalmology.
- Trauma of the eye and adnexa.
- The role of the general practitioner in the management of eye diseases.
- Multiple choice questions. Diagnostics (slides).
- Demonstration material: slides, handouts, videotapes, case studies.

Practice:

- Anatomy of the eye and adnexa. Dissection of a pig’s eye.
- General notions on the examination of an eye patient.
- The normal ophthalmological status.
- Correction of visual refractive errors. Prescription of glasses. Javal-Schiötz ophthalmometer.
- Corneal topography. Contact lenses. Photorefractive keratectomy.
- Visual field, colour vision, examination of dark adaptation, critical flicker fusion frequency. Tonometry.
- External examination of the eye (diffuse light, focal illumination, slit lamp), exposing the palpebral fissure, eversion of the eyelids. Differential diagnosis of the red eye.
- Ophthalmoscopy I.
- Red reflex. Direct and indirect ophthalmoscopy. Examination of the pupil.
- Ophthalmoscopy II.
- Fluorescein angiography. Scanning laser ophthalmoscopy.
- Surgical management of cataract. Ultrasound biometry. Planning of the refractive power of IOL.
- One - day surgery.
- The glaucoma patient, screening and follow-up. Antiglaucomatous interventions.
- Surgery of the vitreous body.
- Ophthalmoscopy IV. Ward round, examination of patients.
- Electrophysiology of vision (ERG, EOG, VEP).
- Emergency in ophthalmology. (Sudden and progressive loss of vision)
- First aid in ophthalmology. Forms of patching, treatment of eye injuries.
- Ophthalmological tasks of the family’s physician. The most common eye complaints and disorders. Ward round, examination of patients.
- Consultation.
**NEUROLOGY – NEUROSURGERY**

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

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

**Responsible Secretary:** Andrea Kovács (Andi)

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

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

**Hours per week:** lecture 2, + block system practical 4,5
**Form of tuition:** lecture, bedside practice

**Lecture title**
- Basic principles of neurological diagnosis. The anamnesis. The connection between symptoms, localization and causes of neurological diseases.
- Patient examination I. Cranial Nerves (part 1).
- Patient examination III. Motor system (part 1)
- Patient examination IV. Motor system (part 2)
- Patient examination II. Cranial Nerves (part 2)
- Patient examination V. The sensory system
- The spinal cord. The peripheral nervous system.
- The brainstem. The thalamus
- The cerebellum
- Altered states of consciousness
- Organization of speech, language
- The temporal and the parietal lobe
- Control of behaviour. Memory and related structures
- Neuroradiology (CT, MRI, angiography)
- Classification and treatment of cerebrovascular disorders
- Tumors of the central nervous system
- Dementias
- Movement disorders
- Diagnosis and treatment of epilepsy
- Neurological Emergencies
- Neurosurgical aspects of Neurology
- Neuromuscular disorders. Myopathies. Neuropathies
- Motoneuron diseases.
- Multiple sclerosis
- Neurological consequences of craniospinal traumas
- Alcohol related nervous system disorders
- Headaches and neuralgias
- Inflammatory neurological disorders. AIDS.
Block Practice

- Signs of meningeal irritation.
- Examination of the I. and II. Cranial nerve. The visual fields.
- Examination of the III., IV., VI. Cranial nerves. The eye movements. Gaze disorders.
- The V cranial nerve. The facial nerve palsy. The nystagmus. Dizziness and vertigo. The vestibular system.
- Motor functions of cranial nerves. Bulbar, pseudobulbar and suprabulbar paresis.
- Assessment of the paresis. Examination of muscle tone and trophy.
- The mono- and polysynaptic reflexes. The pyramidal signs. The upper and lower motoneuron lesion.
- Examination of the sensory system. Examination of the spine and spinal cord. The vegetative functions.
- The coordination. The cerebellar functions (neo-, paleo-, and archicerebellum).
- The reticular activating system. Examination of speech and higher cerebral functions
- Examination of patients suffering from Cerebrovascular Disorders
- Movement Disorders, Hyperkinesias
- Hypnoid and non-hypnoid unconsciousness. Epilepsy
- Multiple Sclerosis, Neuropathies
- Dementias and cognitive functions

Neurology Examination Question List for 5th year Students

I. Neuroanatomical, physiological and biochemical basis of neurology

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

II. Basic Neurology

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

III. Neurological Disorders
1. Classification of ischaemic cerebrovascular disorders
2. Intracranial bleedings, subarachnoid hemorrhage
3. Symptomatology of Parkinson’s disease
4. Classification of headaches. Trigeminal neuralgia
5. Focal epilepsies
6. Generalized epilepsies
7. Meningitis. Examination of the CSF in inflammatory neurological diseases
8. Encephalitis
9. Diagnosis of polyneuropathies
10. Emergency in neurology
11. Traumatic CNS diseases
12. Diagnosis of dementia
13. Multiple sclerosis: signs and diagnosis
14. Intracranial tumors
15. Spinal tumors
16. Disorders of the nervous system due to alcoholism
17. Myasthenia gravis
18. Guillain-Barre syndrome
19. Encephalopathies
20. The motor neuron diseases
21. Muscular dystrophies
<table>
<thead>
<tr>
<th>Course</th>
<th>Lecture</th>
<th>Practice</th>
<th>Credit</th>
<th>Examination</th>
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<tr>
<td>Sports Medicine</td>
<td>0</td>
<td>2 hours per week</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Clinical Genetics</td>
<td>0</td>
<td>1.2 hours per week</td>
<td>1.5</td>
<td>semi-final</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>0</td>
<td>2 hours per week</td>
<td>2</td>
<td>semi-final</td>
</tr>
</tbody>
</table>
PUBLIC HEALTH AND PREVENTIVE MEDICINE

Institute: Department of Public Health
Location: NET building, 1089 Budapest, Nagyvárad tér 4., 13th, 14th, 19th and 21st floors.
NET 13th floor, room 1314
Phone: 061 210-2930, extension 56313
E-mail: terand@net.sote.hu

Course lecturer: Prof. Dr. Károly Cseh
Course tutor: Dr. András Terebessy

Lectures:
- Introduction, history of public health
- Concepts and levels of prevention.
- Health determinants. Health status of the Hungarian population.
- Epidemiology of smoking and related diseases
- Epidemiology of alcohol and illegal drug consumption
- Epidemiology of cardiovascular diseases
- Epidemiology of cancer
- Basics of health policy, public health programs.
- The structure and financing of healthcare.
- Quality assurance in healthcare.
- Basic concepts of health promotion
- Mother-, infant and youth health.
- Public health aspects of handicapped people. Gerohygiene
- Mental hygiene, suicide
- General epidemiology of communicable diseases: Epidemics and the primary and secondary factors of the epidemic process
- Environmental medicine: ecological basics, air pollution, smog
- Environmental medicine: water, the water cycle of Earth, water supply, water mangement
- Environmental medicine: Ionizing radiation, types, effects and limits
- Environmental medicine: Chemical safety, basics of toxicology, risk assessment
- Environmental medicine: Housing and settlement hygiene
- Occupational medicine: The basics of occupational medicine, occupational diseases, exposition
- Occupational medicine: Physical agents
- Occupational medicine: Chemical agents
- Occupational medicine: Ergonomics. Stress at the workplace.
- Nutrition: Evaluating the nutritional status
- Nutrition: Diet-related diseases
- Nutrition: Food safety

Seminars:
- Basics of demography, standardization
- Epidemiology I: Basic concepts, basic measures. Overview of statistical knowledge
- Epidemiology II: Risk and cause. Epidemiological analysis
- Epidemiology IV: Midterm. Critical reading
- Smoking prevention and cessation programs.
- Alcohol and illegal drug prevention programs
- Prevention of cardiovascular diseases and cancer. Screening methods.
- Evaluation of public health programs
- Health care planning, quality assurance.
- Different levels of health promotion. Health plan.
- Mother and youth hygiene.
- Field trip
- Consultation
- Communicable diseases I.: Basic concepts of communicable diseases. Classification of communicable diseases, international statistics
- Communicable diseases II.: Vaccination, Sterilization, disinfection
- Communicable diseases III.: Airborne and enteral diseases
- Communicable diseases IV.: Haematogenic-lymphogenic and animal derived diseases
- Communicable diseases V.: STD
- Basic concepts of toxicology
- Toxicology of certain chemicals.
- Impact of environmental factors on health
- Occupational diseases III.: Physical and chemical occupational agents.
- Nutrition I.: Assessment of nutritional status, nutritional fact charts
- Nutrition II.: Diet planning. Food intoxication / infection.
- Field trip
ELECTIVE SUBJECTS

(basic/pre-clinical/clinical modules) – curricula
It is compulsory to choose one subject each semester.

ANTIBIOTIC THERAPY AND INFECTOLOGY

Held in both semesters.
Lectures: 2 hours/week
Credits: 2
Exam type: multiple choice test
Participation: min. 70% is obligatory

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

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

Textbooks:
4. Material of the lectures online availability
Lectures:

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

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

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

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry

Lecturer: Prof. Dr. Gábor Bánhegyi

Lectures: compulsory
Credit: 1

Topics:
1: Basics of atomic and molecular structure, periodic table, bondings.
5: Consultation: preparation for the 1st midterm. Focused on calculations: ionization, pH, buffer, solubility product.
7: Electrochemistry. Oxidation and reduction, redox systems in the living cells.
9: Calculations in electrochemistry and thermochemistry.
12: The most important groups of organic compounds. Aliphatic and aromatic skeletons, their reactions. Repetitions of their structures.
Consultation before the 2nd midterm – focused on organic chemistry.
13: The most important groups of organic compounds according their functional groups, their reactions. Repetitions of their structures.
14: Closing test. 30 multiple choice questions and 10 structures

Exam: closing test. 30 multiple choice questions and 10 structures

Note: Material of the lectures is available on the website of the Department.
Max. 3 absences are allowed.
VALUE OF ULTRASONOGRAPHY IN THE CLINICAL DIAGNOSTICS

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

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

INTRODUCTORY LECTURES OF TRADITIONAL CHINESE MEDICINE

The topics:
1. Chinese way of thinking about medicine – Introductory lecture
2. Basic principles in Chinese anatomy and physiology (Yin-yang, Chi, meridian, points, cun, etc.)
   – 1 lecture
3. The twelve meridians and their points (locations and indications) – 6 lectures
4. The rules of the point selections – 2 lectures
5. The five-element theory, future trends in research and in the clinical use – 1 lecture
LIBRARY INFORMATICS - AOVKPK088_1A

Lecturer: Dr. Lívia Vasas PhD. – Central Library
Institute: Semmelweis University Central Library, 1088 Budapest
Duration: One semester, 30×45 minutes (10×3 lessons)

SUGGESTED SEMESTER 5-10.

<table>
<thead>
<tr>
<th>Exam-form</th>
<th>Practical mark</th>
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<tr>
<td>Credit-value</td>
<td>3 credit-points</td>
</tr>
<tr>
<td>Minimum/maximum group-size</td>
<td>8/200</td>
</tr>
</tbody>
</table>

The aim of the subject: Teaching students how to use/search in literature sources of medicine, analyse the result of their work supporting the proper competencies.

Thematic: Medical e-catalogues, e-books, e-libraries, databases, scientific resources of internet

Assistant lecturer: Anna Berhidi, Edit Csajbók, Skultéti Attila, Szluka Péter

Student records officer:

Application deadline: September 4 -8, 2019

Precondition: There isn’t.

1. Introduction, technical details, VPN access, technical details, about the history of the Central Library’s Homepage: www.lib.semmelweis.hu and its facilities, UpToDate, ClinicalKey, HS talks: Biomedical & Lifesciences Collections, EBSCOhost, ProQuest, Pharmacopoeia, Turnitin Dissertations: Dart Europe, Open dissertations, OATD

2. Catalogs: books, online books
   Semmelweis University catalog Hunteka: http://hunteka.lib.semmelweis.hu/search
   Online book catalog: https://lib.semmelweis.hu/nav/ekonyvek
   National Library of Medicine (Bethesda, USA)
   Worldcat: https://www.worldcat.org/
   Copac: https://copac.jisc.ac.uk/

3. Scientific publishers and periodicals:
   printed/electronic/open access
   - Browser and matching searching, archive and the newest editions Characterization of periodicals/reviews/journals, ISSN, DOI, Crossmark, Article metrics - Online attention
   - Publishers: Springer, LWW, Wiley, video journal: JOVE
   - Nature: https://www.nature.com/%0A
   - BMC https://www.biomedcentral.com/
   - PLOS https://www.plos.org/, DOAJ https://doaj.org/, etc.

4. New routes: Open Science, Open Access
   The dangers of publishing on Open Access https://lib.semmelweis.hu/nav/open_access_general_information
   Support for Open Access Communication at Semmelweis University https://lib.semmelweis.hu/nav/open_access_tamogatas
   The Semmelweis repository https://repo.lib.semmelweis.hu/
   The concept of plagiarism, its forms of appearance, Plagiarism Search: Turnitin, Copyright questions
5. **NLM databases**: history, OpenI: https://openi.nlm.nih.gov/
   value added services: registration, advances search.
   MeSH, PMC, etc.
   Dictionary: https://www.merriam-webster.com/

6. OVID databases, online books, electronic periodicals, Evidence Based Medicine databases: the role of the EBM in research, full text journals in Ovid databases MEDLINE, PsycINFO, subject heading systems, value-added services, access to the full text version, WHO https://www.who.int/

7. Bibliographic and citation databases, search engine: Web of Science platform, Google Scholar; citations, general searching in the databases, bibliographic and citation searching on keywords, using Boolean operators, value-added services
   Scientometrics: quality of journals: Clarivate Analytics InCites JCR (Science Edition and Social Science Edition), IF: calculating Impact factor; SCImago: SJR

8. **Reference Manager**: EndNote, EndNote Online; the role of reference softwares in modern publishing, Literature searching: Importing and exporting records (from Web of Science, OVID Medline, PubMed) creating own records search facilities within our records and from PubMed; data handling: creating groups, filtering duplicates
   Semmelweis Knowledgebase, Scientific Discovery of the Internet: find medical information you can trust, Building search strategies, Google Scholar, Medworm

9. **Summary of the course, Test writing**

10. **Consultation, Retake the 1st/2nd test OR Renewal opportunity for each tests**
INTRODUCTION TO CLINICAL ANATOMY

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

Course Director: Prof. Dr. Tibor Wenger

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

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

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

1st Dept. of Obstetrics and Gynecology

First Semester

The fundamentals of classical genetics
Polygenic inheritance, multifactorial determination
General cytogenetics
Basic principles of embryology and teratology
Clinical molecular genetics
Amniotic fluid cell culture for cytogenetic analysis
Alphafetoprotein (AFP)
Genetic amniocentesis
Pathology of multiple pregnancy
Genetic counseling
General aspects of decision making regarding the fate of pregnancy
Elements of phenotype analysis
Embryopathology and fetal pathology
Sphingolipidoses
Mucopolysacharidoses and mucolipidoses
Disorders of carbohydrate metabolism
Diseases of amino acid metabolism
Haemophilia and other bleeding disorders. Congenital immunodeficiencies. Congenital hypothyroidism. Cystic fibrosis
Hereditary muscular and neurological diseases
Congenital disturbances of ossification
Neural tube defects (NTDs). Hydrocephalus. Other craniospinal malformations
Thoracic and abdominal malformations
Cystic kidney disease. Obstructive uropathies
Down syndrome. Further autosomal trisomies
Duplication and deficiency (deletion) syndromes
Fragile X mental retardation syndrome (Martin-Bell syndrome)
Disturbances of sex differentiation.
Intrauterine bacterial infections. Congenital rubella syndrome. Further viral and chlamydial infections. Congenital toxoplasmosis
Prenatal screening for fetal malformations and trisomies
ANESTHESIOLOGY AND INTENSIVE THERAPY

Dept. of Anesthesiology and Intensive Therapy

First Semester

Lectures

1. Central venous access and other invasive procedures: indications, performance and pitfalls
2. Advanced cardiac and hemodynamic monitoring. Swan-Ganz catheter, PiCCO, measured and calculated parameters, relevancies (45’)
   Advanced antiarrhythmic therapy: decision between electric and pharmacological treatment (45’)
3. Polytrauma, head trauma, chest trauma
4. Ultrasound: stethoscope of the 21st century (45’)
   Ultrasound in regional anesthesia (45’)
5. Acute pancreatitis (45’)
   The confused patient: principles of management (45’)
6. Pathophysiology of thermoregulation: malignant hyperthermia, NMS, hyper- and hypothermia syndromes, fever in the ICU (45’)
   Anesthesia for one-day-surgery (45’)
7. Principles of antibiotic therapy in the ICU (45’)
8. Principles of antibiotic therapy in the ICU (45’)
9. Difficult airway management (45’)
   Special respiratory therapy: high frequency and jet ventilation (45’)
10. Organ transplantation. End stage organ failure, long term mechanical support, organ transplantation, donor management
11. (Respiratory) Physiotherapy in the ICU
12. CRM: aviation safety and human factors in healthcare
13. Obstetrical intensive therapy: toxaemia, HELLP, Mendelson’s syndrome, pulmonary embolisation, amniotic fluid embolisation (35’)
   Pediatric anesthesia (35’)
   MCQ test (compulsory!) (20’)

Topics may change depending on lecturers’ availability.
**NEONATOLOGY**

Course Director: *Prof. Dr. Istvan Seri*

**Second Semester**

- Physiology of the Fetus and Newborn. Transition to Extrauterin Life.
- Maternal and Fetal Problems in Neonatology. Prenatal Care.
- Respiratory Disorders of Newborns.
- Ventilation of the Neonate.
- Cardiac Diseases of Newborns.
- Surgical Diseases of Newborns.
- Metabolic Problems of Newborns.
- Parhophysiology of Body Fluids. Fluid and Electrolyte Management.
- Neonatal Neurology.
- Infections of the Newborns. Prevention and Treatment.
- Neonatal Radiology.
- Follow up of High-risk Newborns.

**CLINICAL ENDOCRINOLOGY**

2nd Department of Internal Medicine

**Second Semester**

*Lectures*

- Introduction to clinical endocrinology. Case Presentations.
- Use of hormone measurements in the diagnosis of endocrine diseases.
- Molecular genetics of endocrine diseases.
- Radiological imaging methods of endocrine organs.
- New developments in surgical treatment of endocrine tumors.
- Case presentations: pituitary gland disorders.
- Case presentations: adrenal gland disorders.
- Case presentations: thyroid gland disorders.
- Case presentations: parathyroid gland disorders.
- Sex determination and its disorders.
- Hormone-replacement therapy
- Inherited disorders presenting with endocrine tumors.
- Osteoporosis.
- Endocrine hypertension.
EMERGENCY IN SURGERY

Course Director: Prof. Dr. Pál Ondrejka

Second Semester

Purpose of the subject: In the practice of surgery is very important the early detection of emergency cases. For this reason the collaboration with the representatives of other medical professions is indispensable. The goal of our lectures is to present the appropriate procedures of physical examination, laboratory and radiological findings in order to recognize the correct diagnosis; to know what is necessary, what is possible and what is enough to do in a case of surgical emergency; when to ask for a consultation for adequate therapy.

The inborn errors, injuries, inflammations and tumors of the organs are also presented. In order to make the lectures more interesting we are going to review the relevant episodes in history of medicine and final arts.

Main topics:

- Gastric, duodenal, small bowel emergencies.
- Peritonitis acuta.
- Abdominal trauma.
- Surgery of the wound, infections, anaerob infections in surgery (MRSA, Furnier, tetanus, anaerob).
- Small bowel obstruction, large bowel obstruction.
- Esophageal emergencies.
- Biliary emergencies.
- Complications of peptic ulcer.
- Gastrointestinal bleeding.
- Pancreatitis acuta.
- Pancreatitis chronica.
- Appendicitis, diverticulitis, sigmoiditis, typhlitis.
- Surgical infections.

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

2. országgyűlési orvostudományi klinika

Főtanácsadó: Prof. Dr. Tamás Masszi

 Második Felélet

A hematológia területén a kutatási állam az egyes hematólogiai és hemato-onkológiai betegségek állapota

2 órás per hétközép

Fő témák:
2. Anémiai kategória, diagnózis.
3. Myelodisplásia szindróma.
4. Súlyos és kezelhető acélleukémiai.
5. Fiatalon kezdődő acélleukémiai.
7. Lymphomok II. kategória.
8. Hemoragikus diathézisok diagnózis és kezelése.
   Vénusz trombózis előbejárata és kezelése.
9. Gastroenterológiai komplikációk a hematólogiai betegségekben.
10. Dermatológiai jelenségek a hematólogiai betegségekben.
11. Immuncytopeniai.
HISTORY OF MEDICINE

Institute of Public Health

Lecturer: Dr. Judit Forrai

The history of medical science, considered as a part of the general history of civilization. The study of the history of medicine helps us to describe and understand how people in different times and cultures experienced and dealt with these fundamentals of human existence. This knowledge can inform debate about the present and the future, and help to bring medicine and science to a wide audience. All human societies have medical beliefs that provide explanations for birth, death, and disease. Many cultures in ancient times treated illnesses with magic and herbal remedies. Ancient Egyptians thought that their gods healed them. The ancient Greeks pursued medicine as a science. Hippocrates, the most famous physician of the time (c. 400 B.C.), believed that diseases had natural causes, not supernatural ones. By the Middle Ages, Europe was hit with a terrible epidemic that killed millions of people called the plague, or Black Death. The Renaissance marked a new period of interest in art and science throughout Europe. Despite new medical discoveries, many doctors still practiced old ways. Most sick people could not afford to see a trained physician. Instead, they consulted midwives who assisted with childbirths and made herbal remedies to treat illnesses. Minor surgeries were not done in the hospital but at the local barbershop. Medical research and training improved in the 18th century but there were still no cures for diseases like smallpox, a disease that killed millions of people over thousands of years. Middle Eastern doctors gave people mild doses of the smallpox to combat the disease. The portrayal of the history of medicine becomes more difficult in the 19th century. Discoveries multiply, and the number of eminent doctors is so great that the history is apt to become a series of biographies. Nevertheless, it is possible to discern the leading trends in modern medical thought. In the beginning of the 20th century the research and technology have expanded medical knowledge and improved medical practices like surgery. Today, doctors are able to perform less invasive surgical procedures. The science of medicine has progressed dramatically in just the last 50 years. Career opportunities in health care have also expanded. There is a need for more skilled medical professionals, not only in hospitals, but in dentist and doctors’ offices, research labs, rehabilitation centres, mental health clinics, nursing homes and even schools.

Topics/week


13. Consultation

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

**Exam requirement:** written test

**Textbook:**
CLINICAL CARDIOVASCULAR PHYSIOLOGY

AOVKIK102_1A

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

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

Program:
1. Investigation of blood pressure regulation by use of transgenic technologies
2. Complement-related immunological and cardiopulmonary responses (CARPA). Modern methods for measuring and monitoring arterial blood pressure
3. Hemodynamic background of normal and pathological cardiovascular functions
4. Pathophysiology of chronic venous insufficiency
5. Physiological mechanisms supporting venous return of blood; orthostatic tolerance
6. Recent results in control of cerebral blood supply, physiological and clinical aspects
7. Clinical physiology of the microcirculation
8. Interventional radiological procedures on arteries and veins
9. Age related changes in the vascular system, role of sexual hormones
10. Role of endothelial mechanisms in clinical symptoms
12. Biomechanical properties of cerebral aneurisms, their computer modeling
13. Visit to the MRI cardiovascular diagnostic unit of the Semmelweis University Heart Center
14. Ultrasonic investigation of the human heart: theoretical background; 2D-, M-, Doppler-mode, color Doppler imaging, echocardiography; diagnostics of valve insufficiency and coronary diseases. Duplex ultrasonic investigation of large vessel function: measurement of vessel wall elasticity, Doppler-indexes

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

AOSKIK151_1A

Elective course for medical students in the 3-6th years
Course director: Dr. Habil. László Dézsi, Private Professor of Physiology, Semmelweis University

The purpose of the course: To review the theory and practice of modern measuring methods in experimental and clinical medicine, and providing practical knowledge to medical students on cardiorespiratory and neurophysiological measurements. The course is based on but further extends the material delivered during the course of Medical physiology. Throughout the lectures we put an emphasis on potential methodological errors of measurements and examinations, as well as how to avoid them.

Detailed Program:
1. Introduction. Biomedical engineering. Design and safety requirements of biomedical equipments
2. Computerized data acquisition and analysis. Telemetry systems
3. General metrology. Basics of measurement and control theory
4. Home monitoring of cardiovascular health status. Determination of blood glucose and tissue glucose concentrations
5. Sampling of continuous signals. Digitizing analogue signals
6. Direct and indirect methods to determine cardiac output and peripheral blood flow
8. Significance of objective studies in the practice of audiology. Neurophysiological measurements (action potentials, brain stem evoked potentials)
10. Measuring blood pressure in the lab and clinics (invasive and noninvasive methods)
11. Complement-related immunological and cardiopulmonary responses
12. Studying brain function by functional imaging systems
13. Experimental methods to study nociception
14. Investigating the electrical activity of the heart. Design of ECG amplifiers

Acknowledgement of the course: Prerequisite of the course is the completion of the first 2 years (Theoretical module). Regular attendance (maximum 3 absences) is required. Signature in the Index and 2 credit points will be awarded after successful exam. Source: material of the lectures, supplementary literature will be provided by the lecturers.

Applications: via Neptun system. Contact person: Dr. László Dézsi (e-mail: dezsi.laszlo@richter.hu; phone: 06-1-431-4823; phone/fax: 06-72-536-019). The application of min. 5 students is required.
**CLINICAL PHYSIOLOGY OF RESPIRATION AND RESPIRATORY DISEASES**

**AOVKIK099_1A**

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

The aims of the course are to strengthen knowledge on basic physiological principles related to respiration, summarize the most important aspects of cardiorespiratory adaptation in sport activities and also its changes in respiratory diseases and to provide integrated information about the physiological and pathophysiological background of the most important respiratory disorders in light of results from cutting edge research.

**Program:**

1. Physiological function of the respiratory system
2. Smoking, e-cigs, supporting cessation
3. Lung development
4. Inhalation therapy
5. Sleep related respiratory disorders.
6. COPD and COPD exacerbation
7. The lung in systemic diseases
8. Cystic fibrosis
9. Pulmonary circulation
10. Bronchoscopy
11. Cardiovascular exercise testing, COPD
12. Asthma bronchiale
13. Non-invasive ventilation
14. Chest imaging

*Acknowledgement of the course:* regular attendance (maximum 3 absences) is required; signature in the Index, and 2 credit points will be provided.
MEDICINAL, EPIDEMIOLOGICAL, AND SOCIAL ASPECTS
OF DRUG ABUSE

Department of Pharmacology and Pharmacotherapy

Course director: Prof. Dr. Susanna Fürst

Second semester

Credit: 2

Topics:


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


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


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


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

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


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

Absence justification: Medical certificate is accepted

There is no midterm

Requirement: Participation at the lectures

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

Exam: written test

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

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

Exam absence justification: Medical certificate is accepted
BASICS OF FAMILY MEDICINE

Department of Family Medicine

Director: Prof. Dr. László Kalabay
Location: Kútvölgyi Hospital, first floor, library

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

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

Emergency care in family practice
Dr. Szabó János

Cardiology and prevention in family practice
Dr. Simon Judit

Diabetes mellitus in family practice
Optimal treatment of diabetes mellitus
Dr. Dani Vilmos

Prevention program in family practice
Optimal treatment of hypertension
Dr. Torzsa Péter

Primary care in cities
Dr. Torzsa Péter

Primary care in the countryside
Dr. Szabó János

Care of gipsy patients
Dr. Horváth Péter

Medical ethics and law
Dr. Vajer Péter

Continuing home care
Rehabilitation
Terminal illnesses
Summary
Prof. Dr. László Kalabay
Dr. Péter Torzsa
HISTORY OF THE MEDICAL PROFESSIONALISM

Lecturer: Dr. Péter Balázs

Class Sessions: Medical professionalism as an ethical norm is an ancient behavioural pattern and theoretical construction alike based on sacral calling. Consequently, roots of the modern professional mythology may be traced back to the late Neolithic age, but the whole framework was systematized as soon as in the old Egyptian and Mesopotamian culture. Since the Hippocratic age, the medicine of craftsmen was based on teachings of natural sciences and the Middle Age supported the medicine with mythology of sciences, but only the Enlightenment provided the social environment for a de-sacralized professionalism, nevertheless it followed exactly the ancient religious patterns.

General part of the topic is concerning the onset of professionalism while discussing different manifestations and transitions related to ideologies, socio-economic circumstances and scientific teachings from the Neolithic age down to the latest market economies. Specific part demonstrates milestones and historic ages, which were decisive in this proceeding: Old Egypt, Mesopotamia, old age Judaism, early and consolidated Christianity, impact of Islam on Europe, Reformation of the Roman Catholic church, Enlightenment, the Communist ideology and the social market economy.

Attendance at lectures, options for additional lectures:
Basic requirement: attendance at 8 sessions. In case of justified non-attendance of more students at a specific session, additional lecture is available.

Justification for non-attendance at lectures
Up to 2 sessions no need for justification, in case of more than 3 sessions missed no confirming of the course.

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

Control of knowledge acquired within the time-frame of sessions
No control during the session period

Requirements for confirming the session attendance
Having attended less than 8 sessions no confirming of the course. Additional sessions, if organized, are parts of the 10 session contingent.

Preliminary and final marks
Type of marks: five degree evaluation (1-5). Preliminary mark on the written work, which becomes a final mark automatically except additional questions answered (see below).

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

Entering for examination
Student Administration System (NEPTUN)

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

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

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

**Institute of Digital Health Sciences**

**Credit:** 2  
**Lecture:** 2 hours/week

<table>
<thead>
<tr>
<th>Themes</th>
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<tbody>
<tr>
<td>1.</td>
<td>Classification and Coding Systems</td>
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<td>2.</td>
<td>ICD-10 Coding System</td>
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<td>3.</td>
<td>Electronic patient’s Record</td>
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<td>4.</td>
<td>Electronic patient’s Record</td>
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<td>5.</td>
<td>DRG System</td>
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<td>Hospital Information Systems</td>
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<td>7.</td>
<td>WEB 2.0</td>
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<td>8.</td>
<td>WEB 2.0 Solutions in Health Care</td>
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<td>9.</td>
<td>Introduction to Health Databases</td>
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<td>10.</td>
<td>Oncology Database</td>
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<td>11.</td>
<td>Evaluation of Country data. Presentation</td>
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<td>12.</td>
<td>Evaluation of Aggregated data</td>
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<tr>
<td>13.</td>
<td>Principles of Documentation Making</td>
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<tr>
<td>14.</td>
<td>Documentation of Breast cancer: case study</td>
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</tbody>
</table>

Self work: Stomach Cancer Documentation (data collection, evaluating, presentation, documentation) Deadline: half semester. Sending: via Internet
JEWISH MEDICAL ETHICS I - II.

Institute of Behavioral Sciences

Course Director: Rabbi Baruch Oberlander

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

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

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

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

Obligatory: Handouts given during lectures


Fred Rosner: Pioneers in Jewish Medical Ethics, Jason Aronson, New Jersey, 1997


Rabbi Moshe Tendler–Fred Rosner: Practical Medical Halachah, Association of Orthodox Jewish Scientists, New Jersey 1990


Fred Rosner: Medicine and Jewish Law II, Jason Aronson, New Jersey, 1993

Semester I.

1-2. Lecture: The religious orders and the duty of saving a life

3-4. Lecture: Doctors and God – The function of healing and prayer in Jewish ethics

5-6. Lecture: Euthanasia – The questions of death and dying in society

7-8. Lecture: Smoking and use of light drugs from the aspect of Judaism

9-10. Lecture: Medical malpractice in the light of Jewish law and ethics

11-12. Lecture: The possibilities for artificial insemination in Jewish law

13-14. Lecture: The advantages, disadvantages and conditions of cloning

Semester II.

1-2. Lecture: Genetics and Jewish law – What rights do we have over our gene pool?

3-4. Lecture: Genetics and Jewish law – The problem of the gene manipulated food products

5-6. Lecture: Siamese twins – The question of valuation between two living persons

7-8. Lecture: Parasolvency – What is the best method to compensate the doctor?

9-10. Lecture: Contraception in Jewish law

11-12. Lecture: Permitted and prohibited methods of organ transplantation

13-14. Lecture: The questions of DNA identification in Jewish law
CLINICAL ONCOLOGY

– elective for students in the 4th and 5th year
Course Director: Prof. Dr. Zsolt Tulassay

2 hours/week, 2 credits

2nd Department of Internal Medicine

• Basic principles of clinical application of chemotherapy, principles of immunotherapy and endocrine therapy.
• Cancer prevention: tobacco dependence and its treatment, chemoprevention, role of surgery in cancer prevention.
• Cancer screening: principles, gastrointestinal, gynecologic, breast, lung.
• Specialized techniques in cancer management: vascular access, interventional radiology, RFA photodynamic therapy, molecular imaging and functional imaging of cancer.
• Cancer of head and neck: molecular epidemiology, treatment and rehabilitation.
• Cancer of the lung: molecular biology, NSCLC, SCLC.
• Cancer of esophagus and stomach: stage directed multimodality treatment.
• Pancreatic cancer: clinical presentation, evaluation, treatment of resectable and advanced diseases.
• Cancer of the liver: etiology, screening populations, clinical management, systemic therapy, regional therapy, radiotherapy.
• Colorectal cancer: molecular biology, screening, staging and prognosis, stage dependent treatment of colon cancer, combined modality treatment of rectal cancer.
• Kidney cancer: molecular biology of cancer, histologic types, localized and metastatic kidney cancer.
• Cancer of the breast: molecular biology, risk factors, diagnosis, prognostic and predictive factors, multimodality primary adjuvant treatment.
• Cancer of unknown primary site: histologic types of CUPS, management of CUPS.
• Immunosupression related malignancies: AIDS, transplantation, chemotherapy.

The lecturers of the elective are the oncologists of Semmelweis University.
ORGAN TRANSPLANTATION

First Semester

Department: Faculty of Medicine, Department of Transplantation and Surgery

Time: 14x90 minutes

For semesters: 7, 9

Type of exam: written

Credits: 2

Minimum/maximum number of students: 20/140

Course thematics:

1. Introduction - History, Terminology, Organ Donation
2. Pediatric Kidney Transplantation
3. Histocompatibility, Immunologic Aspects and Immunosuppression
4. Kidney Transplantation Indication, Operation, Results, Complications
5. Liver Transplantation
6. Pediatric Liver Transplantation, Hepatocyte Transplantation
7. Follow-up of the Transplant Patient
8. Small Bowel and Multiorgan Transplantation
9. Pancreas and Islet Cell Transplantation
10. Lung Transplantation
11. Heart Transplantation
12. Radiological Aspects of Transplantation
13. Ethics of Transplantation - Case reports
14. Terminal Examination

Sign up: through the Neptun system

Deadline of sign up: September 1
INFLAMMATION BIOLOGY

Department of Genetics, Cell and Immunobiology

Course director: A. Kristóf Fülöp, PhD
Prerequisite subject: Immunology, Molecular Cell Biology II.
Credits: 2

In Every Second Academic Year

Lectures (2 hours per week):

- The place of inflammatory processes in the immune response and in the health science
- Molecular mechanisms in the induction of acute inflammation
- Inflammatory cells I.
- Inflammatory cells II.
- Chemotaxis and chemokines in the inflammation
- The systemic acute phase reaction and the termination of inflammation
- Histaminology
- The systemic inflammation
- Chronic inflammatory diseases I.
- Chronic inflammatory diseases II.
- Genomics of inflammation and asthma bronchiale
- Inflammation, regeneration and tumorigenesis
- Inhibition of inflammation, biological therapies
- Review and consultation

Attendance of a minimum of 75% of the lessons is necessary for the end-term signature.
Exam: written test in the exam period.
Literature: see on the homepage
Homepage: http://gsi.semmelweis.hu
GENETICS OF SEX

Department of Genetics, Cell and Immunobiology

Course director: Dr. Sára Tóth
No Prerequisites
Credits: 2

Second Semester

Lectures (2 hours per week):

1. Genetic background of sex determination; asexual and sexual reproduction; reproductive strategies.
2. From sex determining gene to sex chromosome
3. Male and female sex determination
4. Abnormalities in sex determination I.
5. Abnormalities in sex determination II.
6. Abnormalities in sex determination III.
7. Mechanism and role of X inactivation
8. Epigenetic effects; genome imprinting.
9. Causes of male infertility. Y chromosome mutations and ICSI.
10. Importance of Y chromosomal and mitochondrial polymorphisms in population genetics
11. Influence of sex on heredity
12. Aggressivity and sex
13. Genetics of sexual orientation
14. Ecology and sex; role of endocrine disruptors

Attendance of a minimum of 75% of the lessons is necessary for the end-term signature. No possibility to make up of absences.

Exam: no midterms, practice grade

Core texts: Chapters from Strachan & Read: Human Molecular Genetics 2nd Ed. and Gilbert: Developmental Biology 8th Ed. Both are downloadable from Pubmed Bookshelf.

Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu

Homepage: http://gsi.semmelweis.hu
EPIGENETICS

Department of Genetics, Cell and Immunobiology

Course directors: Dr. Sára Tóth
Credits: 2

First Semester

Lectures (2 hours per week):

1. Timeline of epigenetics; levels of epigenetic changes; targets of epigenetics
2. DNA methylation; de novo and maintenance methylation; Dnmt interactions
3. Histone modifications; histone code; histone modifying enzymes
4. Polycomb and trithorax complexes; Methylated DNA binding proteins
5. Transposons, and non-coding RNAs in epigenetic regulation; RNAi
6. Genome imprinting; skewed X inactivation their connection to DNA methylation
7. Epigenetic changes during early development and gametogenesis;
   Epigenetic consequences of cloning and ART
8. Transgenerational epigenetics; epigenetics of endocrine disruptors;
   maternal behaviour and its epigenetic consequences
9. Paramutation, transvection and mitotic bookmarking
10. Role of epigenetics in carcinogenesis; epigenetic therapy in cancer
11. Epigenetics in aging and autoimmunity
12. Epigenetic changes in diseases of the central nervous system
13. Methods used for the detection and analysis of epigenetic alterations.

Important notes:
Only for third and upper year students. There are no midterm exams. Attendance of 75% of lectures is necessary for the end-term signature.
Exam: Written or oral exam (depending on the number of students).
No possibility to make up of absences.

Lecture presentations and additional texts are available on the homepage: www.dgci.sote.hu
Homepage: http://gsi.semmelweis.hu
CHEMOTAXIS – its significance in biology and clinical sciences

Department of Genetics, Cell and Immunobiology
Course director: Dr. László Köhidai

Credits: 2

Second Semester

Lectures (2 hours per week):

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Lecturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Migratory responses of cells – General significance of chemotaxis in biology</td>
<td>Kohidai László, MD, PhD</td>
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<tr>
<td>2.</td>
<td>Phylogeny of signaling molecules and their receptors with special respectial to chemotaxis</td>
<td>Kohidai László, MD, PhD</td>
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<tr>
<td>3.</td>
<td>Chemotaxis in invertebrates and vertebrates</td>
<td>Kohidai László, MD, PhD</td>
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<tr>
<td>4.</td>
<td>Chemotaxis in Inflammatory cells I.: Antigen presenting cell, monocytes-macrophages, eosinophils and neutrophils</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>5.</td>
<td>Chemotaxis in bacteria - A well studied signaling pathway</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>6.</td>
<td>Genetical backgrounds of bacterial chemotaxis</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>7.</td>
<td>Inflammation and chemotaxis</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>8.</td>
<td>Immunological aspects and their clinical implications in general</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>9.</td>
<td>Phagocytosis: the target reaction of chemotaxis</td>
<td>Szabó Rita, PhD</td>
</tr>
<tr>
<td>10.</td>
<td>Chemotactic ligands – Characterization of their genomics and proteomics</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>11.</td>
<td>Chemokines</td>
<td>Kohidai László, MD, PhD</td>
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<tr>
<td>12.</td>
<td>The optimal chemotactic ligand</td>
<td>Kohidai László, MD, PhD</td>
</tr>
<tr>
<td>13.</td>
<td>Clinical approaches – Tumor biology</td>
<td>Láng Orsolya, MD, PhD</td>
</tr>
<tr>
<td>14.</td>
<td>Does persist ‘Life’ without ‘Chemotaxis’?</td>
<td>Kohidai László, MD, PhD</td>
</tr>
</tbody>
</table>

Important notes:
Prerequisite: Medical Chemistry.
Max. allowed absences: 3. Attendance of 75% of lectures is necessary for the end-term signature.
One individual oral presentation (not for grade) is compulsory.
Exam: oral for practice mark
Possibility to make up of absences from the material on the website:
www.chemotaxis.usn.hu and www.dgci.sote.hu
Homepage: http://gsi.semmelweis.hu
NEUROSURGERY – Introduction to neurosurgery with case presentations and operating room visit

Department of Neurosurgery

For 5th and 6th year students

Program Locations: Department of Neurology (1086 Bp. Balassa u. 6.) & National Institute of Neurosurgery (1145 Bp. Amerikai út 57.)
Length of course: 14 weeks, 2 hours (lectures)/week
Credit: 2
Final exam: multiple choice test

Detailed program (weeks): Every lecture includes a summary of the topic, 2-3 relevant case presentations and if possible video presentation of surgeries.
- Introduction to neurosurgery: history of neurosurgery
- Basics of micro-neurosurgical anatomy
- Neurological investigation of the neurosurgical patient
- Increased intracranial pressure, Hydrocephalus
- Head injury and neurotrauma basics
- Spine and spinal cord injuries
- Spinal tumours
- Brain tumours, neurooncology
- Vascular malformations of CNS
- Degenerative spine diseases
- Epilepsy surgery and investigations
- Functional neurosurgery and stereotactic procedures
- Radiosurgery
- Visiting the operating theatre and examination

Note: 2 absences are allowed. No possibility to make up of absences.
SOCIAL MEDIA IN MEDICINE

Institute of Behavioural Sciences
Course leader: Prof. Dr. Ferenc Túry
Presenter of the course: Dr. Bertalan Mesko

credit: 2 credits; elective course

Second Semester

Course objectives:
To present the role of web 2.0 or social media, the new generation of web services, in a medical practice, medical education and communication through specific examples, case studies and practical solutions.

Course Syllabus:
Week 1: Introduction: Web 2.0 or social media
The role of social media in medicine
Week 2: Medical search engines
The Google phenomenon
Week 3: Being up-to-date with RSS
How to follow your field of interest online?
Week 4: Medical communities online
Facebook from the physician’s perspective
Week 5: Patients on the web
The era of e-patients
Week 6: The medical blogosphere
From the first comment to blog carnivals: Step by step
Week 7: Everything you have to know about Wikipedia
Medical wikis
Week 8: Second Life: Virtual medicine I.
Second Life: Virtual medicine II.
Week 9: Managing a medical practice online
Should medical professionals use social media?
Week 10: Education online: medical resources
Week 11: Podcasts and medical videos
The era of new media
Week 12: A new way of collaboration: Google Docs
Week 13: Dangers of social media
Describing topics requested by the students
Week 14: Future: is there a web 3.0?
The results of the surveys
Participation and making up for absences:
A signature will be given with the prerequisite of participation (minimum 75% of the lectures and seminars). It is possible to make up for an absence by participating in another seminar group the same week. One absence can be overlooked by the teacher if the student writes an essay. The topic of the essay must be discussed with the seminar leader in advance.

Justification of the absence in the lectures and examinations:
Participation list will be recorded at the end of every lecture/seminar. In case of absence medical certificate has to be presented within three workdays to the course leader.

Checks during the semester (reports, written checks):
One written exam on week 12. It can be made up during the semester.

Requirements for the signature at the end of the semester:
Regular participation on the lectures and seminars, filling in two surveys online (week 2 and 12). One written exam (week 12)

Method of the calculation of marks:
- Written exam: 60 points
- Two surveys: 30 points
- Work during classes: 10 points

Categories:
- 5: 85-100 points
- 4: 75-84 points
- 3: 65-74 points
- 2: 50-64 points
- 1: 50 points

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

Course and recommended text books:

http://www.med20course.com
http://www.scienceroll.com
CULTURE IN MEDICINE, CULTURE OF MEDICINE – Popular Themes of Current Clinically Applied Medical Anthropology

Institute of Behavioral Sciences
Course Director: Prof. Dr. Ferenc Túry
Lecturer: Dr. László Lajtai

Credit: 2

Second Semester

Weekly topics of the seminars:
1. „We have never been modern?” – An initiation to critical approaches to evidence base in medicine – How to respond? - / - Discussion of the semester: Requirements and timescale.
2. Alternatives 1: Narratives and explanatory models – Confusions and the lay perspective
3. Alternatives 2: Complementary medicine – Competition at our doorstep
4. Alternatives 3: Healing and folk medicine – Wisdom or beliefs?
5. Alternatives 4: Biomedicine for anthropology, or the twist of perspectives
6. Challenges 1: Migrants, refugees and minorities
7. Challenges 2: Reproduction, sex, age, death and other trends in „western” medicalization
8. Challenges 3: Nutrition and taboos - biopower and social body
9. Challenges 4: Placebo, pharmaceuticals and the rule of pharmaceutical industry
10. Challenges 5: Public medicine, private medicine and the reproduction of inequities
11. Favourite themes 1: Alcohol, drug, and AIDS at crossroads of culture and law
12. Favourite themes 2: Shrinks and madness – CBS and the mirage of the normal
Recapitulation, feedback and evaluation.
ART OF LEARNING

Institute of Behavioral Sciences

Course Director: Prof. Dr. Ferenc Túry
Lecturer: Dr. János Kollár

First and Second Semester

The program focuses on five fields of study:

1. **Keys of Originality** – Teaching simple methods for improving creativity. Such methods can be a part of the everyday practice. By improving creativity, people can regain their capability of open mind thinking and thus understand the world on a higher level.

2. **Learning methods** - Such methods that can help to make the process of learning as enjoyable and easy as possible. They can help to organize the structure of memory, improve recall and give an aid to find associations in between different learning materials.

3. **Lecturing** - Teaching basic rules of lectures and presentations (how to grab the attention of the audience, how to avoid the usual “pitfalls”, how to overcome “stage fright” etc.) and acquiring knowledge about the latest presentation softwares (including Prezi, Leonar3Do etc.).

4. **Analysis of the Social Media and Relaxation** – Using RSS (Really Simple Syndication) for collecting information regarding any topics for eg. for writing scientific papers, wise application of searching systems available on the internet and discovering sites important for teaching and learning. Learning the basics of relaxation.

5. **Exam** – The participants present their own presentations in front of the group while getting feed-backs from each-other and the leader of the course.

There is no prerequisite for the course. It consist of 5 meetings 4 university hours per each. At the end of the course the participants take an exam.

**1st meeting: Keys of Originality** – Teaching simple methods for improving creativity. Such methods can be a part of the everyday practice. By improving creativity, people can regain their capability of open mind thinking and thus understand the world on a higher level.

Some key elements:

- Creativity in the light of transactional psychology (possibilities for enhancing the “creative child” living inside of us)
- Creative problem solving (10 exercises for creativity improvement. Everybody has an opportunity for choosing the best ones for herself/himself.)
- Everyday methods for creativity improvement (20-25 games and exercises in small groups and large group)

**2nd meeting: Learning methods** - Such methods that can help to make the process of learning as enjoyable and easy as possible. They can help to organize the structure of memory, improve recall and give an aid to find associations in between different learning materials.

Some key elements:

- Neurologic base of learning, the role and function of Short Term Memory and Long Term Memory (short lecture)
- Connection in between emotions and learning (presentation and exercise)
- Acquiring individually shaped mnemotechnic methods (PQRST method, Mind Mapping, Locus Method, Storybuilding, ABC method, learning numbers, learning names etc. – introduction into the application of the methods, individual and small group exercises)
- Basic methods of neurolinguistic programming (NLP) (anchoring, reframing, VAKOG method)
- Creation of brainwave synergy and it role in learning (the application of Natura Sound Therapy software and its advantages in learning)
- Time management in learning (how to use time of learning more effectively making the period of learning much shorter)
- Biological background of learning (breathing, nutrition, yoga exercises)
3rd meeting: **Lecturing** – Teaching basic rules of lectures and presentations (how to grab the attention of the audience, how to avoid the usual “pitfalls”, how to overcome “stage fright” etc.) and acquiring knowledge about the latest presentation softwares (including Prezi, Leonard3Do etc.).

Some key elements:
- Basic differences in between a lecture and a presentation
- Making an 8 minute long presentation as perfect as possible on a conference (basic rules of creating and holding presentations)
- Overcoming nervousness while holding a lecture or presentation
- The latest softwares applied presenting your material.
- Making 3D presentations

Making your own presentation about a given topic – exercise (searching for material, collecting the presentation, keeping the rules of presentation, evaluation)

4th meeting: **Analysis of the Social Media and Relaxation** – Using RSS (Really Simple Syndication) for collecting information regarding any topics for eg. for writing scientific papers, wise application of searching systems available on the internet and discovering sites important for teaching and learning and learning the basics of relaxation.

Some key elements:
- How to find relevant material on the World Wide Web? (Search engines, searching methods)
- Searching for illustration materials (pictures, videos, other materials) for your presentation or lecture (introducing Slideshare, Scholar, Digg, Knol etc.)
- Web 2.0 and Web 3.0 and the exploitation of their possibilities (thematic and semantic search)
- Free internet sources of lectures and teaching/learning materials
- Organizing virtual conferences in cyberspace (Second Life, Conference Alert etc.)

5th meeting: **Exam** – The participants present their own presentations in front of the group while getting feedbacks from each-other and the leader of the course.

**Application:** A motivational letter should be written by the applicant describing the reasons of application. Based on the motivational letter the application can be accepted or denied. The decision will be made in 3 days. The motivational letter should be sent to the following e-mail address: kollarmethod@gmail.com.

ONLY ONE absence is allowed.

**Textbooks:**
DISRUPTIVE TECHNOLOGIES IN MEDICINE

Supervisors: Dr. Mária Judit Molnár
Dr. Bertalan Meskó

Code: AOSGRI374_1A
Credit: 1

Disruptive technologies bring groundbreaking changes to medicine and healthcare. While medical students are being prepared for the present conditions, medical technology is going to add different values and require new skills by the time students graduate, therefore modern medical education must prepare them for a world they will have to face in their professional lives. This course was designed to present and analyze today’s medical challenges with tomorrow’s technologies in a meaningful way addressing skills that students will be able to implement in their everyday practices.

Second Semester

Topics
I. Introduction
II. Personalized medicine and point of care diagnostics
III. Personalized medicine - Genomic health
IV. Personalized medicine - Imaging health
V. Social Media and Medicine - Introduction
VI. Social Media and Medicine - Filtering online
VII. Social Media and Medicine - Sharing information
VIII. Harnessing big data in healthcare
IX. Mobile health and telemedicine
X. Biotechnology and gene therapy
XI. Regenerative medicine
XII. Medical robotics, bionics, virtual reality
XIII. Future of medical technologies

Textbooks:
Social Media in Clinical Practice, Springer, 2013
The Guide to the Future of Medicine http://scienceroll.com/2013/10/30/whitepaper/
INTRODUCTION TO PHARMACOLOGICAL RESEARCH

Department of Pharmacology and Pharmacotherapy

Supervisors:  Dr. Péter Ferdinandy  
Dr. Tibor Zelles

HEALTHCARE MANAGEMENT

Course Leader: Dr. habil. Éva Belicza Ph.D.
Prerequisite: Internal Medicine I.
Credit: 2
Lecture: 2 hours / week
Subject code: AOVEMK444_1A

Thematics:
1\textsuperscript{st} week: Introduction: the role of management in healthcare, basics
2\textsuperscript{nd} week: Healthcare economics I.
3\textsuperscript{rd} week: Healthcare economics II.
4\textsuperscript{th} week: Healthcare financing
5\textsuperscript{th} week: Healthcare system models and their international comparison
6\textsuperscript{th} week: Organisational management
7\textsuperscript{th} week: Organisational behavior
8\textsuperscript{th} week: Human resource management in healthcare
9\textsuperscript{th} week: Change management in healthcare
10\textsuperscript{th} week: Patient safety in practice
11\textsuperscript{th} week: Quality management and development in healthcare
12\textsuperscript{th} week: Health politics
13\textsuperscript{th} week: Project and time management
14\textsuperscript{th} week: Summary
MATHEMATICAL AND PHYSICAL BASIS OF MEDICAL BIOPHYSICS

Lecturer: *Dr. Miklós Kellermayer*

Credit: 1

14 hours lecture in the first four weeks of the semester.

**Thematics:**

1. Mathematics necessary for understanding biophysical laws
2. Physical quantities and units
3. Kinematics – physics of motion
4. Statics – changes of shape, forces, mechanical stress, pressure
5. Dynamics – work, energy
6. Oscillations, waves
7. Fluid mechanics
8. Thermodynamics
9. Electricity – charges in rest and in motion
10. Magnetism, magnetic induction

The presence in at least 75% of the lessons is obligatory.

The grade is based on the result of test written on the 5th week. This test should be written by all students irrespective of taking this elective subject. The result of test is expected to be at least satisfactory (2) as a condition for signature in Medical biophysics 1. The elective subject helps in the preparation for this test.

Evaluation: practical grade based on the result of test written on the 5th week.

Textbook: Lecture notes on the homepage of the department.

High school physics textbooks.
MEDICAL GENOMICS

Department of Genetics, Cell and Immunobiology

Lecturer: Prof. Dr. Csaba Szalai

Medical genomics introduces the basic knowledge in medical and human genomics and the associated genomic methods. The main topic of the course is the genetic and genomic background of the most common multifactorial diseases, like asthma, allergy, type 1 diabetes mellitus, type 2 diabetes mellitus, obesity, high blood pressure, atherosclerosis, Alzheimer disease and Parkinson disease. The lectures show the most important genes and genetic variations in these diseases which can influence the susceptibility to them and how these knowledges can be used to get to know the pathomechanisms of these diseases and to reveal novel therapy and drug targets. There are also lectures about pharmacogenomics and how our genes influences our responses to different environmental effects. As genomics belongs to systems biology, a lecture introduces to basic terms of systems biology, and concentrating on diseases, some examples of the application and utilization of this scientific field are also be shown.

Planned lectures:
- Introduction to genomics, the human genom
- Multifactorial diseases
- Genomic methods
- Asthma, allergy
- Type 1 diabetes mellitus
- Type 2 diabetes mellitus
- Obesity
- High blood pressure
- Atherosclerosis
- Alzheimer and Parkinson diseases
- Gene-environmental interactions
- Pharmacogenomics
- Systems biology

Prerequisite subjects: Medical Biochemistry, Molecular and Cell Biology I, II and III.
SYSTEMS NEUROSCIENCE I–VI.

Faculty of Medicine, Department of Anatomy, Histology and Embryology

Type of course: optional course-unit
credit: 2
Name of the responsible person: Dr. Gábor Gerber

Second Semester

Role of the course in the training of the Department:
The Systems Neuroscience program follows the approach of systems theory in understanding the brain. The aim is to provide students a view of the brain as a whole via unfolding, at least in part, its immense complexity. This is a major challenge of all time, but the right answer should be one that can integrate actual knowledge. As we are in the fortunate period of time when high performance tools (both hardware and software) and large datasets are getting more and more available, systems thinking is inevitable in brain research. Therefore, throughout the course students will learn how different approaches - reductionist, holist and functionalist – are all useful and necessary in understanding the brain.

In one way the course is structured by introducing the students the different levels of organization all being complex systems themselves. After an introductory about the systems science approach of the brain (course 2) we discuss the molecular machineries at the subcellular level (course 3) then turn into the cellular level by learning why and why not the neuron is considered as the unit of brain organization (course 4). In the next step it is shown how billions of neurons make up the cerebral cortex and how this evolutionarily new structure can perform diverse cognitive and other functions (course 5). Finally, whole brain functions and functioning will be approached via its role in behavior (course 6).

In other way, each course will show how the brain functions at lower organizational levels such that synaptic and neuronal populations of different structures as well as a whole. Such holistic approaches have high importance in recent efforts made in deciphering the neurobiological basis of neuropsychiatric and neurological diseases (courses 5,6). Finally, with the closing series of lectures (course 7,8) we aim to provide tools, rules and examples, which help integrating knowledge acquired throughout the courses and also provide an outlook whereby the brain can be compared to other complex systems (course 2). Another notable feature of the Systems Neuroscience program is its interdisciplinary nature: it will introduce the students into several state of the art methods both experimental (molecular biology, cellular and extracellular physiology, different kinds of imaging) and theoretical (data and network analyses, simulation and modelling).

Each course includes visiting the lecturers’ lab.

The course will start with an introductory about the history and culture of the geopolitical region thought as Central Europe.

The program of the course:
Weekly schedule of the Courses
1. Central European Culture
2. Introduction to Systems Neuroscience
4. Single neurons and beyond
5. Neocortex: from structure to function
7. Neuroelectricity
8. Statistics and the Brain

Practical courses: introduction into cutting edge research techniques during the lab visits
Consultations: personally with the actual course leader
Requirements of course participation and options to recover missed hours:
1. Total absence allowed: 10% of the total course hours
2. Recovering missing hours: studying the material provided by the course leaders, consultation

Eligibility: US grade point average (GPA) of 3.0. Students with a GPA lower than 3.0 should inquire with the Directors on the possibility of a waiver.

Justification of absence from course hours or exams:
Hungarian medical certificate

Number and schedule of the examinations:
The course is divided into eight blocks each covering different fields and scheduled in a weekly basis. Each block ends with an exam in the last teaching day of the actual week.

Requirements of the successful completion of the program:
written or oral test in each course material

Marks:
In case of a written test grades are given after obtaining points as follows: 0-50% fail, 51-60% pass, 61-75% fair, 76-90% good, above 90% excellent.

Types of exam: test, essay, verbal

Requirements of the examinations:
Verbal and electronic etc. material provided by the lecturers. Syllabus is available upon opening the program on the web page.

Registration for exams: NEPTUN

Rescheduling the tests:
N/A
Each student has to take an examination in each block of the course.

Justification of absence from the exam:
Hungarian medical certificate (see above).

List of useful literature (books, papers etc):
It is made available for the students two weeks before the first lecture
PRECLINICAL AND CLINICAL NEUROPSYCHOPHARMACOLOGY AND PSYCHOPHARMACOGENETICS

(Hungarian: Preklinikai és klinikai neuropsychofarmakológia és pszichofarmakogenetika)

Name of the Programme: Medicine, uninterrupted graduate programme
English name of the course: Preclinical and clinical neuropsychopharmacology and psychopharmacogenetics
Neptun-Code (planned): AOVGYH198_1A
Institute: Department of Pharmacodynamics
Name of the tutor/lecturer: Dr. Gyorgy Bagdy PhD, Dsc.
Phone: +36-1-4591495, +36-1-2104411, +36-1-2102927
E-Mail: bagdy.gyorgy@pharma.semmelweis-univ.hu

Further tutors: Juhász Gabriella Associate Professor, PhD, Lévay György PhD, CSc, Gyertyán István PhD, Gonda Xénia PhD, Ujváry István PhD, Tamási Viola PhD, Vas Szilvia PhD, Eszlári Nóra researcher psychologist (MA)

Number of lectures /week:
blocked course (2X7 lessons)
Credit points: 1

Brief course summary:
The aim of this course is to introduce the function of the central nervous system (CNS), diseases that impact the CNS as well as the (psychiatric, neurological, neurosurgical and addictological) way of their treatment for the interested students. The course creates a bridge between theoretical and clinical subjects. During the course, genetics, molecular sciences, animal models and human investigating methods are demonstrated as well as the possibilities and limits of their application using concrete examples.

Course data

<table>
<thead>
<tr>
<th>Recommended semester of completing the course</th>
<th>Lecture (contact hrs/week)</th>
<th>Practice (contact hrs/week)</th>
<th>Seminar (contact hrs/week)</th>
<th>Individual lecture</th>
<th>Total number of contact hours/semester</th>
<th>Semester</th>
<th>Consultation</th>
</tr>
</thead>
<tbody>
<tr>
<td>from the 4th semester</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td>Spring semester*</td>
<td>Winter semester*</td>
</tr>
</tbody>
</table>

Semester program

1. Lecture topics/week

1. week:
Principles of the function and pharmacological modification of the central nervous system. (György Bagdy) (I-III.)
Animal models of diseases affecting the central nervous system (György Lévay) (IV-V.)
The dopamine theory of schizophrenia. Antipsychotic drug research (István Gyertyán) (VI-VII.)
Experimental studies in learning and memory (István Gyertyán) (VIII.)
Genetics of behavioural characteristics influencing psychiatric disorders (Nóra Eszlári) (IX.)

2. week:
Application of neuroimaging techniques in the neuropsychopharmacology (Gabriella Juhász) (X.)
Pharmacogenetics (Xénia Gonda) (XI.)
Sleep and behaviour. The neurotransmitter regulation of sleep (Vas Szilvia) (XII.)
The phenomenon of hallucination: from tribal customs to chemical structures (Ujváry István) (XIII.)
The role of “omic” methods in the innovation of psychopharmacons (Viola Tamás) (XIV.)
Course requirements

**Prerequisites:** previous attendance of courses in Biology, Physiology and Biochemistry

**Semester acceptation conditions:** (successful course attendance, mid-term tests, absence, etc.)

Attendance of 11 of 14 lectures is required.

Knowledge testing during the semester: -

Requirements of the signature at the end of the semester:

Attendance of 11 of 14 lectures. Repetition of the lessons during the course is not possible.

**Individual activity of the student during the semester (protocol, etc.)** -

**Performance control in the examination period (final, semi-final)** - final examination

**Performance control in the examination period (written, oral, written and oral)** written, correction examination: oral

Prescribed external practice: -

**List of teaching materials:** (List of textbooks, hand-outs, scripts, etc.)


**List of course materials: classroom, projector**

**Scientific, course related researches, publications/essays:**

ULTRASONOGRAPHY IN OBSTETRICS AND GYNECOLOGY

Department: First Department of Obstetrics and Gynecology
AOVNO1554_1A
Course director: Prof. Dr. János Rigó
Lecturer: Dr. Gábor Szabó PhD

Study time: In every second Semester 2×45 minutes. Advised Semester: between 6. und 12. Semester
Exam: Written test and practical note
Credit: 1
Minimal/maximal participants: (1/5 person)
Application deadline: 1. December
Prerequisite: Completion of second year

The knowledge gained in theoretical basic subjects (anatomy, physiology) can be used by medical students as practical knowledge in the clinic. As a result of more than four decades of experience, ultrasound examination has a fundamental role in modern obstetrical and gynecological diagnostic. The course helps you to acquire skill in this field. Performing obstetrical-gynecological ultrasound tests and assessment of findings can only be learned through appropriate training. This non-invasive procedure is also safe for patients. The modern ultrasound equipment of the Department and the wide range of patients and diseases provide the opportunity for learning. Not only obstetricians and gynecologists, but also other associate colleagues such as clinical genetics, radiologists, gynecological cancer surgeons, anesthetists, and intensive therapists can utilize the knowledge provided by the subject

Themes:

Gyorgy Bagdý

CLINICAL HUNGARIAN from the second semester of the 3rd year

Division of Foreign Languages and Communication – Faculty of Health Sciences
H-1088 Budapest, Vas u. 17., room 130
Phone: +(36-1) 486-4960 Fax: +(36-1) 486-4962 Bakó
Head of the Division: Katalin Zöldi Kovács Ph.D.
# OBLIGATORY ELECTIVE AND ELECTIVE SUBJECTS – SCHEDULE OF THE CLINICAL MODULE

## OBLIGATORY ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVANE104_1A</td>
<td>Anesthesiology and Intensive Therapy</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery II.</td>
</tr>
<tr>
<td>AOVFRM252_1A</td>
<td>Medicinal, Epidemiological, and Social Aspects of Drug Abuse</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVPAT126_2A</td>
<td>Clinicopathology II.</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>Pathology final</td>
</tr>
<tr>
<td>AOVBL2112_1A</td>
<td>Clinical Endocrinology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Basic module</td>
</tr>
<tr>
<td>AOVCVT411_1A</td>
<td>Clinical Hematology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVGLM157C1A</td>
<td>Clinical practice</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVBL2150_1A</td>
<td>Clinical Oncology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>AOVINF108_1A</td>
<td>Health Informatics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVGY1120_1A</td>
<td>Neonatology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVKIK102_1A</td>
<td>Clinical cardiovascular physiology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVKIK099_1A</td>
<td>Clinical Physiology of Respiration and Respiratory Diseases</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOVEMK444_1A</td>
<td>Healthcare Management</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>AOVNO1554_1A</td>
<td>Ultrasonography in Obstetrics and Gynecology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>AOVKIK553_1A</td>
<td>Methodology of Clinical Experiments – Observational Experiments</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td></td>
</tr>
</tbody>
</table>

## ELECTIVE SUBJECTS

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVIFS105_1A</td>
<td>Antibiotic therapy &amp; infectology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pharmacology and Pharmacotheraphy II.</td>
</tr>
<tr>
<td>AOSKIK151_1A</td>
<td>Cardiorespiratorical and neurophysical measuring techniques</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Physiology II.</td>
</tr>
<tr>
<td>AOSMAG318_1A</td>
<td>Social media in medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Medical Communication</td>
</tr>
<tr>
<td>AOVSB2129_1A</td>
<td>Emergency Surgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Surgery I.</td>
</tr>
<tr>
<td>AOVGY1283_1A</td>
<td>Neurobehavioral assessment of infants</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Pre-clinical module</td>
</tr>
<tr>
<td>AOVIDS279_1A</td>
<td>Neurosurgery</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Neurology</td>
</tr>
<tr>
<td>AOSMMS174_1A</td>
<td>Traditional Chinese Medicine</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>For 3rd year students and up</td>
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<tr>
<td>AOSGEN134_1A</td>
<td>Introduction to Epigenetics</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>semi-final</td>
<td>Immunology</td>
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<tr>
<td>AOSLEK340_1A</td>
<td>Clinical Hungarian</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology V.</td>
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<tr>
<td>AOSGEN135_1A</td>
<td>Inflammation Biology</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Immunology, Molecular Cell Biology II.</td>
</tr>
<tr>
<td>AOSFRM394_1A</td>
<td>Introduction to Pharmacological Research</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>pract. mark</td>
<td>Molecular Cell Biology II., Medical Biochemistry</td>
</tr>
<tr>
<td></td>
<td>Clinical work - Radiology</td>
<td>2</td>
<td>–</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clinical Gastroenterology</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>pract. mark</td>
<td>Internal Medicine – Propedeutics</td>
</tr>
<tr>
<td></td>
<td>Patient Safety</td>
<td></td>
<td></td>
<td></td>
<td>e-learning course</td>
<td></td>
</tr>
</tbody>
</table>
COMPULSORY INTERNSHIPS AND RESPONSIBLE DEPARTMENTS

Internal Medicine

1st Department of Internal Medicine
1083 Budapest VIII., Korányi Sándor u. 2/A Phone: 459-1500 / ext 51465
Head of the Department: Dr. István Takács
Tutor: Dr. Péter Studinger

2nd Department of Internal Medicine
Budapest, Szentkirály u. 46. Phone: 266-0926 ext. 55599, 55524
Head of the Department: Prof. Dr. Péter Igaz
Tutor: Dr. Krisztina Hagymási

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

Infectology

2nd Department of Medicine, Division of Infectology at Szent László Hospital
1097 Budapest, Albert Flórián u. 5-7.
Head of the Department: Prof. Dr. Gergely Kriván
Tutor: Dr. János Sinkó

Surgery

1st Department of Surgery
Budapest VIII., Üllői út. 78. Phone: 313-5216 / ext. 52167
Head of the Department: Prof. Dr. László Harsányi
Tutor: Dr. Ákos Szűcs

2nd Department of Surgery
1125 Budapest XII., Kútvölgyi út 4. Phone: 325-1100/ext. 57351, 57376, 57311
Head of the Department: Prof. Dr. Gábor István
Tutor: Dr. György Ledniczky

Department of Transplantation and Surgery
1082 Budapest VIII., Baross u. 23. Phone: 267-6000, 459-1500/ ext. 60857
Head of the Department: Prof. Dr. László Kóbori
Tutor: Dr. Gábor Telkes
Traumatology

Department of Traumatology
Budapest VIII., Fiumei út 17. Phone: 461-4723
Budapest XIV., Uzsoki u. 29.
Head of the Department: Prof. Dr. László Hangody
Tutor: Dr. Tamás Gál

Vascular surgery

Department of Vascular Surgery
Budapest, XII., Városmajor u. 68. Phone: (+36-1) 458-6700
Head of the Department: Prof. Dr. Béla Merkely
Tutor: Dr. Péter Banga

Pediatrics

1st Department of Pediatrics
Budapest VIII., Bókay J. u. 53. Phone: 3142-858
Head of the Department: Prof. Dr. Attila Szabó
Tutor: Dr. Erzsébet Horváth

2nd Department of Pediatrics
Budapest IX., Tűzoltó u. 7-9. Phone: 215-1380 / ext. 52892
Head of the Department: Dr. Gábor Kovács
Tutor: Dr. Péter Hauser (hauser.peter@med.semmelweis-univ.hu)

Obstetrics and Gynecology

Department of Obstetrics and Gynecology
Budapest VIII., Baross u. 27. Phone: 266-0473
Head of the Department: Prof. Dr. Nándor Ács
Tutor: Dr. Gyula Richárd Nagy

Neurology

Department of Neurology
Budapest VIII., Balassa u. 6. Phone: 210-0330
Head of the Department: Prof. Dr. Dániel Bereczki
Tutor: Dr. Róbert Debreczeni (debreczeni.robert@med.semmelweis-univ.hu)

Psychiatry

Department of Psychiatry and Psychotherapy
Budapest VIII., Balassa u. 6. Phone: 210-0330 / ext. 51100
Head of the Department: Dr. János Réthelyi
Tutor: Dr. Erika Szily
Family Medicine in Daily Practice

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

Prehospital Emergency Medicine

National Ambulance Service
Budapest XIII., Róbert Károly krt. 77. Phone: 350-6720
Director: Dr. Gábor Göbl

Transfusion Course

Department of Pathophysiology
1089 Budapest VIII., Nagyvárad tér 4.
Phone: 210-2940
Head of the Department: Prof. Dr. Attila Tordai
### STUDY PROGRAM

#### 6th Year

<table>
<thead>
<tr>
<th>Number of weeks</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infectology + 1 week Family Med.</td>
<td>8 weeks</td>
<td>8</td>
<td>final</td>
</tr>
<tr>
<td>Surgery + 1 week Vascular Surgery + 2 Traumatology</td>
<td>6 weeks</td>
<td>6</td>
<td>final</td>
</tr>
<tr>
<td>Obstetrics, Gynecology</td>
<td>4 weeks</td>
<td>4</td>
<td>final</td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>6 weeks</td>
<td>6</td>
<td>final</td>
</tr>
<tr>
<td>Neurology</td>
<td>3 weeks</td>
<td>3</td>
<td>final</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>3 weeks</td>
<td>3</td>
<td>final</td>
</tr>
<tr>
<td>Ambulance</td>
<td>2 weeks</td>
<td>2</td>
<td>pract. mark</td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
<td>1</td>
<td>pract. mark</td>
</tr>
<tr>
<td>Elective</td>
<td>6 weeks</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Thesis work</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Physical Education IX.</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>39</strong></td>
</tr>
</tbody>
</table>

**Comment:**
- 6 weeks of elective practice: It can be completed at any Clinical Department or Clinic. Major subjects that end with a final exam are also elective.

Please read more about the rules concerning the criteria of selecting the foreign clinical practice positions and accepting the practice period spent abroad:
http://www.semmelweis-english-program.org
http://www.sote.hu/intezetek/oktatas/?inst_id=145&page_id=480

Certificates can be downloaded at

**Please note the followings:**

1. When **not at Semmelweis University** the two weeks Traumatology is to be completed at a surgical department providing **neurochirurgia** as well.
2. It is strongly required to keep the instructions of Article 24 of the Examination and Studies Regulations concerning the requirements of the **diploma work** focusing especially on the **deadlines**.
3. The **final exams** can be done only on the exam **dates** published by the clinical departments of Semmelweis University.

Please note: there are no individual requests and the rule should be kept **strictly**.
INTERNAL MEDICINE

To be present for at least 7 hours per day (35 hours per week), including 1 week Infectology and 1 week Family Medicine.

Activities should include the following subjects: general survey of hospital/department organization, examination of patients in the Medical Department, with special emphasis to case history taking and full physical examination.

The students should gain practice in patient documentation, problem-oriented medical record keeping, taking of pulse, blood pressure of patients.

Participate in the preparation of diagnostic and therapeutic plan for patients.

Be present at invasive and semi-invasive interventions (taps of abdominal and chest fluid, preparation of bone marrow smear etc.).

To spend time at the outpatient department.

To practice basic laboratory techniques needed in bedside diagnosis (urinalysis, stool examination, use of dip sticks etc.).

To be on night duty once during the period.

Consultations in gastroenterology, diabetes, hematology, endocrinology, cardiology, sonography, X-ray, ECG etc.

Watch endoscopy performed.

See the intensive coronary care unit.

Regular consultations with the doctor responsible for the student.

All these activities should be carefully supervised by members of the medical staff.

The students should also practice communication with patients and their relatives, while giving them relevant medical information on the disease but avoiding conflicts with medical confidentiality.

Students should take an active part in medical consultations concerning their patients, as well as in the medical conferences in the department.
INFECTOLOGY IN INTERNAL MEDICINE

One week Infectology practice within sixth year’s rotation in Internal Medicine

Subject: Infectious diseases (Infectology)
Head of Division: Dr. Gergely Kriván PhD
Location: 2nd Department of Medicine, Division of Infectology at Szent László Hospital
1097 Budapest, Albert Flórián u 5-7.
Time period: 30 hours a week
Registration: NEPTUN system

Program: a detailed program plan will be announced about locations and tutors of daily practice in time

Group size: Our institution can only accept a limited number of students (14 persons) at a time. In order to keep the program interactive and to avoid overcrowding at patients’ departments we cannot accept your request to register above this quota. If the scheduled practice weeks do not match your plans you can: 1. Switch registration with a fellow student. 2. Collect at least 5 more persons having the same problem and apply to the English Secretariat to schedule an additional week for Infectology rotation. Our Division will do its best to fulfill these requests; however it cannot be granted that rotations will be organized at any desired time.

Overview
Knowledge on infectious diseases has been among the most ancient parts of medical practice and science. Epidemics, isolation of patients with communicable diseases, vaccinations and anti-infective therapy had a significant impact not only on the progress in healthcare but also on history and socio-cultural development of mankind. Although infectology is often considered being of marginal importance within internal medicine, it should be noted that an increasing number of diseases and conditions seem to have an infectious background. In addition, around a third of chapters within major medical textbooks deal with infectious diseases.

Currently development of infectology has two important directions that are complementary to each other. The traditional one will target classical and emerging infections often of global scope, like influenza, gastrointestinal infections, hepatitis or malaria etc. A newer branch of infectology is focusing on infections related to modern medicine, like nosocomial outbreaks caused by multiresistant organisms or infections occurring in immunocompromised hosts. Prophylaxis and therapy of infections as well as knowledge on antibiotic therapy is of significant importance in both fields.

Program details
During the infectology rotation you will be welcome to
- take part in rounds at Departments of Infectious Disease
- participate in round table discussions on current topics in infectology
- discuss real life cases especially in the immunocompromised host setting
- being updated on basic diagnostic and therapeutic approaches in stem cell transplant patients
- have an overview on developments in HIV/AIDS therapy.

Sessions are designed to be as interactive as possible, so you are encouraged to actively take part in discussions and feel free asking questions from tutors at all times.

Completion of rotation and signature: Registered students must attend all courses to receive their signature. We can only accept hospital discharge papers for verification of absences. The absence must be substituted at a later time period, assigned by the tutor. In the case of further absences, the practice cannot be accepted. Excuses like having been unable to locate the venue of practice are not acceptable. Students arriving later than 10 minutes past the scheduled start of the sessions will not be accepted to take part in the program.
SURGERY

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

- Suction of the throat and trachea.
- Observation of ITU work.

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

- Observation of postoperative treatment.
- Observation of resuscitation and reanimation.
- Observation of autopsies of the ward.
- Being present at every medical discussion of the ward.
- Observation of outpatient work.
- Assistance in outpatient work including assistance at day surgical operations.
- Changing of dressings of outpatients.
- Treatment of infected wounds.
- Assistance at i.v. anesthesia.
- Performing and assisting at local anesthesia.
- Observation and assistance at ultrasound, endoscopies and X-ray examinations.
- As interns, students take part in the daily rounds and report on the patients examined by them or treated in their section. Interns examine the patients under the supervision of the ward chief or ward surgeon. Interns are required to be personally involved in the examinations and the evaluation of the findings.

Involvement in the preparation of the documentation of the patients.
Involvement in the preoperative preparations as well as in the postoperative care and treatments.

Take part in the operations as second assistants.
Take part in on-call duty without numerical limitations. During on-call (night) duty, interns should-under the supervision of the ward chief or authorized surgeon – be involved in solving all problems caused by either acute or chronic diseases.
Interns are required to take part in all consultations organized for them.

Interns will be eligible for the final examination if the above conditions have all been met and their academic achievements during their internship proved.
TRAUMATOLOGY

Department of Traumatology

Subject: Traumatology  
Type of subject: Mandatory  
Code: AOKTRA075 _SA  
Credit points: 0  
Time period: 2 weeks  
The work hours of the practice are 30 hours/week  
Head of Department: Prof. Dr. Hangody László

Dear Students,

In order to begin your 6th year practice at Semmelweis University, Department of Traumatology – in Uzsoki Hospital or Péterfy Traumatology Center – the following certificate is required to show on the first day of your 2 weeks traumatology practice: Occupational suitability health examination results.

Purpose of subject:
Traumatology as a specialty deals with the treatment of injured patients, independent of the injured organ, patient’s age or previous diseases. In developed countries, the 4-5th leading cause of death is injury, while in the actively working population, the rate of death is even higher. Morbidity in children and in the elderly is also high. Since the patient examination and therapeutic algorithm somewhat differ from the previously taught examination and treatment methods in the curriculum, our aim is to offer a general and practical approach to treating trauma patients for students. The prerequisite for 6th year Traumatology is the material and exam from 5th year in Traumatology, to be used in a more practical manner. Beside this, familiarization and active participation in the daily routine of a Traumatology department play a role in the students’ curriculum.

Syllabus: 6th year students – 2 week practice
The student may attend this practice at one of the following institutions: 1. Semmelweis University Department of Traumatology, 2. in the Member States of the European Union (and in Switzerland and Norway), clinical practice is accepted and recognized if it is earned at a Traumatology or Orthopedic-Traumatology department at state-accredited university clinics or teaching hospitals – the legal ground for this is the mutual recognition of diplomas issued by the accredited institutions, or 3. abroad at a Traumatology or Orthopedic-traumatology department of an accredited teaching hospital accredited by the Hungarian Accreditation Committee – HAC (this can be checked on the following website: http://www.semmelweis-english-program.org/index.php?option=com_content&task=view&id=79&Itemid=101 under the link: Approved Health Institutes for 6th year Rotations).

1. Daily attendance of morning conference. After becoming acquainted with the introduced cases, students will have the opportunity to examine the hospitalized patients and familiarize themselves with patient’s documentation.

2. Assisting or observing in the operative theater, depending on the operative program.

3. Students shall participate in patient admission, examination, follow and help in the evaluation of the diagnostic examinations, and take part in the acute treatment of traumatized patients during on duty shifts.

4. Participating in grand rounds, patient presentation, and following up on referrals.

5. Consultation with attending tutor of actual clinical cases, planning the treatment and the course of patient follow up.

6. Taking part in patient follow up examinations. Examining the range of motion, function, evaluating x-rays and CT scans. Identification and treatment of complications.
Detailed syllabus:
1. First Aid
2. Evaluation of the mental-stage/orientation with the Glasgow-score
3. Evaluating and management of external wounds
4. Termination of bleeding
5. Transportation of trauma patient
6. Transient fixating bandage of traumatic part of body
7. Preparation of the surgical area
8. Surgical scrub-in and clothing
9. Infiltrational anaesthesia
10. Incision and drainage
11. Management of infected, necrotic wound
12. Closure
13. Stitch removal
14. Applying pressure-bandage
15. Reuniting closed fractures
16. Fracture stabilization
17. Reduction of dislocation
18. Transient fixation of broken extremities
19. Insertion of Foley’s catheter in men
20. Insertion of Foley’s catheter in women
21. Venous-canulating
22. Pain management
23. Assisting surgical procedures

Attendance criteria and absences:
The complete attendance of the two week practice as well as the completion of the syllabus signed by the tutor is mandatory. The syllabus must be handed in at the Traumatology Department upon completion of the practice with the certificate (if practice is spent abroad) and student index. During the course of the two weeks, 6 hour work days are mandatory.

Verification of absences from practices of from the exam:
We can only accept hospital discharge papers for verification of absences, with a maximum of 3 days. The absence must be substituted at a later time period, assigned by the tutor. In the case of further absences, the practice cannot be accepted.

The topics and monitoring of practices:
Regular attendance is taken during the two week practice on an attendance sheet. The traumatology student syllabus contains the topics and requirements the student must fulfill during the practice.
Students who spend their Traumatology practice abroad must hand in a Letter of Acceptance form (For obligatory internship in Traumatology as part of the student’s sixth year’s curriculum) signed by the professor in charge/Head of Department at least one month prior to beginning their practice at that hospital/clinic. We cannot accept the practice of a student, if the “letter of acceptance” is handed in later than one month prior to starting the practice.
Students who spend their Traumatology practice at the Traumatology Department of Semmelweis University must do so at one of the allotted time periods on the Neptun program.

Criteria for the signature at the end of the semester:
Attendance of the two weeks of traumatology practice, as well as the completion of the syllabus (which can be downloaded from the Semmelweis University Traumatology Department’s website) signed by the tutor. Traumatology must be attended and signed separately from the general surgery practice in the 6th year. Participation is only accepted, if the department has a trauma care unit, which is qualified according to Semmelweis University guidelines.

Grading: One topic is a traumatology topic, which is part of the surgery oral exam.

Type of exam: Oral exam. One traumatolgy topic within the surgery exam.

Exam requirements:
The knowledge of the given textbook, lecture and practice material including that of V. year. One topic is chosen from a topic list.

Exam registration: Neptun program

Modification of exam registration: Neptun program

Absence from the exam:
We can only accept hospital discharge papers for verification of the absence from the exam, proving the student was continuously hospitalized during that time period.

List of textbooks, notes, study-aids and references:
The Trauma Manual: TRAUMA AND ACUTE CARE SURGERY Third edition Editors: Andrew B. Peitzman, Michael Rhodes, C. William Schwab, Donald M. Yealy, Timothy C. Fabian, Publisher: Wolters Kluwer / Lippincott Williams & Wilkins
VASCULAR SURGERY

Department of Vascular Surgery

Type of the subject: mandatory
Code: AOKSBE066_SA
Credits: 0
Interval of practice: 1 week
Time of practice: 30 hours a week.

SYLLABUS OF THE SUBJECT

I: Reception, assignment, and tutor appointment
The 6th grade students who registered themselves to the certain term, should appear on the first day of the practice (usually on Monday) at 8 am at the English course coordinator (Zsuzsanna Jaranyi M.D., associate professor). They can get information of the meeting point at the reception. From 8 am till 8:30 the students get their coats and their lockers. After this, they are assigned to their tutor. Our aim is the “one tutor-one student” principle, but this is not possible often, due to the numerous students at same time (4-5 students have 1 tutor). During the practice course it is the tutor’s task to introduce the whole range of the vascular surgical procedures to the students: like the morning ward round – physical examination of the patients – diagnostical steps of vascular diseases – treatment strategy – knowledge of operative techniques – early control, medical therapy, recognition and treatment of adverse events, long term prognosis of patients who underwent vascular surgical operations and the activities of the outpatient clinic.

II: Activities in wards
The student participates in the ward rounds with the tutor’s guidance, where he can get acquainted with the admitted patients’ history, the type of the previously performed operations, or even with the planned operative opportunities. The tutor involves the student in the features of the arterial and venous patient examination: like recording the patient history, listing the risk factors of the vascular diseases, palpation, auscultation, and examination with mini Doppler, performing special tests (Trendelenburg-, Perthes probe, postural-, capillary refill test), including or excluding cardiac co morbidities (ECG, ECHO, history findings), and finding other co morbidities, which affect with the surgical treatment.

III: Diagnostic possibilities of patients with vascular diseases
Students should spend at least one day in the angiography, carotid duplex scan, and CT/MRI laboratories, where they could get acquainted with the most common invasive and non-invasive diagnostical opportunities, and with the endovascular therapy.

IV: Activity in the Operating Theatre
The student participates in the patients’ operations, following all the stations, and in some of these he/she could take a hand in: anesthesia, narcosis, intubation or local anesthesia, catheter usage, canulation, giving injection, disinfection, isolation, surgical techniques, wound drainage, closing, and dressing change, and following the operated patient to the ward or to the intensive care unit. It is recommended for the student to scrub in, and to assist to the surgeon. During the operation he/she should get a possibility to touch the ill and the reconstructed vessels and the tutor should explain the specialties of the actual type of the operation.

V: Outpatient clinic
The student should participate in his/her tutor’s outpatient clinic, where he/she could learn the examinations of the vascular patients. The student should perform patient examination also (palpation, auscultation, Doppler, and evaluating the test results), and should follow the treatment decision strategy, and the aspects of the patient controlling

VI: Practice oriented theoretical training
The students get a grouped theoretical training, which involves the whole range of vascular surgery. These are one and a half – two hours long discussions which are all practice oriented.

VII: On the last day of the practice course the students give back their coats and their locker keys, and they get the signature in their index, which certifies the successfully fulfilled practice.
According to the curriculum, 6th year medical students should complete a **6-week Pediatric practical (including 1 week Infectology)**.

- During one half of the practical, students work in infants’ wards, in the other part in children’s wards. This way they can acquire and practice the following activities on both infants and children:
- Taking of pulse and blood pressure, correct weight and height measurement (also of infants) (use of percentile tables).
- Under the supervision of the ward physician, active participation in blood sampling, taking throat swab etc.
- Under the supervision of the ward physician, practice of various injection techniques (venous, im, sc and Mantoux test).
- Preparation and control of infusion and transfusion accessories and performing these activities under the supervision of the ward physician. Determination of blood group.
- To assist to special diagnostic or therapeutic interventions and learning eventually to perform them under the supervision of the ward physician (bonemarrow sampling, lumbar puncture).
- Based on the knowledge of the necessary physiological studium: blood counting and urine analysis (also the sediment).
- Taking of case records and temperature charts.
- Participation in the daily rounds for students, where simpler differential diagnostic questions are discussed with the instructions of a full or associate professor.
- Participation in tutorials held on the most important theoretical subjects, enabling students to get acquainted with the standpoint of the hospital in debated questions.
- In addition to the above, students are expected to be able to contact children patients of various ages (to win the patients for the examination), to do basic nursing duties (feeding, drinking, bathing, changing of infants’ diapers, administering of medicaments).
- Working in the wards:
  a) ward round (physical examination, discuss about illnesses, therapy, different diagnoses, etc.)
  b) follow up on patients
  c) paperwork (status of physical findings, decursus, discharge report, etc.)
  d) diagnostic procedures (venapuncture, urine collection, etc.)
- Ward round participation

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

**Note:** Only legibly, completely and accurately filled out, institutionally sealed, original acceptance letters are recognized by the I. Department of Pediatrics!
OBSTETRICS AND GYNECOLOGY

Essential Requirements in Obstetrics

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

General information

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

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

Responsible Secretary: Andrea Kovács (Andi)

Rotation periods: set by the English Secretariat, but for individual changes one might apply at the Department of Neurology. To ease the scheduling of other 6th year practices the Department shall organize “early rotations” right after taking the 5th year semifinal exam.

Neurology rotation is 3 weeks long. Students receive their schedule and assignments on the first day of practice. During the training students must write one neurological case report. It is also obligatory to spend one day at our Outpatient Clinic and to take part in one nightduty (no sleep in). Students’ activity in the wards, at the Outpatient Clinic and during duty, and also the case report is evaluated by the student’s tutor on an assessment sheet. The assessment form and the case report must be presented at the final exam. During the training period two days of absence are allowed.

Final examination

One can register for the exam only through the Neptun-system.

The final examination consists of:
1. practical part: neurological examination skills, decision making, tested at the bedside;
2. theoretical part: 3 theoretical questions.
   Examinations start at 10 a.m. Students must present their index book, assessment form, case report and in case of retake the permission from the Office of Dean.
   On event of failing the earliest possible retake is 10 days later.

Official textbooks:

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

Other suggested books:

2. Duus: Topical Diagnosis in Neurology. Thieme Medical Publishers
6th year Medical Student Clinical Neurology Learning Objectives

Neurologic History and Examination

1. Perform a competent history, noting the following factors:
   A. Establish the onset, progression and character of the disorder identifying all related symptoms.
   B. Perform a standard neurologic review of symptoms with regard to personality, memory, headaches, pain, seizures, impairments of consciousness, vision, hearing, language function, swallowing, coordination, gait, weakness, sensory alterations, sphincter disturbance, and involuntary movements.

2. Perform a neurologic examination
   A. Perform a screening mental status examination to include:
      - level of consciousness assessment, and aphasia assessment.
   B. Examine for meningismus, straight leg raising maneuver.
   C. Cranial nerve examination
   D. Motor examination including: tone, strength and bulk, pronator drift, abnormal movements.
   E. Perform a reflex examination (muscle stretch reflexes, superficial reflexes, pathologic reflexes)
   F. Coordination examination including finger-to-nose- test, heel-to-shin test, rapid alternating movements.
   G. Gait examination: stance and Romberg test, gait, tandem gait, ability to rise from sitting, toe walking and heel walking.
   H. Perform sensory examination including primary modalities (pain, temperature, position, vibration) and secondary/cortical modalities (stereognosis, graphesthesia, double simultaneous stimulation).

I. Acquire the following skills:
   A. Anatomic and physiologic basis of the neurologic examination.
   B. Competent history, physical and neurologic examination.
   C. Localize the lesion using the clinical database.
   D. Develop a differential diagnosis of the clinical problem.
   E. Assess the acuteness of neurological diseases, recognize neurological emergencies.
   F. Formulate a plan of investigation and management.

II. Describe the indications, techniques, results, contraindications and risks of the following:
   A. Lumbar puncture (investigation of CSF)
   B. EEG, EMG, ENG, Transcranial magnetic stimulation
   C. CT, MRI, SPECT, PET
   D. Carotid and transcranial ultrasound

III. Disorders of motor function
   A. Differentiate between upper and lower motor neuron lesion (UMN, LMN).
   B. UMN facial weakness and LMN facial weakness.
   C. Disorders of coordination. Recognize symptoms of cerebellar disorders.
      - Define ataxia, dysmetria, wide-based gait, and discuss the localization.
   D. Define and differentiate involuntary movement disorders: tremor, rigidity, spasticity, athetosis, chorea, dystonias, myoclonus, tics. Discuss the findings and treatment of: Parkinson’s disease, essential tremor, tardive dyskinesia, Huntington’s chorea, Wilson’s disease.

IV. Disorders of sensation
   A. Differentiate central sensory disorders from peripheral sensory disorders.

V. Disorders of vision
   A. Localize the lesions causing vision disorders and visual field defects.
   B. Differentiate papilledema from papillitis.
   C. The innervation deficit of the ocular muscles.
   D. Recognize gaze problems and nystagmus.
   E. Assess rystalli abnormalities.
VI. Episodic disorders
A. Seizure disorders: generalized and partial seizures, distinguish seizure from syncope.
B. Describe Todd's postictal phenomenon.
C. Evaluation of a patient for new-onset seizure.
D. The anticonvulsants, their indications and side effects.
E. Management of a patient in status epilepticus.
F. Narcolepsy and obstructive sleep apnea.

VII. Cerebrovascular diseases
A. Define the following: asymptomatic carotid bruit, TIA, amaurosis fugax, ischemic infarct, lacunar infarct, hemorrhagic infarct, parenchymal hemorrhage, SAH.
B. The clinical features of various territorial infarcts.
C. Treatment options to prevent infarction in atrial fibrillation and carotid stenosis.
D. The clinical features for hypertensive parenchymal hemorrhage.
E. The clinical picture and diagnosis of SAH. Early medical/surgical management of a patient with a SAH.

VIII. Multiple sclerosis (MS)
A. The criteria for the clinical diagnosis of MS.
B. The treatment of MS.

IX. Head trauma
A. Define the temporal profile, symptoms and treatment of: commotion, concussion, anterograde and retrograde amnesia, subdural hematoma, epidural hematoma, contusion or hemorrhage, liquorreha.

X. Dizziness and disorders of hearing
A. Define vertigo, and contrast it with other type of dizziness.
B. Describe nystagmus, hanging head test (Hallpike maneuver), calorics.
C. Identify the clinical features of: benign paroxysmal positional vertigo, vestibular neuronitis, Meniere's disease, brainstem TIA with vertigo, acoustic neuroma.

XI. Disorders of higher cognitive functions
A. Define and assess: dementia, delirium, amnesia, confabulation, hallucination.
B. Define normal-pressure hydrocephalus.
C. Define the anatomical basis for aphasia and dysarthria.
D. Differentiate the aphasias on the basis of ability to produce speech, comprehension, naming, repetition.

XII. Disorders of altered consciousness
A. Define hypnoid and non-hypnoid unconsciousness.
B. The anatomic basis of consciousness.
C. Assess the comatose patient, evaluation and treatment.
D. Localize the following: decorticate and decerebrate rigidity, conjugately deviated eyes, pathologic respiration, pinpoint pupils, anisocoria, intact versus absent oculocephalic response, intact versus disconjugate ice water calorics.
E. Diagnosis and management of increased intracranial pressure (ICP).
F. Symptoms of uncal and other herniations.

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

XIV. Brain tumors
A. Clinical presentation and diagnosis of primary brain tumors.
B. Metastatic tumors to the brain in adults.
XV. Infections
   A. Bacterial meningitis, viral meningitis, encephalitis including herpes simplex, chronic meningitis, brain abscess. Neurosyphilis. Lyme disease.
   B. HIV and the nervous system.

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

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

XVIII. Alcohol related disorders
   A. Wernicke-Korsakoff syndrome, dementia.
   B. Delirium tremens, alcohol withdrawal seizure.
   C. Cerebellar degeneration, peripheral polyneuropathy.
Neurology Examination Question List for 6th year Students

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

2nd series
1. Neurological causes of impaired visual acuity. Visual field defects.
2. Ocular movement and gaze disorders
3. Disorders of the vestibular system.
5. Syndromes of pons and mesencephalon lesions
6. The muscle tone control
7. Neuroanatomical basis of sensory disturbances
9. Gait disorders
10. Symptoms of frontal lobe damage
11. Symptoms of temporal lobe damage
12. The limbic system
13. Symptoms of parietal lobe damage
14. Symptoms of occipital lobe damage
15. Classification of aphasia
16. Agnosia, apraxia, alexia, agraphia
17. The basal ganglia
18. Disorders of the thalamus
19. Localisation of memory disturbances
20. Imaging techniques (angiography, CT, MR, PET, SPECT)
21. Investigation of cerebral circulation
22. EEG in the diagnostic workup
23. EMG, nerve conduction studies, transcranial magnetic stimulation and evoked potentials (BAEP, VEP, SSEP)
24. The lumbar puncture and the examination of cerebrospinal fluid
25. The cerebral circulation, and its regulation
26. Classification of cerebrovascular disorders
27. TIA
28. Causes of cerebral ischaemia in young adults
29. Treatment and prevention of cerebral ischemia
30. Classification of epilepsy
31. Diagnostic workup of epilepsy
32. Differential diagnosis of syncope and other types of disturbed consciousness
33. Treatment of epilepsy

3rd series
1. Neurological disorders caused by viral infections
2. Neurological disorders caused by Herpes virus
3. Prion-diseases, slow virus infections
4. Neurological consequences of AIDS
5. Clinical types and treatment of multiple sclerosis
6. Hystopathological classification of brain tumors
7. Metastatic tumors of the brain
8. Paraneoplasias of the nervous system (PML, neuropathies, cerebellar deg., Lambert-Eaton sy.)
9. Disorders associated with parkinsonian syndrome
10. Treatment of Parkinson’s disease
11. Hyperkinetic movement disorders
12. Hyperkinesias
13. Classification of encephalopathies
14. Primary degenerative dementias
15. Multiple system atrophy
16. Disturbed cerebrospinal fluid circulation (hydrocephalus)
17. Syndrome of brachial plexus damage
18. Syndrome of radial, ulnar and median nerve damage
19. Syndrome of lumbosacral plexus damage
20. Etiology of polyneuropathies
21. Neuropathies in diabetes mellitus
22. Inherited neuropathies (Charcot-Marie, Dejerine-Sottas)
23. Low back pain, and cervical disk disease
24. Malformation of the spine and spinal cord
25. Symptoms of the disorder of spinal cord
26. Motoneuron diseases
27. Muscular dystrophies
28. Muscle disorders
29. Primary headache syndromes
30. The neuralgias
31. The physiological sleep and the sleep disorders
32. Genetic disorders in neurology (Huntington chorea, fragile X, dystrophia myotonica)
PSYCHIATRY

Department of Psychiatry and Psychotherapy
Tutor: Dr. Erika Szily

Teaching Psychiatry for the sixth-year students at the Department of Psychiatry and Psychotherapy at Semmelweis University

The goals of the psychiatric practices (3 weeks)

The goal of our Clinic is to teach medical students about the most important signs and symptoms of the most common diseases as psychiatric disorders have a relatively high prevalence in the population. Considering the high prevalence and the last but not least economic consequences, psychiatric disorders can be a burden for every society. Every medical student must be familiar with the high prevalence of depressive and anxiety disorders. Hungary was once one of the leading countries among those with high suicide rates; therefore, we require them to get acquainted with important details of the main causes and therapeutic possibilities of suicide, as well. As many psychiatric disorders can mask somatic diseases, medical students have to learn about the differentiation of these conditions.

In the 5th year students must base their knowledge on lectures and materials of practice where they have an opportunity to talk to a psychiatric patient, so they can learn how to detect the most important signs and symptoms of diseases. During the 6th year, they need to explore patients and write a case report according to the sample that is available on the website of our Clinic. Before the oral exam they have to discuss this case report with the responsible tutor who will give a mark for it. Students are not allowed to take their final exam without a marked case report. We have a certificate form on our website containing all the details students must bring from the hospital where they have completed their rotation.

The link is: http://semmelweis.hu/pszichiatria/oktatas/the-english-version-can-be-found-here/

Objectives/target abilities:

- The ability how to obtain a complete and reliable history
- The method of asking about specific psychiatric symptoms or how to evaluate the information provided by the patients including:
  - orientation and attention
  - affect
  - thought disorder
  - memory
  - psycho-motor abilities
  - perception
  - motivation, intellect and personality
- The ability of noticing states of potential psychiatric emergency
- The ability to recognize specific symptoms that can refer to any hidden psychiatric problem which is not told by the patients
- The ability of summarizing all the gained information in a detailed case report
- The ability of establishing a tentative diagnosis and to know what kind of tests (either laboratory or psychological or neuro-radiological, etc) are needed for the correct diagnosis
- Being aware of the most important effects and side/adverse effects of drugs used in psychiatry
- To learn that the practitioner must always consider the possible existence of psychiatric disorders even when there are a lot of somatic symptoms, since they can also appear as a result of psychiatric diseases

We have 5 wards with different profiles in our Clinic. Students must join these wards according to their schedule made by our training coordinator. Everybody has a tutor within the ward he or she is scheduled to. The tutor presents the specific profile of that particular ward, but they also have the opportunity to go and see other wards, too. They spend a day at the out-patient department of our Clinic, which is very useful because there are many patient examinations referred from other departments of Semmelweis University. Thus, they can gain insight into the most important psychiatric features of internal medicine, neurology, surgery etc. Students must join for one all-night-duty and they have to participate in the emergency treatment performed during this period.

Under the supervision of an appointed physician students have to:
- Participate in the work of one unit;
- Evaluate patients independently;
- Write a detailed case history of one patient which has to be presented at the exam;
- Participate in consultations.
The internship in Psychiatry has to be completed at a Department of a University or in a Teaching Hospital which has a contract with a University. Students completing the internship abroad have to present a document of evaluation (i.e. Certificate downloadable from our website) indicating their performance during the internship and a grade from 5 (excellent) to 1 (failure).

Requirements
1. The 6th year includes a 3-week-long rotation in Psychiatry in a hospital or clinic which is accredited for teaching by Semmelweis University.
2. If you want to complete your rotation abroad, then before you start it, you must present at our department an officially stamped statement of acceptance issued by the teaching hospital abroad where you intend to spend your rotation.
   BE AWARE: The Letter of Acceptance for the 4-week-long Psychiatry internship requested from practice places abroad must state:
   a) The training place abroad is a teaching hospital
   b) A brief description of how Psychiatry is taught in that institution
   c) The name of the responsible tutor (name, e-mail)
3. The Psychiatry practice must consist of 6 hours on 20 (4x5) workdays at psychiatric wards. Students participate in the everyday work of the ward(s), in patients’ admission, in ward rounds and in therapeutic decisions. One all-night-duty is compulsory within the rotation period.
4. Writing a case report during the rotation period is a task for every student. A sample case report is available on the website of our department
   http://semmelweis.hu/pszichiatria/oktatas/the-english-version-can-be-found-here/
5. Case reports should not include patients’ personal data (name, birth date, national insurance number, etc). Only those practice places are acceptable where the release of the case report is not forbidden by law. Students completing the internship abroad have to present at the exam the CERTIFICATE in which the tutor has indicated their performance during the internship on the scale: excellent-satisfactory-unsatisfactory and commented on their strengths and weaknesses.

Without these documents students are not allowed to take their final exam in Psychiatry.
Please note that the Final Examination in Psychiatry cannot be taken within the 4th week of the rotation, just after the completion of 4 full weeks.
Sign-up for the exams: through the NEPTUN SYSTEM.
7. It is important to bring to the final exam this signed Certificate of the practice the case report (or a detailed report of the case report by the tutor on a separate sheet of paper) the mark for the case report, the filled-in Register of observed psychiatric conditions that was signed continuously by the tutors during the 5th and 6th year. The form is available on our website:
   http://semmelweis.hu/pszichiatria/oktatas/the-english-version-can-be-found-here/
FAMILY MEDICINE IN DAILY PRACTICE within Internal Medicine

One week Family Medicine practice within sixth year’s rotation in Internal Medicine

Tutor: Dr. Péter Torzsa
During practice, treatment of patients is carried out with continuous consultation.

The student should:
- master the basics of treatment of acute cases;
- gain insight into the everyday practice of ongoing treatment of patients and the care of the chronically sick;
- form an opinion of the importance of the doctor-patient and nurse-patient relationship;
- besides treating patients, encounter social and family problems that have an influence on health;
- having gained the necessary knowledge and experience, prepare – under the GP tutor’s supervision – an independent case study, and carry out treatment independently;
- take part in home visits;
- keep a continuous documentary record of observations and experience in a practice diary.

If the student wishes to complete the internship outside Hungary, the following instructions are to be followed:

Objectives of the course
1. To introduce the medical care outside the hospital, giving an opportunity to study the characteristics of work in general practice.
2. To help to manage patient members of a family who have problems (not only diseases) with their physical, psychological and social aspects.
3. To provide an opportunity to improve students’ clinical skills.

Structure of the course
1 week = 5 workdays: working together with a GP tutor in his office and accompanying him/her on house calls:
4 consulting hours/day
1-3 house calls/1 week

Topics to observe and concentrate on during the course:
- patient-physician communication (structure, methods)
- problem-based care
- problem-oriented solution
- decision-making responsibility
- common acute problems
- complex care of patients with chronic illnesses

Make short notes in a 3–4 pages diary about:
8–10 instructive and interesting cases/day
(age, sex, problem, alteration in physical status, solution)

The following should be practiced independently:
history taking
physical examination
making medical record

Assessment and evaluation:
The performance of the students will be assessed on the diary and a written qualifying report by the GP tutor, so show these instructions to him/her, asking for an opinion about your medical knowledge
pharmaceutical knowledge
practical abilities (physical examination)
attitude, interpersonal relations, communication skills
TRANSFUSION COURSE

Department of Pathophysiology
Course Director: Prof. Dr. Attila Tordai

1. Introduction, the history of transfusion medicine
2. Immunological introduction: basic mechanisms important in transfusion medicine
3. Immune response to incompatible transfusion: antigen (protein, carbohydrate) recognition, primary/secondary immune response
4. The molecular structure and physiological role of red cell antigens
5. Plasticity of stem cells, regenerative medicine
6. Introduction of the HLA system, diagnostics in transplantation immunogenetics
7. Platelet, granulocyte antigen systems
8. The blood group serology compatibility
9. Immunomodulation effects of transfusion
10. Blood donors, blood letting for donation, donor screening, risk assessment and reduction, international trends
11. Red cell, platelet, granulocyte and plasma blood products: manufacturing, storage, quality parameters
12. Generation and clinical use of albumin and immunglobulin blood products
13. Challenges and approaches of blood supply management, international examples
14. Steps and practices of transfusion execution, international outlook
15. Indications of red cell, platelet and granulocyte transfusion
16. Alternatives to red cell transfusion: stimulation of red cell formation
17. Apheresis and extracorporal photopheresis
18. Transfusion aspects of hematology patient care, application of special blood products
19. Options for blood saving, peri-operative blood collection
20. Solid organ transplantation and its transfusion aspects (complications, case reports)
21. Infectious diseases transmitted by transfusion, epidemiology, screening, prevention
22. Transfusion aspects of the coagulation system, generation and clinical application of coagulation factor products
23. Treatment and long term care in inherited coagulation disorders
24. Effects of massive transfusion, factor substitution in acquired bleeding disorders
25. Transfusion aspects of cardiac surgery (complications, case reports)
26. Immunological complications of transfusions: hemolytic and non-hemolytic
27. Non immunological complications of transfusions: circulatory and iron overload
28. Hungarian and international legal aspects of transfusion medicine
29. Test examination
AMBULANCE PRACTICE (Prehospital Emergency Medicine)

National Ambulance Service
Lecturer: Dr. Gábor Göbl

Syllabus

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

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

The certification of the practice should contain the
– period of time spent at the ambulance station
– list of cases the student participated at
– signature of the local director of the Ambulance Service

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

Mode of certifying absences: oral
Evaluation: “completed” or “not completed”

Important information: Solely in the Neptun registered students are welcome at the Central Ambulance Station (1055 Budapest, Markó u. 22) on the first day of the term at 9 in the morning. All the information concerning the location of the practice, schedule of work, information about safety at work, etc. will be announced at this time. Without getting these information nobody will be allowed to start the practice, and there will be no opportunity for replacement.

We ask the students not to turn directly to us with their wish to change schedule.
CARDIORESPIRATORY AND NEUROPHYSIOLOGICAL MEASURING METHODS

AOSKIK151_1A

Elective course for medical students in the 3-6th years

Course director: Dr. Habil. László Dézsi,
Private Professor of Physiology, Semmelweis University

The purpose of the course: To review the theory and practice of modern measuring methods in experimental and clinical medicine, and providing practical knowledge to medical students on cardiorespiratory and neurophysiological measurements. The course is based on but further extends the material delivered during the course of Medical physiology. Throughout the lectures we put an emphasis on potential methodological errors of measurements and examinations, as well as how to avoid them.

Detailed Program:
1. Introduction. Biomedical engineering. Design and safety requirements of biomedical equipments
2. Computerized data acquisition and analysis. Telemetry systems
3. General metrology. Basics of measurement and control theory
4. Home monitoring of cardiovascular health status. Determination of blood glucose and tissue glucose concentrations
5. Sampling of continuous signals. Digitizing analogue signals
6. Direct and indirect methods to determine cardiac output and peripheral blood flow
8. Significance of objective studies in the practice of audiology. Neurophysiological measurements (action potentials, brain stem evoked potentials)
10. Measuring blood pressure in the lab and clinics (invasive and noninvasive methods)
11. Complement-related immunological and cardiopulmonary responses
12. Studying brain function by functional imaging systems
13. Experimental methods to study nociception
14. Investigating the electrical activity of the heart. Design of ECG amplifiers

Acknowledgement of the course: Prerequisite of the course is the completion of the first 2 years (Theoretical module). Regular attendance (maximum 3 absences) is required. Signature in the Index and 2 credit points will be awarded after successful exam. Source: material of the lectures, supplementary literature will be provided by the lecturers.

Applications: via Neptun system. Contact person: Dr. László Dézsi (e-mail: dezsi.laszlo@richter.hu; phone: 06-1-431-4823; phone/fax: 06-72-536-019). The application of min. 5 students is required.
**GENERAL INFORMATION**

**Deadline of paying the tuition fee in the 6th year:** the first part is to be paid between **September 2-6, 2019**, the second part between **January 27– January 31, 2020**.

The professor responsible for the student’s instruction during the clinical rotation outside Hungary is requested to give a detailed certificate of the student’s performance. It is requested to be done in the Student Handbook! This certificate in the Student Handbook must be signed by the professor, the Head of the Department as well as by the director of the hospital or the Dean of the University the hospital is affiliated to. **Semmelweis University reserves the right to accept a certificate or refuse it in justified cases.** Students have to present these certificates to the concerned departments. After the departments have accepted them, students have to retain the originals and hand them in at the English Secretariat.

**Tuition fee reduction:**

1) In case the student completes more than the compulsory 3 weeks of clinical rotations at Semmelweis University, he/she has to pay 100% of the tuition fee valid in that academic year.

2) In case the student completes the 2 weeks compulsory Pediatrics rotation and 1 week Transfusion course at Semmelweis University and completes the remaining of the rotations abroad, he/she has to pay 80% of the tuition fee valid in the academic year. The relevant acceptance letters should be handed in latest until December 15. Otherwise the student is not entitled for the reduction!

Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!

**Please note:**

that you have to sign up for the General Board Examination held in June latest until April 30, 2020! For the August exam latest until July 15, 2020, November exam latest until October 15, 2020!
FACULTY OF DENTISTRY

Study Programs since the 2010/11 academic year
Study program for students started studies in the 2010/11 academic year

<table>
<thead>
<tr>
<th>BASIC MODULE</th>
<th>1st semester</th>
<th>2nd semester</th>
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<tbody>
<tr>
<td><strong>subjects</strong></td>
<td><strong>credit code</strong></td>
<td><strong>examination</strong></td>
</tr>
<tr>
<td>compulsory Anatomy, Histology, Embryology I.</td>
<td>C8L3P5</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory Physical Bases of Dental Materials</td>
<td>C2L2P0</td>
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<tr>
<td>compulsory Medical Chemistry</td>
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<tr>
<td>obligatory elective Medical Terminology</td>
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Total Credit 25

Total Credit 30
## BASIC MODULE

### 3rd semester

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<td>C7L3P4</td>
<td>semifinal</td>
<td>Anatomy, Histology, Embryology II.</td>
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<tr>
<td>compulsory Biochemistry, Molecular and Cellbiology II.</td>
<td>C6L3P3</td>
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<td>compulsory Medical and Dental Physiology I.</td>
<td>C11L6P5</td>
<td>semifinal</td>
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<td>compulsory Odontotechnology I.</td>
<td>C3L1P2</td>
<td>practice mark</td>
<td>General Dental Materials</td>
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<tr>
<td>compulsory Hungarian Medical Terminology III.</td>
<td>C2L0P4</td>
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<td>Hungarian Medical Terminology II.</td>
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### 4th semester

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<tr>
<td>compulsory Anatomy(Maxillofacial Anatomy) IV.</td>
<td>C5L3P2</td>
<td>final#</td>
<td>Anatomy, Histology, Embryology III.</td>
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<td>compulsory Medical and Dental Physiology II.</td>
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<td>practice mark</td>
<td>Odontotechnology I.</td>
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<tr>
<td>compulsory Conservative Dentistry and Endodontics, Pre-clinical I.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Odontotechnology I.</td>
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<td>compulsory Hungarian Medical Terminology IV.</td>
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#The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.
C= Credit point
L= Lecture (hours/week)
P= Practice (hours/week)
### PRE-CLINICAL MODULE

#### 5th semester

<table>
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<tr>
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<td>C4L1P3</td>
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<td>BASIC MODULE</td>
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<tr>
<td>compulsory</td>
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<td>C4L2P2</td>
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<tr>
<td>compulsory</td>
<td>Basic Immunology</td>
<td>C3L1P2</td>
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<tr>
<td>compulsory</td>
<td>Hungarian Dental Terminology I.</td>
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<td>practice mark</td>
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<tr>
<td>compulsory</td>
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<td>C2L0P2</td>
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#### 6th semester

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<td>compulsory</td>
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# CLINICAL MODULE

## 7th semester

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<td>C4L2P2</td>
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<td>Radiation protection</td>
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<td>Pathology I.</td>
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**Total Credit**: 39

## 8th semester

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**Total Credit**: 25

# The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.
C= Credit point
L= Lecture (hours/week)
P= Practice (hours/week)
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<th>examination</th>
<th>prerequisites</th>
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# CLINICAL MODULE

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* at the Dept. of Prosthodontics  
** at the Dept. of Conservative Dentistry  
#The grade influences the qualification of the diploma.  
15 credits should be gained from the elective subjects during the 5-year studies.  
C= Credit point  
L= Lecture (hours/week)  
P= Practice (hours/week)
Study Program for students started studies in the 2011/12 academic year

**BASIC MODULE**

### 1st semester

<table>
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<tr>
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<th>prerequisites</th>
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<tbody>
<tr>
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<td>C8L3P5</td>
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<tr>
<td>compulsory</td>
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<td>Medical Chemistry</td>
<td>C6L3P3,5</td>
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<tr>
<td>compulsory</td>
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**Total Credit** 25

### 2nd semester

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**Total Credit** 30
### BASIC MODULE

#### 3rd semester

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<td>Odontotechnology and Prosthodontics Preclinical I.</td>
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#The grade influences the qualification of the diploma.

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

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
### PRE-CLINICAL MODULE

#### 5th semester

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#### Total Credit

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### PRE-CLINICAL MODULE

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#### Total Credit

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### CLINICAL MODULE

#### 7th semester

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**Total Credit**: 39

#### 8th semester

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**Total Credit**: 25

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#The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.

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

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*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

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

C= Credit point
L= Lecture (hours/week)
P= Practice (hours/week)
<table>
<thead>
<tr>
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*at the Dept. of Prosthodontics
*at the Dept. of Conservative Dentistry
#The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.
C= Credit point
L= Lecture (hours/week)
P= Practice (hours/week)
# Study Program for students started studies in the 2012/13 academic year

## BASIC MODULE

### 1st semester

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<td>C2L2P0</td>
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<td>compulsory</td>
<td>Medical Chemistry</td>
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<td>Medical Biology (Cellbiology)</td>
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**Total Credit**: 28

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**Total Credit**: 29
### BASIC MODULE

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**Total Credit** 30

#### 4th semester

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**Total Credit** 34

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

### 5th semester

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<tr>
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**Total Credit** 30

## PRE-CLINICAL MODULE

### 6th semester

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**Total Credit** 33
### CLINICAL MODULE

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**Total Credit** 41

#### 8th semester

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**Total Credit** 25

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# The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.
C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
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<thead>
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**Total Credit** 38

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

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

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

### 10th semester

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**Total Credit**  
48

*at the Dept. of Prosthodontics

#The grade influences the qualification of the diploma.

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

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
Study Program for students started studies in the 2013/14 academic year

**BASIC MODULE**

**1st semester**

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**Total Credit** 28

**BASIC MODULE**

**2nd semester**

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**Total Credit** 31
### BASIC MODULE

#### 3rd semester

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# The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.

C = Credit point  
L = Lecture (hours/week)  
P = Practice (hours/week)
## PRE-CLINICAL MODULE

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**Total Credit** 30
## PRE-CLINICAL MODULE

### 6th semester

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| compulsory    | Conservative Dentistry and Endodontics I.             | C4L1P3      | practice mark | Conservative Dentistry and Endodontics, Pre-clinical Course II.  
|               |                                                        |             |             | Odontotechnology and Prosthodontics Preclinical Course III.                   |
| compulsory    | Internal Medicine I.                                   | C3L2P2      | practice mark | General and Oral Pathophysiology, Pathology                                  |
| compulsory    | Oral and Maxillofacial Surgery I.                      | C4L1P3      | practice mark | Oral and Maxillofacial Surgery, Pre-clinical course                          |
| compulsory    | Oral Biology                                           | C5L3P2      | final#      | General and Oral Pathophysiology, General and Oral Microbiology, Anatomy (Maxillofacial Anatomy) IV. |
| compulsory    | Genetics and Genomics                                  | C2L2P1      | final#      | Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II. |
| compulsory    | Oral Pathology                                          | C4L2P2      | final#      | Pathology, General and Oral Microbiology, General and Oral Pathophysiology   |
| compulsory    | Preventive Dentistry II.                               | C1L1P0      | final#      | Preventive Dentistry I.                                                      |
| compulsory    | Prosthodontics I.                                      | C4L1P3      | practice mark | Odontotechnology and Prosthodontics Preclinical Course III.  
|               |                                                        |             |             | Conservative Dentistry and Endodontics, Pre-clinical II.                    |
| compulsory    | Radiation protection                                   | C2L1.5P1    | semifinal   | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.  
|               |                                                        |             |             | Medical and Dental Physiology II.                                            |
| compulsory    | Hungarian Dental Terminology II.                       | C2L0P4      | final        | Hungarian Dental Terminology I.                                               |
| compulsory    | Oral Diagnostics I.                                    | C2L1P1      | semifinal    | Pathology                                                                    |
| compulsory    | Dento-Alveolar practice (summer, minimum 1 week)       | C0L0P30     | signature    |                                                                               |

**Total Credit** 33

### Explanation

- **15 credits** should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.
- The grade influences the qualification of the diploma.
- 15 credits should be gained from the elective subjects during the 5-year studies.
- **C** = Credit point
- **L** = Lecture (hours/week)
- **P** = Practice (hours/week)
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### CLINICAL MODULE

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

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**Total Credit** 32

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry*
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| Total Credit  | 50                                            |             |                    |                                                   |

* at the Dept. of Prosthodontics
#The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.
C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
Study Program for students started studies in the 2014/2015 academic year

BASIC MODULE

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**Total Credit**: 26

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**Total Credit**: 33
### BASIC MODULE

#### 3rd semester

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<td>C7L3P4</td>
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<td>Biochemistry, Molecular and Cellbiology I.</td>
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<td>C9L6P3.5</td>
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**Total Credit**: 26

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### BASIC MODULE

#### 4th semester

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**Total Credit**: 36

---

#The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
## PRE-CLINICAL MODULE

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<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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**Total Credit**: 30
### PRE-CLINICAL MODULE

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<td>practice mark</td>
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</table>

*Total Credit 33*

# The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
<table>
<thead>
<tr>
<th>subjects code</th>
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<th>credit code</th>
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<th>prerequisites</th>
</tr>
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| obligatory elective |                            |             |             | Total Credit                                                  | 40
## CLINICAL MODULE

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**Total Credit** 24

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# The grade influences the qualification of the diploma.

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

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
<table>
<thead>
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<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry*
### CLINICAL MODULE

<table>
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<th>subjects code</th>
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<th>prerequisites code</th>
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</table>

**Total Credit**  50

* at the Dept. of Prosthodontics

#The grade influences the qualification of the diploma.

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

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
# Study Program for students started studies in the 2015/2016 academic year

## BASIC MODULE

### 1st semester

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
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<tr>
<td>compulsory</td>
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<td>C8L3P5</td>
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<tr>
<td>compulsory</td>
<td>Physical Bases of Dental Materials</td>
<td>C2L2P0</td>
<td>semifinal</td>
</tr>
<tr>
<td>compulsory</td>
<td>Medical Chemistry</td>
<td>C6L3P3</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
<td>Medical Biology (Cell Biology)</td>
<td>C3L2P1</td>
<td>final#</td>
</tr>
<tr>
<td>compulsory</td>
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<td>C3L1.5P2</td>
<td>semifinal</td>
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<tr>
<td>compulsory</td>
<td>Hungarian Language</td>
<td>C2L0P4</td>
<td>practice mark</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Medical Latin I.</td>
<td>C2L0P2</td>
<td>practice mark</td>
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<tr>
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**Total Credit** 26

### 2nd semester

<table>
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<th>examination</th>
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<td>final#</td>
<td>Biophysics I., Physical Bases of Dental Materials</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>Nursing Practice (summer, 2 weeks)</td>
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</table>

**Total Credit** 33

**Explanation**

15 credits should be gained from the **elective subjects** during the 5-year studies – see the elective list after the 3rd year study program.

#The grade influences the qualification of the diploma.

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

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
### BASIC MODULE

#### 3rd semester

<table>
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<th>subjects code</th>
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</thead>
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</tr>
<tr>
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<td>Biochemistry, Molecular and Cellbiology I., Biophysics II.</td>
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<tr>
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<td>C2L0P4</td>
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<td>C5L3P2</td>
<td>final#</td>
<td>Biochemistry, Molecular and Cellbiology II., Medical and Dental Physiology I.</td>
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<td>Medical and Dental Physiology II.</td>
<td>C9L6P3.5</td>
<td>final#</td>
<td>Medical and Dental Physiology I., Medical and Cellbiology II.</td>
</tr>
<tr>
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<td>Odontotechnology and Prosthodontics Preclinical Course II.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Odontotechnology and Prosthodontics Preclinical Course I.</td>
</tr>
<tr>
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<td>Conservative Dentistry and Endodontics, Pre-clinical I.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Odontotechnology and Prosthodontics Preclinical Course I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Hungarian Dental Terminology II.</td>
<td>C4L0P4</td>
<td>practice mark</td>
<td>Hungarian Dental Terminology I.</td>
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<tr>
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**Explanation**

- **15 credits** should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.
- The grade influences the qualification of the diploma.
- The grade influences the qualification of the diploma.
- **15 credits** should be gained from the elective subjects during the 5-year studies.
- C = Credit point,
- L = Lecture (hours/week),
- P = Practice (hours/week)
## PRE-CLINICAL MODULE

<table>
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<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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</thead>
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| compulsory    | Conservative Dentistry and Endodontics, Pre-clinical II. | C4L1P3 | final# | Anatomy (Maxillofacial Anatomy) IV.  
Conservative Dentistry and Endodontics, Pre-clinical I.  
General Dental Preclinical Practice |
| compulsory    | General and Oral Microbiology | C4L2P2 | final# | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.  
Medical and Dental Physiology II. |
| compulsory    | General and Oral Pathophysiology | C4L2P2 | final# | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.  
Medical and Dental Physiology II. |
| compulsory    | Basic Immunology | C3L2P1 | semifinal | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.  
Medical and Dental Physiology II. |
| compulsory    | Hungarian Dental Terminology III. | C2L0P4 | practice mark | Hungarian Medical Terminology II. |
| compulsory    | Oral and Maxillofacial Surgery, Pre-clinical course | C2L0P2 | practice mark | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.  
Medical and Dental Physiology II. |
| compulsory    | Pathology | C5L3P2 | final# | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.  
Medical and Dental Physiology II. |
| compulsory    | Preventive Dentistry I. | C3L1P2 | practice mark | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.  
Medical and Dental Physiology II. |
| compulsory    | Odontotechnology and Prosthodontics Preclinical Course III. | C3L0P3 | final# | Odontotechnology and Prosthodontics Preclinical Course II.  
General Dental Preclinical Practice |
| compulsory    | The Medical Basis of Disaster Management I. | C0L2 hours/sem | signature | Anatomy IV. |

**Total Credit** | **30**

Explanation

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

# The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
## PRE-Clinical Module

<table>
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<tr>
<th>Subjects Code</th>
<th>Subjects</th>
<th>Credit Code</th>
<th>Examination</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
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<td>C4L1P3</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.</td>
</tr>
<tr>
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<td>C3L2P2</td>
<td>practice mark</td>
<td>General and Oral Pathophysiology, Pathology</td>
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<tr>
<td>compulsory</td>
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<td>C4L1P3</td>
<td>practice mark</td>
<td>Oral and Maxillofacial Surgery, Pre-clinical course, Pathology</td>
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<tr>
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<td>C5L3P2</td>
<td>final#</td>
<td>General and Oral Pathophysiology</td>
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<td>final#</td>
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<td>C4L1P3</td>
<td>practice mark</td>
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</table>

**Total Credit** 33

# The grade influences the qualification of the diploma
C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
### CLINICAL MODULE

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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<td>Radiation protection, Pathology, General and Oral Microbiology</td>
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<td>practice mark</td>
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# CLINICAL MODULE

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<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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**Total Credit** 26

Explanation

- **15 credits** should be gained from the **elective subjects** during the 5-year studies – see the elective list after the 3rd year study program.
- # The grade influences the qualification of the diploma.
- C = Credit point
- L = Lecture (hours/week)
- P = Practice (hours/week)
<table>
<thead>
<tr>
<th>subjects code</th>
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<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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</thead>
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<td>C5L1P4</td>
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<td>Conservative Dentistry and Endodontics III.</td>
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<tr>
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<td>Periodontology III.</td>
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<td>Internal Medicine III., First Aid</td>
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<tr>
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<td>C1L0P1</td>
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*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry
#The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.

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

<table>
<thead>
<tr>
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**Explanation**

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

# The grade influences the qualification of the diploma

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
# Study Program for students started studies in the 2016/2017 academic year

## BASIC MODULE

### 1st semester

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<td>compulsory</td>
<td>Physical Bases of Dental Materials</td>
<td>C2L2P0</td>
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<tr>
<td>compulsory</td>
<td>Medical Chemistry</td>
<td>C6L3P3</td>
<td>final#</td>
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<tr>
<td>compulsory</td>
<td>Medical Biology (Cell Biology)</td>
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<td>compulsory</td>
<td>Biophysics I.</td>
<td>C3L1.5P2</td>
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<tr>
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<td>practice mark</td>
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<tr>
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<td>Medical Latin I.</td>
<td>C2L0P2</td>
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<tr>
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### 2nd semester

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<tr>
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<td>C2L0P4</td>
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<td>compulsory</td>
<td>General Dental Materials</td>
<td>C1L1P0</td>
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<td>Physical Bases of Dental Materials</td>
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**Explanation**

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

# The grade influences the qualification of the diploma.

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

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

#### 3rd semester

<table>
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<td>practice mark</td>
<td>General Dental Materials, Anatomy, Histology, Embryology II., Medical Latin II.</td>
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<tr>
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#### 4th semester

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<tr>
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<td>C5L3P2</td>
<td>final#</td>
<td>Biochemistry, Molecular and Cellbiology II., Medical and Dental Physiology I.</td>
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<tr>
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<td>Medical and Dental Physiology II.</td>
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<td>final#</td>
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<td>C4L1P3</td>
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<td>C4L1P3</td>
<td>practice mark</td>
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</tr>
<tr>
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<td>Hungarian Dental Terminology II.</td>
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<tr>
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<td>semifinal</td>
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**Explanation**

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

#The grade influences the qualification of the diploma.

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

C = Credit point, L = Lecture (hours/week), P = Practice (hours/week)
## PRE-CLINICAL MODULE

### 5th semester

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<td>final#</td>
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<td>C5L3P2</td>
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**Total Credit** 30

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**Explanation**

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

# The grade influences the qualification of the diploma.

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
## PRE-CLINICAL MODULE

### 6th semester

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<td>practice mark</td>
<td>Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.</td>
</tr>
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<td>C3L2P2</td>
<td>practice mark</td>
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<td>C4L1P3</td>
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<td>Hungarian Dental Terminology III.</td>
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<td>C2L1P1</td>
<td>semifinal</td>
<td>Pathology, General and Oral Pathophysiology</td>
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### Total Credit

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</table>

# The grade influences the qualification of the diploma

C = Credit point  
L = Lecture (hours/week)  
P = Practice (hours/week)
<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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<tbody>
<tr>
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<td>C4L2P2</td>
<td>final#</td>
<td>Radiation protection Pathology, General and Oral Microbiology</td>
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### CLINICAL MODULE

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**Explanation**

- **15 credits** should be gained from the **elective subjects** during the 5-year studies – see the elective list after the 3rd year study program.
- The grade influences the qualification of the diploma.
- **C = Credit point**
- **L = Lecture (hours/week)**
- **P = Practice (hours/week)**
## CLINICAL MODULE

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<thead>
<tr>
<th>subjects code</th>
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* at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry  
# The grade influences the qualification of the diploma.  
15 credits should be gained from the elective subjects during the 5-year studies.  
C = Credit point  
L = Lecture (hours/week)  
P = Practice (hours/week)
### CLINICAL MODULE

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</table>

**Total Credit** 50

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**Explanation**

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

* The grade influences the qualification of the diploma

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
Study Program for students started studies
in the 2017/2018 academic year

BASIC MODULE

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#### 3rd semester

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**Explanation**

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.

#The grade influences the qualification of the diploma.

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

C = Credit point, L = Lecture (hours/week), P = Practice (hours/week)
## PRE-CLINICAL MODULE

<table>
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<th>examination</th>
<th>prerequisites</th>
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| compulsory   | Conservative Dentistry and Endodontics, Pre-clinical II. | C4L1P3 | final# | Anatomy (Maxillofacial Anatomy) IV.  
Conservative Dentistry and Endodontics, Pre-clinical I.  
General Dental Preclinical Practice |
| compulsory   | General and Oral Microbiology | C4L2P2 | final# | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Celliology III.  
Medical and Dental Physiology II. |
| compulsory   | General and Oral Pathophysiology | C4L2P2 | final# | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Celliology III.  
Medical and Dental Physiology II. |
| compulsory   | Basic Immunology | C3L2P1 | semifinal | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Celliology III.  
Medical and Dental Physiology II. |
| compulsory   | Hungarian Dental Terminology III. | C2L0P4 | practice mark | Hungarian Medical Terminology II. |
| compulsory   | Oral and Maxillofacial Surgery, Pre-clinical course | C2L0P2 | practice mark | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Celliology III.  
Medical and Dental Physiology II. |
| compulsory   | Pathology | C5L3P2 | final# | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Celliology III.  
Medical and Dental Physiology II. |
| compulsory   | Preventive Dentistry I. | C3L1P2 | practice mark | Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Celliology III.  
Medical and Dental Physiology II. |
| compulsory   | Odontotechnology and Prosthdontics Preclinical Course III. | C3L0P3 | final# | Odontotechnology and Prosthdontics Preclinical Course II., General Dental Preclinical Practice |
| compulsory   | Medical Aspects of Disaster Preparedness and Response I. | C0L2 hours/sem | signature | |

| Total Credit | 30 |

Explanation
15 credits should be gained from the elective subjects during the 5-year
# The grade influences the qualification of the diploma
C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
## PRE-CLINICAL MODULE

### 6th semester

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*The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
## CLINICAL MODULE

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**Total Credit**: 26

**Explanation**

15 credits should be gained from the **elective subjects** during the 5-year studies – see the elective list after the 3rd year study program.  
# The grade influences the qualification of the diploma  
C = Credit point  
L = Lecture (hours/week)  
P = Practice (hours/week)
<table>
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<td>practice mark</td>
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*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry
#The grade influences the qualification of the diploma.
15 credits should be gained from the elective subjects during the 5-year studies.

C = Credit point
L = Lecture (hours/week)
P = Practice (hours/week)
**CLINICAL MODULE**

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**Explanation**

- **15 credits** should be gained from the **elective subjects** during the 5-year studies – see the elective list after the 3rd year study program
- # The grade influences the qualification of the diploma
- C = Credit point
- L = Lecture (hours/week)
- P = Practice (hours/week)
Study program for students started studies in the 2018/2019 academic year

**BASIC MODULE**

**1st semester**

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**Total Credit** 26

**2nd semester**

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**Total Credit** 35
### 3rd semester

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<td>Anatomy, Histology, Embryology II., Molecular Cellbiology I., Medical Latin II.</td>
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| Total Credit  | 28                                             |             |             |                                                                                                         |

### 4th semester

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| Total Credit  | 34                                             |             |             |                                                                                                         |
## PRE-CLINICAL MODULE
### 5th semester

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<th>prerequisites</th>
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**Total Credit** 38
**CLINICAL MODULE**

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**Total Credit** 26
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**Total Credit** 32
## Clinical Module

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<td>C20</td>
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FACULTY OF DENTISTRY
BASIC MODULE
New Study Program for students starting 1st and 4th year studies in the 2019/20 academic year is to be introduced. Details available before starting the academic year. Please note that corrections regarding the curricula, number of hours, requirements and credits will be implemented. Please follow the changes on the website.

### BASIC MODULE

#### 1st semester

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
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<th>examination</th>
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<tbody>
<tr>
<td>compulsory</td>
<td>Macroscopic Anatomy I.</td>
<td>C6L1P5</td>
<td>semi-final</td>
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<tr>
<td>compulsory</td>
<td>Physical Bases of Dental Materials</td>
<td>C2L2P0</td>
<td>semi-final</td>
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<tr>
<td>compulsory</td>
<td>Medical Chemistry</td>
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<td>C3L1.5P2</td>
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<td>compulsory</td>
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<td>C2L0P4</td>
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#### 2nd semester

<table>
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<tr>
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<tbody>
<tr>
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<td>C8L2P6</td>
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<td>Microscopic Anatomy I.</td>
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<td>compulsory</td>
<td>Molecular Cell Biology I.</td>
<td>C4L2,5P2</td>
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<td>Medical Chemistry, Cell Science</td>
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<tr>
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<td>Hungarian Medical Terminology</td>
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<tr>
<td>compulsory</td>
<td>General Dental Materials</td>
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<td>Physical Bases of Dental Materials</td>
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<td>C2L1P1</td>
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<tr>
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<td>History of Medicine</td>
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<tr>
<td>compulsory</td>
<td>Dental Assistant Practice (summer, 2 weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>Prerequisite of registering to the 3rd semester</td>
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<tr>
<td>compulsory</td>
<td>Nursing Practice (summer, 2 weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>Prerequisite of registering to the 3rd semester</td>
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<td><strong>Total Credit</strong></td>
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**Explanation**

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

#The grade influences the qualification of the diploma.

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
LIST OF TEXTBOOKS (The list may change!)

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

3. Sasvári-Müllner: Bioorganic Compounds 4 kötet. (Bp.)
MACROSCOPIC ANATOMY I – II.

Department of Anatomy, Histology & Embryology
Course Director: Dr. Andrea D. Székely

LEARNING OBJECTIVES
Aims of the lectures in anatomy: Presentation of the important and/or complicated chapters such as introductory chapters, thorax, pelvis, hand, foot, skull, heart, chapters of the visceral organs, central nervous system, organs of special senses, topographical anatomy.

Aims of the practical sessions in the dissecting room: Based on the weekly programs (see separate), students will both observe prosected cadaver specimens (bones, joints, muscles, viscera, brain) and perform dissections on parts of, or on an entire, enbalmed cadaver. Students are supervised by the lab instructors. Bones, joints, muscles and peripheral nervous system will be primarily taught in the dissecting room.

LECTURES: First semester: 1×45 min; second semester: 2×45 min.
PRACTICAL CLASSES: First semester: 5×45 min; second semester: 6×45 min.
ECTS CREDITS: Altogether 14 (first semester: 6; second semester: 8).
MIDTERM TESTS: Oral and/or written

ACCEPTENCE OF THE SEMESTER:
Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in 25%. Attendance will be recorded in the lectures and in the dissection room classes.

One of the midterm tests will have to be passed to gain acceptence of the semester. In case neither of the midterm tests are successful, only the e-learning type written midterm may be retaken (2 consecutive retake times are offered). Diligence of students will be evaluated by the instructor and this mark will form part of the semifinal/final examination. Students are eligible to sit for the final examination only upon presentation of a dissected specimen. The dissection work may be done during the two semesters. The specimen will be evaluated by a departmental board.

TYPE OF EXAMS: oral and written
First semester: semifinal examination, second semester: final exam

Semifinal and final examinations consist of written and oral (practical and theoretical) parts
1. Written pretest (e-learning module – access to SeKA account is obligatory)
2. Macroscopic Anatomy (identification of structures on true anatomical specimens) including relevent theoretical questions
LIST OF TEXTBOOKS


Recommended textbooks:

4. **Bräuer: Sobotta Flashcards** (Muscles; Bones, Ligaments, and Joints) URBFI, 2013.
COURSE DESCRIPTION

Macroscopic Anatomy I.

Lectures and dissection classes  
Subject matter: Macroscopy and clinically oriented anatomy of the parts of the musculoskeletal system, i.e. osteology, arthrology and myology, together with the vascular and nervous supply of the limbs and the trunk. Skull (viscerocranium, neurocranium). Cavities, muscles of the head & neck region. Macroscopy of the brain and spinal cord, membranes (dura, arachnoid and pia mater).

Credits: 6  
Prerequisite: none

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Dissection room</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The role of anatomy in the medical curriculum. Terminology</td>
<td>General introduction to practical work in the dissection room, tools and rules. Bones of the upper limb and the girdle, shoulder joint</td>
</tr>
<tr>
<td>2.</td>
<td>General arthrology and myology, joints, muscles and movements of the shoulder and the upper girdle</td>
<td>Muscles (flexors) of the upper limb/ girdle, Elbow joint</td>
</tr>
<tr>
<td>3.</td>
<td>Muscles and actions of the elbow joint</td>
<td>Upper limb, arm, forearm, Muscles and joints of the hand</td>
</tr>
<tr>
<td>4.</td>
<td>Joints, muscles and actions of the wrist and the hand</td>
<td>Dissection of the muscles, vessels and nerves of the upper limb (branches of the axillary a+v, brachial plexus)</td>
</tr>
<tr>
<td>5.</td>
<td>Bones, joints, construction of the pelvis. Muscles and actions of the hip joint</td>
<td>Dissection of the muscles, vessels and nerves of the upper limb</td>
</tr>
<tr>
<td>6.</td>
<td>Muscles and actions of the knee joint. Muscles and joints of the foot. Architecture of the foot</td>
<td>Dissection of the limbs and superficial regions of the the trunk (cadaver)</td>
</tr>
<tr>
<td>7.</td>
<td>Components, muscles, joints, ligaments and movements of the vertebral column. Intervertebral, atlantooccipital and atlantoaxial joints together with the muscles</td>
<td>Knee joint, bones of the leg and foot</td>
</tr>
<tr>
<td>8.</td>
<td>Ribs, components and movements of the thorax. Diaphragm.</td>
<td>Dissection of the limbs and superficial regions of the the trunk (cadaver)</td>
</tr>
<tr>
<td>11.</td>
<td>Bony framework of the skull, neurocranium. Sphenoid and temporal bones.</td>
<td>Dissection of the lower limb and superficial regions of the the trunk (cadaver)</td>
</tr>
<tr>
<td>12.</td>
<td>Introduction to the study of the nervous system Meninges, hemispheres, CSF, lateral ventricles</td>
<td>2. Midterm test (oral): Lower limb including the girdle; bones, joints, muscles and fasciae of the trunk, hernia canals</td>
</tr>
<tr>
<td>14.</td>
<td>Brain stem, cerebellum, 4th ventricle, spinal cord</td>
<td>Blood supply, meninges, sinuses, CSF circulation, cisterns, Cadaver dissection, Demonstration of prosected specimens</td>
</tr>
</tbody>
</table>
Topic list for the semifinal examination

Musculoskeletal Anatomy
- General osteology, classification of bones
- Bones, spaces and connections of the skull, external and internal skull bases
- Neurocranium, components and cavities (anterior, middle and posterior cranial fossae)
- Viscerocranium, components and cavities (walls and connections of the nasal cavity, orbit, oral cavity, pterygopalatine and infratemporal fossae)
- Bones of the axial and appendicular skeleton
- Vertebrae, ribs, sternum
- Bones of the girdles and limbs
- General arthrology
- Fibrous and cartilaginous joints
- Components of the synovial joints
- Classification of synovial joints; movements and mechanisms
- Structure of the vertebral column, the gross anatomy of the muscles acting upon it
- Movements and muscles of the head&neck (atlantooccipital and atlantoaxial joints)
- Joints of the shoulder girdle, the gross anatomy of the muscles acting upon them
- Shoulder joint, the gross anatomy of the muscles acting upon it
- Elbow joint, the gross anatomy of the muscles acting upon it
- Structure and movements of the radiocarpal joint, gross anatomy of the muscles acting upon it
- Metacarpophalangeal and interphalangeal joints, the gross anatomy of the muscles concerned with the movements
- Carpometacarpal, metacarpophalangeal and interphalangeal joints of the thumb, the gross anatomy of the muscles concerned with the movements
- Hip joint and the gross anatomy of the muscles concerned with the movements
- Knee joint and the gross anatomy of the muscles concerned with the movements
- Ankle joint together with the gross anatomy of the muscles acting upon it
- Subtalar and talocalcaneonavicular joints, the muscles acting upon them
- Temporomandibular joint and the gross anatomy of the muscles acting on it
- Architecture and classification of bones
- Structure and actions of somatic muscles
- Osteofibrous structure of the thoracic cage (bones, joints, ligaments, movements)
- Muscles and movements of the thorax
- Muscles of the back and nape (occipital region)
- Axilla, the quadrangular and triangular spaces
- Cubital fossa
- Muscles and cross section of the arm
- Muscles and cross section of the forearm
- Osteofibrous spaces and muscle compartments of the hand, tendinous sheaths
- Muscles and spaces of the abdominal wall, rectus sheath
- Composition of the pelvis (bones, ligaments and membranes)
- Inguinal canal, femoral canal
- Subinguinal hiatus, vascular and muscular compartments; adductor canal, femoral canal
- Muscles of the buttock, the posterior abdominal wall and the pelvis (external and internal muscles of the hip)
- Osteofibrous compartments, muscles and cross section of the thigh
- Popliteal fossa
- Osteofibrous compartments, muscles and the cross section of the leg
- Structure of the foot, arches of the foot
- Osteofibrous compartments of the foot, tendinous sheaths

Vessels and nerves
- Dorsal branches of the spinal nerves, intercostal nerves
- Cervical plexus, brachial plexus, lumbar plexus, sacral plexus.
- Innervation of limbs
- Innervation of the trunk
- Cutaneous innervation
- Axillary artery and branches
- Arteries and veins of the arm, forearm, and hand
- Arteries and veins of the lower limb

Lymphatic drainage
- Lymph nodes and vessels of the limbs
- Lymphatic drainage of the thoracic wall including the mamma
- Lymph nodes and lymphatic vessels of the head&neck

Macroscopy of the nervous system
- Intracranial topography
- Dura mater, dural sinuses
- Arachnoid mater, pia mater, cisterns, CSF circulation
- Description and meninges of the spinal cord
- Brain stem (medulla oblongata, pons, midbrain)
- Cerebellum
- Diencephalon (parts, blood supply).
- Thalamus, hypothalamus
- Lateral ventricles
- III. ventricle
- IV. ventricle
- Hemispheres
- Basal ganglia
- Internal carotid artery (course, parts and branches)
- Vertebral artery (course and branches)
- Circle of Willis
- Veins of the brain
Macroscopic Anatomy II. including Maxillofacial Anatomy

**Lectures and dissection classes**

**Subject matter:** Morphology, topography and clinically oriented anatomy of the internal organs (i.e. cardiovascular, gastrointestinal, respiratory and urogenital systems).
Morphology and topography of the intracranial spaces. Course and branches of cranial nerves. Autonomic nervous system. Maxillofacial Anatomy

**Credits:** 8

**Prerequisite:** Macroscopic Anatomy I.

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Dissection room</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Composition and part of the oral cavity, palate, faucial isthmus and pharynx 2. Nasal cavity, paranasal sinuses, larynx</td>
<td>Cadaver dissection Demonstration of prosected specimens Cervical viscera</td>
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<tr>
<td>3</td>
<td>5. Vessels, conducting system of the heart. Surface projection of the heart, pericardium. Auscultation points 6. Stomach and small intestines (duodenum, jejunum, ileum)</td>
<td>Organs of the thoracic cavity Mediastinum, passages of the diaphragm branches of the thoracic aorta</td>
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<tr>
<td>4</td>
<td>7. Liver, gall bladder, pancreas, spleen. 8. Large intestine, rectum, porto-caval anastomoses</td>
<td>Organs of the abdominal cavity Esophagus, abdominal aorta, stomach, liver, gall bladder, spleen, celiac trunk Lesser omentum, omental bursa, duodenum, pancreas</td>
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<tr>
<td>5</td>
<td>9. Peritoneum, peritoneal recesses, peritoneal relations of abdominal organs. 10. Morphology of the kidney, capsules of the kidney, ureter, urinary bladder</td>
<td>Organs of the abdominal cavity Jejunum, ileum, superior mesenteric artery Large intestines, greater omentum Inferior mesenteric artery, rectum</td>
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<tr>
<td>6</td>
<td>10. Morphology and coats of the testicle. 12. Morphology of the epididymis, spermatoid cord, seminal vesicle and prostate</td>
<td>Retroperitoneum, kidney, ureters Male urogenital system Male perineal regions</td>
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<tr>
<td>7</td>
<td>13. Morphology and histology of penis and male urethra. Male perineum 14. Ovary, Fallopian tube and uterus</td>
<td>Female urogenital tract, broad ligament Female perineal regions</td>
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<tr>
<td>8</td>
<td>15. Vagina, female perineum, external genital organs 16. Blood supply and lymphatic drainage of the abdomen and lesser pelvis</td>
<td>Dissection of organs of the lesser pelvis Cadaver dissection Demonstration of prosected specimens</td>
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**MAXILLOFACIAL ANATOMY**

<table>
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<th>Week</th>
<th>Lectures</th>
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<tr>
<td>9</td>
<td>17. Muscles of facial expression. Muscles, fasciae and muscular trigones of the neck. 18. Temporomandibular joint, muscles of mastication</td>
<td>Dissection of organs of the lesser pelvis Midterm test 1 (oral) Internal organs (gastrointestinal and respiratory tracts, urogenital system, perineal region)</td>
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**Easter break**
<table>
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<th>Week</th>
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<th>Dissection room</th>
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</table>
| 11   | 21. Imaging anatomy of the jaws, teeth and the maxillary sinus (Radiology lecture)  
Topography of the parotid region  
Head and neck specimens |
| 12   | 23. Olfactory nerve (CN 1), optic nerve (CN 2). Orbit  
Extraocular muscles and eye movements. Protective and lacrimal apparatus of the eye,  
24. Trigeminal nerve (CN 5) | Head and neck specimens  
Dissection of deep regions of the head and neck.  
Infratemporal region  
Orbit |
| 13   | 25. Oculomotor nerve (CN 3), trochlear nerve (CN 4), abducent nerve (CN 6), facial nerve (CN 7)  
26. Glossopharyngeal nerve (CN 9), vagus nerve (CN 10), accessory nerve (CN 11), hypoglossal nerve (CN 12) | Dissection of the deep head and neck region  
Cranial nerves, para- and retropharyngeal spaces |
| 14   | 27. Sympathetic and parasympathetic nervous systems  
28. Innervation of the teeth and the gingiva, the anatomy of dental local anaesthesia | Dissection of deep head and neck region  
Deep cervical fascia, carotid sheath, sympathetic trunk |

2. Midterm test (e-learning type): Maxillofacial Anatomy

### TOPICS OF THE FINAL EXAMINATION

1. Topics of the 1st semester (see at Macroscopic Anatomy I.)

2. Topics of the 2nd semester (see below)

#### Circulatory system
- Shape, external features of heart
- Chambers of heart
- Endocardium, ostia, valves of heart
- Skeleton of heart, anuli fibrosi
- Structure of heart wall
- Pulse generating and conducting system of heart
- Pericardium
- Position and surface projections of heart
- Percussion and auscultation (area of cardiac dullness, heart sounds)
- Radiology of heart
- Pulmonary circulation
- Ascending aorta, arch of aorta and its branches
- Thoracic aorta and its branches
- Abdominal aorta and its branches
- Celiac trunk and its branches
- Superior mesenteric artery and its branches
- Inferior mesenteric artery and its branches
- External and internal iliac artery and its branches
- Internal pudendal artery and its branches
- Superior vena cava and its tributaries
- Inferior vena cava and its tributaries
- Azygos and hemiazygos veins and their tributaries
- Portal vein and its tributaries, portocaval anastomoses
- Cutaneous veins and lymphatic vessels of trunk

#### Digestive system
- Tongue (parts, vessels, innervation)
- Salivary glands (anatomy)
- Isthmus of fauces
- Palate, palatine muscles
- Pharynx, (shape, position, parts, muscles)
- Topography of the pharynx, para- and retropharyngeal spaces
- Esophagus (anatomy)
- Stomach (shape, position, parts)
- Peritoneal relations of stomach
- Blood supply and innervation of stomach
- Duodenum (shape, position, divisions, vessels)
- Jejunum-ileum (shape, position, vessels)
- Rectum, anal canal (shape, position, vessels)
- Liver (shape, position)
- Gall bladder and biliary passages (anatomy)
- Liver (peritoneal relations, vessels)
- Circulation of liver, liver sinusoids
- Pancreas (shape, position, vessels)
- Peritoneum, greater and lesser omentum, mesentery, omental bursa

#### Respiratory system
- Trachea and bronchial tree
- Lung (shape, parts, surfaces, hilum)
- Lung (position, topography, vessels, nerves)
- Surface projection of pleura and lung
Body cavities
Thoracic wall
- Pleura, pleural cavity
- Mediastinum (divisions and content)
- Diaphragm
- Abdominal cavity (divisions and surface projections)
- Abdominal wall (muscles, fasciae)
- Rectus sheath
- Hernia sites

Urogenital system
- Kidney (shape, position, hilum, sinus, capsules)
- Kidney (section, vascular architecture)
- Renal pelvis and calyces
- Ureter
- Urinary bladder (shape, position, muscles, vessels)
- Female urethra
- Testis (shape, position, vessels)
- Epididymis, vas (ductus) deferens, spermatic cord
- Scrotum, coats of testis
- Seminal vesicle
- Prostate
- Male urethra, bulbourethral gland
- Penis (shape, position, mechanism of erection, vessels, nerves)
- Pelvic floor, male perineum
- Hernia canals (inguinal and femoral)
- Uterine tube (shape, position, vessels)
- Uterus (shape, parts, wall, cavity)
- Uterus (position, supporting structures, vessels)
- Broad ligament (lig. latum) and its components
- Vagina, female perineum
- External female genital organs (mons pubis, labia, vestibule of vagina, greater vestibular gland, vessels)

MAXILLOFACIAL ANATOMY
- Muscles of mastication
- Muscles of facial expression
- Superficial muscles of the neck, muscle triangles
- Deep muscles of the neck and the laminae of the cervical fascia
- Subclavian artery and its branches
- Common and external carotid arteries and their branches
- Maxillary artery and its branches
- Veins of face and neck
- Oral cavity (divisions, boundaries)
- Frontal section of the oral cavity
- Floor of mouth, sulcus lateralis linguae
- Types and morphology of teeth
- Blood supply and innervation of teeth
- Tonsils (anatomy)
- Faucial isthmus, palate
- Macroscopy of the tongue
- Salivary glands together with topography
- Pharynx and parapharyngeal spaces
- Blood supply and innervation of pharynx
- Pharyngeal muscles
- Nose, nasal cavity (boundaries, nasal meatus, vessels)
- Paranasal sinuses (connections, vessels)
- Larynx (shape, position, vessels, nerves)
- Skeleton and joints of larynx
- Laryngeal ligaments (fibroelastic membranes, mucous membrane)
- Muscles of larynx, innervation
- Cranial nerves, brain, dural and skull exits
- Branches of cranial nerves (CN 3, CN 4, CN 5, CN 6, CN 7, CN 9, CN 10, CN 11, CN 12)
- General composition of the autonomic nervous system
- Sympathetic system (cranial, cervical, thoracic and lumbar parts)
- Sympathetic trunk
- Parasympathetic system (cranial and sacral parts)
- Extraocular muscles. Eye movements.
- Eyelids, conjunctiva, fasciae of the orbit, lacrimal apparatus
MICROSCOPIC ANATOMY AND EMBRYOLOGY I (– II).

Department of Anatomy, Histology & Embryology
Course Director: Dr. Andrea D. Székely

LEARNING OBJECTIVES

Aims of the lectures in embryology: Presentation of the early development from the differentiation of the germ cells to the formation of the human embryo (general embryology). Presentation of the development of the organs and functional systems parallel with the gross anatomical and histological lectures including the frequently occurring malformations.

Aims of the lectures in histology: Presentation of the cell, basic principles in cell biology (mitosis, cytoskeleton, cellular motility), detailed presentation of the basic (epithelial, connective, muscle and nervous) tissues. Complementing gross anatomy with a detailed presentation of the fine structure of organs, including the ultrastructural details together with the molecular background. Important chapters: basic tissues, viscera, central nervous system.

Aims of the practical sessions in the histology room: Facilitate the understanding of ground (epithelial, connective, muscle and nervous) tissues and the fine structure of the organs through the observation and interpretation of histological specimens.

LECTURES: 2 × 45 min in both semesters
PRACTICAL CLASSES: I.: 2 × 45 min; II.: 2 × 45 min.
ECTS CREDITS: Altogether 8 (I.: 4; II.: 4).
MIDTERM TESTS: written (e-learning type)

ACCEPTENCE OF THE SEMESTER:
Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in 25%. Attendance will be recorded in the lectures and in the dissection room classes.

Midterm tests will have to be passed to gain acceptence of the semester. In case the midterm tests are unsuccessful, two (2) consecutive retake times are offered. Diligence of students will be evaluated by the instructor and this mark will form part of the semifinal/final examination.

TYPE OF EXAMS: oral and written
I.: semifinal examination, II.: final exam

Semifinal and final examinations consist of written and oral parts
1. Written pretest (e-learning module – access to SeKA account is obligatory)
2. Oral test in Microscopic Anatomy: identification of structures on virtual histological specimens including relevent theoretical questions

LIST OF TEXTBOOKS
1. The Developing Human – Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384
Recommended textbooks:

COURSE DESCRIPTION

Microscopic Anatomy and Embryology I.

Lectures in Histology and Embryology; practical classes in Histology

Subject matter

**Histology:** Microscopy of the ground (basic) tissues (epithelia, glandular tissues, connective and supporting tissues, types of muscle tissues. Histology of the corpuscular elements of the blood, cells of the red bone marrow. Microscopical structure of the internal organs (cardiovascular, gastrointestinal, respiratory and the urogenital systems.)

**Embryology:** Basic principles of human development, introduction to the clinical embryology.

General embryology, including spermatogenesis, oogenesis, fertilization, cleavage, blastulation, formation of germinal layers, body axes, molecular basis of right-left asymmetry, Hox genes, formation of the placenta, fetal membranes. Organ development including the early onset of fetal circulations, and the development of the limbs, together with the trunk and the skull. Factors inducing congenital malformations. Development of the internal organs together with their malformations.

**Credits:** 5

**Prerequisite:** Cell Biology

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Histology laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Epithelial tissues, cell contacts, intercellular connections</td>
<td>Simple and stratified epithelial tissues, Glandular epithelium</td>
</tr>
<tr>
<td></td>
<td>2. Glandular epithelium</td>
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<tr>
<td>2</td>
<td>3. Connective tissue cells and fibres. Extracellular matrix</td>
<td><strong>Connective tissues</strong></td>
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<td></td>
<td>Supporting tissues (cartilage, bone)</td>
<td>Blood and red bone marrow</td>
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<td></td>
<td>6. Ossification, bone remodelling</td>
<td>Supporting tissues, Cartilage, bone, Types of ossification</td>
</tr>
<tr>
<td>3</td>
<td>5. Muscle tissues</td>
<td>Smooth, skeletal and cardiac muscle types</td>
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<td></td>
<td>8. Histology of vessels</td>
<td>Blood vessels</td>
</tr>
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<td></td>
<td>Gastrointestinal tract</td>
<td>Lip, tongue, lingual papillae.</td>
</tr>
<tr>
<td>4</td>
<td>9. Histology of the tongue and airways, development of the respiratory system</td>
<td><strong>Respiratory system</strong></td>
</tr>
<tr>
<td></td>
<td>10. Histology of the esophagus and stomach</td>
<td>Larynx, trachea, lung</td>
</tr>
<tr>
<td>5</td>
<td>11. Gametes, fertilization, cleavage, blastulation</td>
<td>Gastrointestinal tract</td>
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<tr>
<td></td>
<td>12. Implantation. Placenta, placental circulation, fetal membranes</td>
<td>Esophagus, stomach</td>
</tr>
<tr>
<td></td>
<td>Placenta</td>
<td></td>
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<td>6</td>
<td>13. Microscopical anatomy of the small and large intestines</td>
<td>Gastrointestinal tract</td>
</tr>
<tr>
<td></td>
<td>14. Histology of the liver and pancreas</td>
<td>Duodenum, jejunum, ileum, colon</td>
</tr>
<tr>
<td>7</td>
<td>15. Molecular basis for gastrulation. Formation, differentiation and derivatives of the germinal layers</td>
<td><strong>Gastrointestinal tract</strong></td>
</tr>
<tr>
<td></td>
<td>16. Neurulation, folding of the embryo. Body axes, left-right lateralization, asymmetry</td>
<td>Liver, gall bladder, pancreas</td>
</tr>
</tbody>
</table>

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### Week Lectures | Histology laboratory
---|---
9 | 17. Mircoscopical anatomy and development of urinary organs | Urinary system
| 18. Histology of the male genital system | Kidney, ureter, urinary bladder
10 | 19. Histology of the female genital system | Midterm test:
| 20. Development of the genital system | Histology and Embryology
**Easter break**
11 | 21. Development of the heart. Fetal circulation | Male genital system I.
| 22. Development of arteries and veins | Testis, epididymis, spermatic cord Seminal vesicle, prostate, penis, glans penis
12 | 23. Pharyngeal arches, development of the foregut, midgut and hindgut | Female genital system I.
| 24. Histology of teeth I. | Ovary, corpus luteum, uterine tube Uterus (proliferation, secretion), vagina, placenta
13 | 25. Histology of teeth II. | Tooth development, salivary glands
| 26. Tooth development, malformations |
14 | 27. Development of the face, malformations | Histology of the oral cavity
| 28. Parodontal tissues | Midterm test:
| | Maxillofacial Histology and Embryology

### Topic list for the semifinal examination

**GENERAL HISTOLOGY**
- Concept of basic tissues
- Definition and classification of epithelial tissue
- Simple epithelia
- Stratified epithelia
- Membrane specializations of epithelia
- Glandular epithelia
- Pigment epithelium, sensory neuroepithelium
- Cells of connective tissue
- Ground substance and fibres of connective tissue
- Types of connective tissue
- Blood and the corpuscular elements of blood
- Histology of the bone marrow, maturation of erythrocytes and platelets
- Differentiation of granulocytes, lymphocytes and monocytes
- Histology of cartilage
- Histology of the bone tissue
- Intramembranous ossification
- Endochondral ossification
- Growth and remodeling of bone
- Smooth muscle and myoepithelial cells
- Skeletal muscle tissue
- Cardiac muscle tissue

**HISTOLOGY OF ORGANS**
- Wall structure of hollow organs
- General composition of parenchymal (solid/compact) organs

**Circulatory system**
- Histological structure of arteries and arterioles
- Composition of capillaries and veins

**Digestive system**
- Lip
- Tooth
- Tooth bud
- Salivary glands
- Oesophagus
- Stomach
- Divisions of small intestine
- Fine structure of the intestinal vili
- Large intestine
- Histology of vermiform appendix
- Liver
- Gall bladder
- Pancreas

**Respiratory system**
- Larynx
- Trachea
- Lung

**Urogenital system**
- Histology of kidney (+JGA)
- Ureter
- Urinary bladder
- Testicle
- Epididymis
- Vas deferens
- Spermatic cord
- Seminal vesicle
- Prostate
- Penis
- Ovary, oogenesis and the corpus luteum
- Uterine tube
- Uterus (proliferative, secretory phases) menstrual cycle
- Vagina

**General Embryology**
- Spermatogenesis, spermiogenesis
- Oogenesis
- Fertilization, cleavage of the zygote
- Blastocyst formation; the bilaminar embryonic disc
- Implantation
- Formation of body axes
- Formation of the intraembryonic mesoderm; the notochord
- Neurulation (neural tube and neural crest)
- Derivatives of ectoderm
- Derivatives endoderm
- Differentiation of the intraembryonic mesoderm; formation and derivatives of the somites
- Derivatives of the intermediate mesoderm
- Lateral plate mesoderm and its derivatives
- Folding of the embryo
- Development of the primitive cardiovascular system, the fetal circulation
- The structure and function of the placenta
- Development of the fetal membranes (chorion and amnion) and the umbilical cord
- Periods of embryonic/fetal life
- Twin formation

**Development of internal organs**
- Development of the heart, looping of the heart tube
- Formation of atria, development of the interatrial septum
- Formation of ventricles, development of the aorticopulmonary septum
- Development of arteries
- Development of the inferior vena cava
- Development of the portal vein
- Development of the superior vena cava, azygos and hemiazygos veins
- Fetal circulation
- Face development
- Development and differentiation of the foregut
- Derivatives of pharyngeal pouches and grooves
- Derivatives of pharyngeal arches
- Development of the tongue
- Tooth development
- Development and differentiation of the midgut
- Development and differentiation of the hindgut
- Formation of the liver and pancreas
- Formation of the nasal cavity and paranasal sinuses
- Development of the lower airways including the lungs
- Kidney development
- Development of the urinary passages
- Gonadal development
- Development of the male genital tract
- Development of the female genital tract
- Development of the male/female external genitals
- Development and divisioning of the body cavities
- Development of the peritoneum
GENERAL DENTAL MATERIALS

Lecturer: Dr. Judit Borbély D.M.D., PhD – associate professor

Second Semester

Lectures (1 hour/week)

Topics of the lectures (weekly, numbered):

1. History of dental education
2. Impression materials
3. Casts, models and dies
4. Metals, technologies
5. Investment materials, flanking methods
6. Precious alloys, non precious alloys
7. Dental resins
8. Dental ceramics
9. Dental cad/cam technology
10. Implant materials
11. Filling materials
12. Luting materials
13. Consultation

PHYSICAL BASES OF DENTAL MATERIALS

Tutor: Dr. István Voszka

First Semester

Lecture (2 hours/week)

1. Basic forms of material, atoms, interactions, bonds
   Fluids. Interface phenomena. Liquid crystals.
4. Methods for structure examination (diffraction, microscopic, spectroscopic methods)
6. Ceramics, polymers, composites.
10. Other physical (optical, electrical, thermal) properties of materials
11. Comparison of the properties of dental materials
13. Physical bases of implantology.
MEDICAL CHEMISTRY

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry
Detailed information on the subject is available on our website under http://semmelweis.hu/orvosi-vegytan/en/students/medchem/

Cell Science

Department of Genetics, Cell- and Immunobiology
Address: NET Building, H-1089 Budapest, Nagyvárad tér 4.
Course director: Edit Buzás MD, DSc
Course coordinator: Orsolya Láng MD, PhD
Credit: 3

Lectures (1 hour per week):
1. Cell theory. Model cells in medicine
2. Cell membrane
3. Structure and function of the nucleus
4. Endoplasmic reticulum
5. Golgi complex, vesicular transport and secretion
6. Endocytosis. Autophagy
7. Cell adhesion and cell junctions
8. Cytoskeleton
9. Cellular movement
10. Structure and function of mitochondria and peroxisomes
12. Cell cycle and mitosis
13. Stem cells and differentiation
14. Cellular ageing and cell death

Practices (2 hours per week):
1. The light microscope
2. The general cell structure. Light microscopic microtechnique
3. The electron microscope. Cell membrane
4. The interphase nucleus. Cyto(histo)chemistry
5. Immunohistochemistry. Super-resolution microscopy
6. Cell and tissue culture
7. Endoplasmic reticulum
8. Golgi complex and secretion
9. Endocytosis and lysosomes
10. Cell surface differentiation, enzyme-histochemistry
12. Mitosis
13. Meiosis
14. Cell death (necrosis and apoptosis)
The order of topics may vary

Course requirements: Students must participate at least 75% of the classes. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.
The course ends with an exam consists of an oral test (preparations, electron micrographs, methods applied in cell biology) and a written test (multiple choice, essays, drawings, etc. covering theoretical part of the subject). Further details will be announced on the website of the department (http://gsi.semmelweis.hu).
Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)
DENTAL BIOCHEMISTRY I.

Department of Medical Biochemistry

Credits: 4
Total number of hours: 56; lectures (hours): 28; practices (hours): 28
Type of the course: obligatory
Academic year: 2019/2020
Code of the course
Course Director: Dr. Kraszimir Kolev

Contact details: H-1094 Budapest, Tűzoltó u. 37-47. Phone: +36-1-459-1500#60010 e-mail: Kolev.Krasimir@med.semmelweis-univ.hu
Position: Professor
Date of habilitation: 2008 Ref.: 266

Aim of the course:
The aim of this course is to examine biologically important molecules - namely amino acids, carbohydrates, lipids and nucleotides - identify their contributions to metabolic processes emphasized from a medical point of view, examine the structure and function of proteins, and address mechanisms of catalysis performed by enzymes. Furthermore, three basic biochemistry modules are outlined: The enzymology module, encompassing general principles of enzyme kinetics and how enzymes influence efficiency and controllability of chemical processes in biological systems, as well as how they affect structure and regulation of metabolic pathways; the bioenergetics module, addressing the relationships between mass-energy conversions in the human body emphasizing nutrional aspects, also elaborating on thermodynamic aspects of metabolism; and the ‘first’ intermediary metabolism module, presenting the salient features of carbohydrate and lipid metabolism which are essential for understanding physiological and pathological processes of the human body. During practices, students apply the theoretical knowledge acquired at lectures as part of case-oriented discussions in an effort to interpret - from a molecular point of view - relevant conditions.

Location of the course (lecture hall, practice room, etc.):
Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:
Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound professional decisions.

Prerequisite(s) for admission to the course: Medical Chemistry
Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects
How to apply for the course: Application is through the Neptun online system

The course in thematic details:

Lectures: weekly 1×90 min (2 hours)
Practices (P): 2 hours every week

Lecturers: Prof. Ádám Veronika (ÁV), Prof. Csanády László (CSL), Prof. Kolev Kraszimir (KK), Dr. Komorowicz Erzsébet (KE), Dr. Szöllősi András (SZA), Dr. Törőcsik Beáta (TB), Prof. Tretter László (TL)
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures: weekly 1×90 min (2 hours)</th>
<th>Practices (P): 2 hours every week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The chemical structure of proteinogenic amino acids. The peptide bond. The primary, secondary and tertiary structure of proteins. (CSL, SZA)</td>
<td>P: Structural and chemical characteristics of amino acids; pH and temperature dependent properties.</td>
</tr>
<tr>
<td>6</td>
<td>Reactions and control of the citric acid cycle. Sources of citrate. The pyruvate dehydrogenase complex. The synthesis of ATP. ATP production by oxidative phosphorylation in mitochondria. Redox reactions of terminal oxidation (electron transport chain, etc.). The enzyme complexes of ETC. (TL)</td>
<td>P: Bioenergetics</td>
</tr>
<tr>
<td>10</td>
<td>Metabolism of lipids – overview. Absorption of lipids. Metabolism of chylomicrons. (AV, BT)</td>
<td>P: Structure and function of the most important lipids in the body and in the diet.</td>
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<tr>
<td>13</td>
<td>Metabolism of cholesterol, cholesterol transport in circulation. (KK, KE, TL)</td>
<td>P: Determination of triglycerides and cholesterol in blood plasma.</td>
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<tr>
<td>14</td>
<td>Biosynthesis and metabolism of bile acids, the importance of bile acids in lipid digestion. Cholesterol uptake and release by cells. (KK, KE)</td>
<td>P: Signal transduction of insulin</td>
</tr>
</tbody>
</table>
Potential overlap(s) with other topics: none
Requirement for special study: not applicable
Policy regarding attending practice; policy regarding absences:
Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 3 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.
Means of assessing acquired knowledge during the semester:
not applicable
Requirement for acknowledging the semester, and for allowing the student to take the semi-final exam: In case of absences amounting to more than 3 practices, the semester is not acknowledged.

Exam Type: Colloquium (semi-final), Form: written test exam, based on material of the official textbook, lectures and practices published at the department’s website (http://semmelweis.hu/biokemia/en/).
Exam Requirements: The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.
Types and modes of grading:
The competition is held on week 13, and the structure of the competition is the same as that of the semi-final.

The grade of the semi-final exam is based on:

Written test:
This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam:
  60-65: grade 5 (excellent)
  49-59: grade 4 (good)
  41-48: grade 3 (satisfactory)
  33-40: grade 2 (pass)
If 39 and below, then the grade of the semi-final exam is ‘fail’.

How to apply for the exam: The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

Opportunities to repeat the exam: an exam can be re-taken only after two calendar days.

Printed, electronic and online notes, textbooks, tutorials, and literature for online learning (html for online material):
Harper’s Biochemistry (30th edition, or latest)
Online material published in the department’s website (http://semmelweis.hu/biokemia/en/)
### MOLECULAR CELL BIOLOGY I.

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry  
Detailed information on the subject is available on our website under http://semmelweis.hu/orvosi-vegytan/en/students/molcellbio1/

### BIOPHYSICS I.

**Tutor:** *Dr. István Voszka*

#### First Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (1.5 hours per week)</th>
<th>Laboratory (2 hours per week)</th>
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<tbody>
<tr>
<td>1</td>
<td>Radiations (basic concepts)</td>
<td>Laboratory safety rules</td>
</tr>
<tr>
<td>2</td>
<td>Properties of electromagnetic radiations; wave and corpuscular nature</td>
<td>Resonance</td>
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<tr>
<td>3</td>
<td>Attenuation of radiation</td>
<td>Emission spectroscopy. Light sources</td>
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<tr>
<td>4</td>
<td>Luminescence and its applications</td>
<td>Spectrophotometry</td>
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<tr>
<td>5</td>
<td>Lasers and their medical applications</td>
<td>Optical lenses; light microscope</td>
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<tr>
<td>6</td>
<td>Thermal radiation, thermography. Biological effects of light</td>
<td>Detection of nuclear radiations</td>
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<tr>
<td>7</td>
<td>Production and spectrum of X-radiation</td>
<td>Oscilloscope</td>
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<td>Cyclotron; Linear accelerator;</td>
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<tr>
<td>8</td>
<td>Attenuation of X-radiation, interactions</td>
<td>Special light microscopes</td>
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<tr>
<td>9</td>
<td>Atomic structure; Radioactive decay law Gamma-radiation and its detection</td>
<td>X-ray diagnostics</td>
</tr>
<tr>
<td>10</td>
<td>Radiotherapy, radiosurgery; Isotope diagnostics</td>
<td>Optics of the eye</td>
</tr>
<tr>
<td>11</td>
<td>SPECT, PET Beta-radiation, beta-decay</td>
<td>Polarimeter</td>
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<tr>
<td>12</td>
<td>Alpha-radiation, alpha-decay Interaction with matter</td>
<td>Coulter counter</td>
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<tr>
<td>13</td>
<td>Dosimetry</td>
<td>Determination of skin-impedance</td>
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<tr>
<td>14</td>
<td>Radiation protection; estimation of risk</td>
<td>Concentration determination with refractometer</td>
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<td>Repetition</td>
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# BIOPHYSICS II.

## Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (2 hours per week)</th>
<th>Laboratory (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bonds and their significance in macromolecular structure; Boltzmann distribution, examples</td>
<td>The attenuation of gamma-radiation</td>
</tr>
<tr>
<td>2</td>
<td>Liquid crystals, membranes</td>
<td>Dosimetry</td>
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<tr>
<td>3</td>
<td>Electronic properties of condensed materials (solids, macromolecules)</td>
<td>Amplifier</td>
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<tr>
<td>4</td>
<td>Ultrasound properties, generation of ultrasound</td>
<td>Gamma energy determination</td>
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<tr>
<td>5</td>
<td>Ultrasonography, Doppler methods</td>
<td>Pulse generators (e.g. pacemaker, defibrillator)</td>
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<tr>
<td>6</td>
<td>Methods for structure examination heat</td>
<td>Sine wave oscillators (high frequency therapy, ultrasound)</td>
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<tr>
<td>7</td>
<td>Basic concepts of Thermodynamics, First law</td>
<td>Audiometry</td>
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<tr>
<td>8</td>
<td>General description of transport phenomena, Onsager’s equation, examples</td>
<td>Isotope diagnostics</td>
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<tr>
<td>9</td>
<td>Diffusion; transport across membrane</td>
<td>Densitography (CT)</td>
</tr>
<tr>
<td>10</td>
<td>Resting potential and its local changes</td>
<td>Flow of fluids. Electric model of vascular circulation</td>
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<tr>
<td>11</td>
<td>Action potential, properties, interpretation</td>
<td>Electrocardiography</td>
</tr>
<tr>
<td>12</td>
<td>General characteristics of sensory function, hearing, vision</td>
<td>Diffusion</td>
</tr>
<tr>
<td>13</td>
<td>Biophysics of muscle function</td>
<td>Sensory function</td>
</tr>
<tr>
<td>14</td>
<td>Motor proteins</td>
<td>Repetition</td>
</tr>
</tbody>
</table>
BIOETHICS-DENTAL ETHICS

Institute of Behavioural Sciences
Type of the course: compulsory elective
code: FOKVMAG113_1A
credit: 2 credits
Presenter of the course: Dr. József Kovács

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

Course Syllabus:
1. week (Lecture) Principles of Medical Ethics (József Kovacs)
2. week (Lecture) Competence and Capacity to Make Health Care Decisions (Orsolya Peter)
   Information Disclosure to Terminally Ill Patients. Telling the Truth to Patients (Orsolya Peter)
3. week (Lecture) Informed Consent I. (József Kovacs)
4. week (Lecture) Informed Consent II. (József Kovacs)
5. week (Lecture) Information Disclosure to Terminally Ill Patients. Telling the Truth to Patients (Orsolya Peter)
6. week (Lecture) Reproductive Issues (Orsolya Peter)
7. week End of Life Issues (József Kovacs)
8. week Organ and Tissue Transplantation (József Kovacs)
9. week (Lecture) Doctor and Society (József Kovacs)
10. week (Lecture) Doctor-Patient, Doctor-Doctor Relationship (József Kovacs)
11. week Ethical Questions of Human Research (Imre Szebik)
12. week (Lecture) Malpractice (Orsolya Péter)

Participation and making up for absences:
A signature will be given with the prerequisite of participation (minimum 75% of the lectures and seminars). It is possible to make up for an absence by participating in another seminar group.

Justification of the absence in the lectures and examinations: Medical certificate

Checks during the semester (reports, written checks):
Number of checks during the semester: 1
Type: written exam on the 9th week.
Subjects: the material of practice weeks 1-8 and the relevant chapters of the textbook.
It is possible to make up for an absence or correct grade by oral exam.
Requirements for the signature at the end of the semester:
Participation of 75% of the lectures and seminars. Successful written or oral exam.
Method of the calculation of marks:
The result of the exam

Type of the exam: kollokvium
Requirements for the exam: Successful written exam or the successful oral exam
Application for the exam: Through the Neptun system.
Changing the application for the exam: Through the Neptun system.
Justification of the absence from the exam: Announcing it at the secretariat of the Institute

Course and recommended text books:
DENTAL PSYCHOLOGY

Institute of Behavioral Sciences
Code: FOKVMAG019_1A
Credit: 2
Head of the Department: Prof. Dr. József Kovács
Tutor: Dr. Gyöngyvér Salavecz

Second Semester

Course objectives:
– to introduce the concepts of stress, emotions, states of consciousness, and their role in pain perception
– to emphasize suggestive communication and therapeutic methods that may be used to improve doctor-patient relationship in dental practice
– to enable students to recognize and understand psychological and psychopathological issues when encountered in everyday dental practice

Topics:
1-2. Control problems and their relations to dental practice
3-4. Principles of perception, pain, consciousness, emotions and communication -and their relations to dentistry.
5-6. Stress and stress management in dental practice
7-8. Psychological crisis, presuicidal syndrome, and burn-out prevention
9-10. Role of psychological factors in producing and enhancing pain.
   Psychological interventions for pain suppression.
11-12. National holiday
13-14. Psychotherapeutic methods
15-16. Fables and imagination in dental practice
17-18. Substance misuse and surrounding areas in dentistry
19-20. Dental consequences of eating disorders
21-22. Hypnosis and relaxation therapies, and their possible use in dental practice
23-24. Conscious states, sleep, dreaming, general anesthesia
25-26. Affects, emotion and motivation
27-28. Review

Department:
Institute of Behavioral Sciences
Department of Psychology
NET Building, 20th floor
Phone: 210-2953
Secretary: NET Building, 20th floor, Room-2005. Phone: 2102930/56114.

Lecturers: Dr. György Purebl e-mail: purgyor@net.sote.hu
Dr. Róbert Bódízs e-mail: bodro@net.sote.hu
Dr. Adrienne Stauder e-mail: staadr@net.sote.hu
Dr. László Harmat e-mail: laszloharmat@yahoo.com
Éva Pollák e-mail: evipoll@yahoo.com
Gabor Suhai e-mail: shgabor@gmail.com

Participation and making up for absences:
Participation list will be recorded at the end of every lecture. To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. Maximum number of absences in a semester is 3.
Certifying absence from lesson and exam:
Medical certificate presented to the course leader.

Semester requirements:
Course will conclude with a written \textit{semi-final examination} in the examination period.

Requirement of semester signature:
A signature will be given with the prerequisite of participation. One absence can be overlooked by the teacher if the student writes an essay. The topic of the essay must be discussed with the course leader in advance.

Method of granting grade: The result of the \textit{semi-final}.

Type of exam: written \textit{semi-final examination}
Exam requirements: Content of the lectures
Sign up for exam: through the Neptun system
Modifying sign up \textit{for exam}: through the Neptun system

Certifying absence \textit{from exam}:
A telephone message to the secretary of the Institute or an email message to the course leader.

Recommended text books:
3 Fadem B: Behavioral Science, Lippincott Williams & Wilkins, 5\textsuperscript{th} ed., 2008.
MEDICAL SOCIOLOGY (Dentsoc)

Second Semester

Hour/semester: 15
Credit: 2
Code: FOKVMAG010_1A
Lecturer: Professor Dr. József Kovács
Course leader: Zsuzsa Szanto (szanto.zsuzsa@med.semmelweis-edu.hu)
Teachers: Bence Döbrössy e-mail: dobrossy.bence@chello.hu  Katalin Kovács e-mail: kovacs@demografia.hu

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

Syllabus of the subject:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to medical sociology for dentistry, preparation for the project work.</td>
<td>Practice</td>
</tr>
<tr>
<td>2</td>
<td>General health and oral health status through history</td>
<td>Lecture</td>
</tr>
<tr>
<td>3</td>
<td>Social determinants of oral health and oral health related behaviour</td>
<td>Lecture</td>
</tr>
<tr>
<td>4</td>
<td>Intercultural dentistry</td>
<td>Lecture</td>
</tr>
<tr>
<td>5</td>
<td>Patient expectations regarding dentistry: the theory and practice of dental patient satisfaction studies.</td>
<td>Lecture</td>
</tr>
<tr>
<td>6</td>
<td>Socio-cultural aspects of pain</td>
<td>Lecture</td>
</tr>
<tr>
<td>7</td>
<td>Midterm test</td>
<td>Lecture</td>
</tr>
<tr>
<td>8</td>
<td>Social inequality and health inequality</td>
<td>Lecture</td>
</tr>
<tr>
<td>9</td>
<td>Health Care Systems workshop</td>
<td>Practice</td>
</tr>
<tr>
<td>10</td>
<td>21st century dentistry technological and socio-cultural changes</td>
<td>Practice</td>
</tr>
<tr>
<td>11</td>
<td>Dental help seeking behaviour, illness behaviour</td>
<td>Practice</td>
</tr>
<tr>
<td>12</td>
<td>The profession of dentistry, dentist patient relationship</td>
<td>Practice</td>
</tr>
<tr>
<td>13</td>
<td>Medicalisation in dentistry, cosmetic dentistry</td>
<td>Practice</td>
</tr>
<tr>
<td>14</td>
<td>Project reports</td>
<td>Practice</td>
</tr>
</tbody>
</table>

Course requirements, methods of monitoring:
Participating in 75% of the classes and doing the fieldwork in the practicals, taking and passing the midterm.
Supplement possibilities: Absence may be justified by a medical document at the next class. No less than 75% of all classes must be attended. One practical absence can be made up by undertaking an extra task set by the practical leader or by participating in the practical with another group.

1. Exam requirements: 1 Written midterm test in week 7. on the materials covered in the lectures. 30% of the final grade.
2. project fieldwork in the practicals. 30% of the final grade
3. Written exam in the examination period 40% of the final grade

The lectures can be obtained from the homepage of the Institute of the Behavioural Sciences.

Exam sign up: Through the Neptun System
Modifying: Through the Neptun System
Absence from the exam: With medical document submitted to the course director
Lectures’ material (can be obtained from the homepage of the Institute of the Behavioural Sciences).

Textbook:
2. The lecture notes are made available on (www.magtud.hu).
The history of medical science, considered as a part of the general history of civilization, helps us to describe and understand how people in different times and cultures experienced and dealt with these fundamentals of human existence. This knowledge can inform debate about the present and the future, and help to bring medicine and science to a wide audience. All human societies have medical beliefs that provide explanations for birth, death, and disease. Many cultures in ancient times treated illnesses with magic and herbal remedies. Ancient Egyptians thought that their gods healed them. The ancient Greeks pursued medicine as a science. Hippocrates, the most famous physician of the time (c. 400 B.C.), believed that diseases had natural causes, not supernatural ones. By the Middle Ages, Europe was hit with a terrible epidemic that killed millions of people called the plague, or Black Death. The Renaissance marked a new period of interest in art and science throughout Europe. Despite new medical discoveries, many doctors still practiced old ways. Most sick people could not afford to see a trained physician. Instead, they consulted midwives who assisted with childbirths and made herbal remedies to treat illnesses. Minor surgeries were not done in the hospital but at the local barbershop. Medical research and training improved in the 18th century but there were still no cures for diseases like smallpox, a disease that killed millions of people over thousands of years. Middle Eastern doctors gave people mild doses of the smallpox to combat the disease. The portrayal of the history of medicine becomes more difficult in the 19th century. Discoveries multiply, and the number of eminent doctors is so great that the history is apt to become a series of biographies. Nevertheless, it is possible to discern the leading trends in modern medical thought. In the beginning of the 20th century the research and technology have expanded medical knowledge and improved medical practices like surgery. Today, doctors are able to perform less invasive surgical procedures. The science of medicine has progressed dramatically in just the last 50 years. Career opportunities in health care have also expanded. There is a need for more skilled medical professionals, not only in hospitals, but in dentist and doctors’ offices, research labs, rehabilitation centres, mental health clinics, nursing homes and even schools.

Topics/week


13. Consultation

**Important:** 3 absences are allowed. Doctor’s certificate is required to certify absence from the exam.  
**Exam requirement:** written test

**Textbook:**  
FIRST AID

Department of Oxyology and Emergency Care
Faculty of Health Sciences
1088 Budapest, Vas u. 17., room 145
Phone: +(36-1)486-5840
Head of the Department: Péter L. Kanizsai, MD, PhD, DEAA

Second Semester

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

Note: Participation at 75% of practices is necessary. Compensation of absences is possible in subsequent practices.
Development in learning skills will be controlled all the time during the practices in the semester.
Mode of certifying absences: oral – referring to practices
Requirements: The student should be able to
recognize emergencies, and call for help
start with BLS + AED
provide airway management in unconscious patients
provide first aid for patients complaining for chest-pain, shortness of breath, signs for hypoglycaemia and having suffered from fainting, shock condition, convulsion, injuries.
The practical exam on the last practical lesson is evaluated with 5 grades method.
MEDICAL INFORMATICS

Name of the educational organizational unit: SE EKK Institute of Digital Health Sciences

Name of the subject: Medical Informatics

Type of the subject: 1 theory, 2 practice / week

code: FOKVINF009_1A

credit value: 3

Name of the lecturer of the subject: Dr. Miklós Szócska

Teachers: Dr. Ádám Zoltán Tamus (PhD, associate professor)
Tamás Tóth (assistant lecturer)
Zoltán Sándor (assistant lecturer)
Péter Dombai (lecturer)

Administrator: Ms. Dóra Bacska

Term: spring

The exercise of the subject in the in the realization of the aim of the education:
To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences.
The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Topics of the subject:
Topic of the theoretical lectures (broken down into weekly figures): 2×7 lectures = 14 lectures
1. Introduction: disruptive technologies in the healthcare
2. Medical data – definitions, their collection and use on the individual and population level
3. Medical information on the Internet
4. Informatics background of the ambulance care – mobilcommunication
5. The background of basic healthcare informatics – integrated healthcare systems
6. The active aging – lifestyle supported by informatics
7. Clinical evidences – Scientific proofs and their data sources

Topic of the practical practices: 2×14 practices = 28 practices
1. Application of MS Excel in the pharmacist practice
   (functions, diagrams, advanced level) 4×2 lessons
2. Application of MS Word in the pharmacist practice 2×2 lessons
3. Execution of individual complex exercise 1×2 lessons
4. Database management (PuPha (MS Access)) 3×2 lessons
5. Practice with data representation and data visualisation
   (MS Powerpoint, Prezi) 3×2 lessons
6. Execution of individual complex exercise 1×2 lessons

Requirements of participation of the lessons and the possibility of substitution of the absence:
According to rules of the Studies and Exam Code. Attendance at min. 75% of the classes (both lecture and practice). Max. 2 absence allowed from lectures. Max. 3 absence allowed from practices. Practices and lectures are evaluated separately!

The mode of the certificate in case of absence from the lessons and from the exams:
According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term:
Suitable percentage of participation and solution of a computer test
Type of the exam:
Colloquium.

Exam requirements:
Exam: solution of a computer test (five-grade valuation).

Mode of the application for the exam:
Via Neptun system.

Mode of the certification in case of absence from the exam:
By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:
The educational materials are available at http://dei-cloud.semmelweis.hu
Username and password is announced at the lecture/first practice.
LANGUAGE COURSES – Medical Latin

Directorate for Language Communication

Lecturer: Dr. Éva Kovács

Subject name: Medical Latin I.; Medical Latin II.

Code: FOKVNYE173_1A; FOKVNYE173_2A

Credit value: 2

Thematics:
Students are introduced to the basic vocabulary of scientific terminologies in general, and to the terminology of medicine, dentistry and pharmacy in special.

– Texts: Anatomical names, clinical and pathoanatomical diagnoses and prescriptions

– Grammar: Substantives: the 5 declensions; adjectives with 3, 2 and 1 ending; construction of the most important attributive structures with the vocabulary of anatomy, clinical subjects and pharmacy; gradation of adjectives; prepositions; verbs: stem forms of the verb and participles; numerals: usage in prescriptions;

– Vocabulary: appr. 500 words used in anatomy (especially in the oro-maxillofacial region, the oral cavity, the anatomy of the head), pathology; parallel forms of Latin and Greek vocabulary

Attendance and absence:
Attendance of lessons is obligatory. Students are allowed to have maximum 3 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times a semester).

Certifying absence:
A medical certificate is required if the student has been absent more than 3 times.

Requirements:
midterms (week 7 and 13)

Topics of midterms: vocabulary, construction of Latin phrases, used in anatomy, pathology, pharmacology

Students who fail a midterm have to retake it.

Semester signature:
Attendance of lessons is obligatory. Students are allowed to have maximum 3 absences a semester. In case of more absences, the teacher may deny giving the signature. Students who miss a class, can make up for it (max. two times a semester). Students have to pass the two midterms.

Evaluation:
The evaluation of student performance is based on the marks for the 2 written papers as well as the active participation in classes.

0–50% = 1
51–60% = 2
61–75% = 3
76–89% = 4
90–100% = 5

Textbooks:

Teaching material
### Medical Latin I.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction into medical Latin: alphabet, pronunciation, declensions, Greek and Latin elements. Anatomical planes and directions of the human body. The dictionary entry of nouns and adjectives, the 5 declensions</td>
</tr>
<tr>
<td>2.</td>
<td>Anatomical planes and directions of the human body. Possessive and attributive construction in anatomical terms (Genitive Singular; agreement of the adjective and noun)</td>
</tr>
<tr>
<td>3.</td>
<td>The anatomy of the bones. Declensions of adjectives; subjective and possessive construction with adjectives</td>
</tr>
<tr>
<td>4.</td>
<td>The anatomy of the bones. Exercises with possessive constructions.</td>
</tr>
<tr>
<td>5.</td>
<td>The cranium and the facial bones. Common endings of the 3rd declension</td>
</tr>
<tr>
<td>6.</td>
<td>The cranium and the facial bones. Plural phrases in anatomy (Nominative Plural)</td>
</tr>
<tr>
<td>7.</td>
<td>1st midterm</td>
</tr>
<tr>
<td>8.</td>
<td>Articulations and muscles of the head. Possessive phrases in plural (Genitive Plural)</td>
</tr>
<tr>
<td>9.</td>
<td>Articulations and muscles of the head. Exercises on possessive phrases in plural</td>
</tr>
<tr>
<td>10.</td>
<td>Exercises on vocabulary and grammar of the previous lessons</td>
</tr>
<tr>
<td>11.</td>
<td>Exercises on vocabulary and grammar of the previous lessons</td>
</tr>
<tr>
<td>12.</td>
<td>Review</td>
</tr>
<tr>
<td>13.</td>
<td>2nd midterm</td>
</tr>
<tr>
<td>14.</td>
<td>Evaluation of student performance; retake of the midterms</td>
</tr>
</tbody>
</table>

### Medical Latin II.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Grammatical exercises to maxillofacial anatomy and dental diagnoses. Introduction to medical prescription: <em>gramma, lita, gutta; numerals</em></td>
</tr>
<tr>
<td>2.</td>
<td>Grammatical exercises to maxillofacial anatomy and dental diagnoses. Using Genitive and Accusative in the prescription</td>
</tr>
<tr>
<td>3.</td>
<td>Grammatical exercises on maxillofacial anatomy. The Accusative Singular and Plural; prepositions with Accusative</td>
</tr>
<tr>
<td>4.</td>
<td>Grammatical exercises on maxillofacial anatomy. The Accusative Singular and Plural with prepositions: prescriptions and diagnoses (<em>ICD</em>)</td>
</tr>
<tr>
<td>5.</td>
<td>Exercises on maxillofacial anatomy and dentistry. Verb forms in prescriptions (Imperative, passive and active voice)</td>
</tr>
<tr>
<td>6.</td>
<td>Exercises on maxillofacial anatomy and dentistry. Practising verbal forms in prescriptions; packaging materials used in pharmacology</td>
</tr>
<tr>
<td>7.</td>
<td>1st midterm</td>
</tr>
<tr>
<td>8.</td>
<td>Exercises on maxillofacial anatomy and dentistry. The Ablative Singular and Plural; prepositions with Ablative</td>
</tr>
<tr>
<td>9.</td>
<td>Exercises on maxillofacial anatomy and dentistry. The Ablative Singular and Plural in diagnoses</td>
</tr>
<tr>
<td>10.</td>
<td>Translation of Latin diagnoses and prescriptions into English. Writing diagnoses and prescriptions in Latin</td>
</tr>
<tr>
<td>11.</td>
<td>Translation of Latin diagnoses and prescriptions into English. Writing diagnoses and prescriptions in Latin</td>
</tr>
<tr>
<td>12.</td>
<td>Translation of Latin diagnoses and prescriptions into English. Writing diagnoses and prescriptions in Latin</td>
</tr>
<tr>
<td>13.</td>
<td>2nd midterm</td>
</tr>
<tr>
<td>14.</td>
<td>Evaluation of student performance; retake of the midterms</td>
</tr>
</tbody>
</table>
Hungarian Language, Hungarian Medical and Dental Terminology

Information on the course
The course is obligatory for dental students and is offered in 4 hours a week per term. Student performance is evaluated with a practical course grade. A written and oral examination is taken in the examination period at the end of the 4th term. Students obtain 4 and 2 credit points in the fourth term and in all other terms, respectively.

Hungarian Dental Language is an obligatory course for dental students in the 3rd year of their studies. A final examination consisting of a written and an oral part has to be passed at the end of the 6th term.

The prerequisite for enrolling in the 2nd term is that criteria of the first term (signature, practical course grade and credit points) are fulfilled. The prerequisite for enrolling in every subsequent term is that criteria of the previous term (signature, practical course grade and credit points) are fulfilled. Attendance at classes is obligatory. The term is not recognized if the student has had more than six absences regardless of the reasons.
Curriculum and detailed course requirements

Term 1 Hungarian Language

Hungarian Language is a course for students in the first year without any previous exposure to Hungarian. Students will be introduced to the basic vocabulary of general Hungarian. Topics of the course are arranged into 14 teaching units (weeks), with special attention to the most important expressions. Each text is linked to vocabulary, grammar issues and tasks. The course consists of 56 hours (4 hours per week). Students receive 2 credit points for the course.

**Topic**
*Vocabulary:* greetings, introduction, numbers, addresses, telephone numbers, place of residence, apartment, restaurant, shopping, furniture, orientation in the city, transport, main activities and daily routine.
*Grammar:* accusative, verb conjugation in present tense, postpositions and endings, as well as adverbs.

**Requirement**
Active use of about 600 words and expressions
Written tests (2 during the term) focus mainly on vocabulary and communication.

**Textbooks**
L. Gyöngyösi – B. Hetesy: Jó reggelt!
L. Gyöngyösi – B. Hetesy: Jó napot kívánok!
A. Marthy – Á. Végh: Egészségére!

Term 2 Hungarian Medical Terminology

Hungarian Medical Terminology is a course for students who completed the course Hungarian Language in the first term. Course objectives are to acquire basic knowledge and skills in order to understand general medical communication, apply the acquired skills freely and creatively to minimize communication problems with Hungarians and use medical language correctly in practice.

**Topic**
Students will be introduced to topics in medicine and learn related grammar issues in order to help communication with patients and assistants in Hungary.
*Vocabulary:* health, disease, body parts, medicines, examination, medical history, complaints, etc.
*Grammar:* plural, modal verbs, infinitive, definite verb conjugation, possessive (have and belong to), genitive construction.
The course consists of 56 hours (4 hours per week). Students receive 2 credit points for the course.
Evaluation is based on two written tests and active participation in classes.

**Textbooks**
M. Győrffy: Mi a panasz?
R. Halász: Anamnézis magyarul
Á. Silló: Szituációk
A. Marthy – Á. Végh: Egészségére!
Syllabus of Physical Education

Department of Physical Education
Subject: Physical Education I.
Type of Subject: Compulsory
Code of Subject: FOKOTSI007_1A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.).

1. St. year 1. semester:

1 – 2 weeks: **General information**
Accident, fire and environmental education. The mid-year adoption requirements, the construction of classes and the presentation of the university recreational and sports opportunities for extra-curricular activities. The purpose and practice of the warm-up, such as preventing sport injuries. Common warm-up. Free exercises.

3 – 4 weeks: **Stamina Development**
Preferably outdoors, on grass ground running, with the aim of developing good running and breathing techniques.

5 – 6 weeks: **Coordination enhancing exercises**
Various arm and leg exercises in place and in motion (walking, running, jumping, etc.)

7 – 8 weeks: **Balls skill development**
Introducing the most popular ball-games (football, basketball, handball, volleyball). Exercising technical and tactical elements of the games.

9 – 10 weeks: **Strengthening exercises**
Hand-wait exercises in walking, running and jumping stationary.

11 – 12 weeks: **Posture improving exercises**
Core muscle strengthening exercises in various positions.

13 – 14 weeks: **Stretching exercises and it’s relaxing effects**
The physiological background of stretching and its practical role and importance in everyday activities.

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!
Subject: Physical Education II.

Type of Subject: Compulsory
Code of Subject: FOKOTS1007_2A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.).

I. St. year II. semester:

1 – 2 weeks: General information
   Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra-curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.

3 – 4 weeks: Stamina Development

5 – 6 weeks: Coordination enhancing exercises
   The Floorball – learning the basic technical and tactical aspects of the game to improve hand-eye coordination.

7 – 8 week: Strengthening exercises
   Using medicine-balls focusing on different muscle groups.

9 – 10 weeks: Ball games
   Basketball – skill improving exercises (dribblings, throws, passes, etc.)

11 – 12 weeks: Posture improving exercises
   Wall-bar exercises (pull-ups, crunches, etc)

13 – 14 weeks: Stretching exercises
   Stretching exercises in pairs using sitting, standing, recumbent positions.

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!
COMPULSORY SUMMER PRACTICE

I.

Dental Assistant Practice – 2 weeks (60’ hours)

Week 1
- Introduction of the summer assistant practice, Fire and job sec. Rules, code of conduct
- Introduction of the Dental Clinical Training Centre, patients check in and patient pathway, dental departments in the Centre

Lecture: General tasks of a dental assistant, the most important parts of their profession in the different departments.
Lecture: The basic structure of the patient registration system.
Lecture: Visit of the main sterilization unit
Lecture: Contamination, surface-, and instrument desinfection. Basic rules of sterilisation, and assistant tasks besides the dental chair
Lecture: Infection control, documentation and quality control
Lecture: Presentation of manual and machine driven mixing of impression materials, different types of material mixing practices: silico- cone, polyether, alginate.
Lecture: Basic and auxilliary materials used in the dental office: Impression-, filling-, luting materials, endodontic desifectants
Lecture: Mixing practice of phosphate-, carboxilate-, and glass ionomer cements
Lecture: Introduction of four-handed treatment

Week 2 (practicing the things learnt the previous week)
Clinical assistant practice in the clinical Department

II.

Dental Laboratory Technical Practice (60 hours)

Topics of the practical sessions:

1. week: visiting of a dental laboratory
   - Introduction of the laboratory, of its structure. Demonstration of the cast making, metall casting and porcelain veneering.
   - Getting aquainted with the making of fixed and removable dental appliances.
   - Presentation of a specific odontotechnological workphase, as a group assignement (8 minute ppt presentation).
2. week:
   - Introduction to the training laboratory, handing out of the instruments, demonstration of the instruments
   - Cast making
   - Wax pattern making of and incisor and a praemolar tooth.
   - Waxing up of an occlusal surface.
   - Artificial teeth

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!
BASIC MODULE
## STUDY PROGRAMME

### BASIC MODULE

#### 3rd semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Microscopic Anatomy II.</td>
<td>C5L2P2</td>
<td>final</td>
<td>Macroscopic Anatomy II., Microscopic Anatomy I., Cell Biology</td>
</tr>
<tr>
<td>compulsory Dental Biochemistry II.</td>
<td>C2L1P3</td>
<td>final</td>
<td>Dental Biochemistry I.</td>
</tr>
<tr>
<td>compulsory Molecular Cell Biology II.</td>
<td>C3L3P0</td>
<td>final#</td>
<td>Dental Biochemistry I.</td>
</tr>
<tr>
<td>compulsory Medical and Dental Physiology I.</td>
<td>C9L6P3.5</td>
<td>semi-final</td>
<td>Anatomy, Histology, Embryology II., Biochemistry, Molecular and Cell Biology I., Biophysics II.</td>
</tr>
<tr>
<td>compulsory Odontotechnology and Prosthodontics Preclinical Course I.</td>
<td>C3L1P2</td>
<td>practice mark</td>
<td>General Dental Materials, Anatomy, Histology, Embryology II., Medical Latin II.</td>
</tr>
<tr>
<td>compulsory Hungarian Dental Terminology I.</td>
<td>C2L0P4</td>
<td>practice mark</td>
<td>Hungarian Medical Terminology</td>
</tr>
<tr>
<td>compulsory Physical Education III.</td>
<td>C0L0P1</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credit</strong></td>
<td></td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

#### 4th semester

<table>
<thead>
<tr>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory Medical and Dental Physiology II.</td>
<td>C9L6P3.5</td>
<td>final#</td>
<td>Medical and Dental Physiology I., Biochemistry, Molecular and Cell Biology II.</td>
</tr>
<tr>
<td>compulsory Odontotechnology and Prosthodontics Preclinical Course II.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Odontotechnology and Prosthodontics Preclinical Course I.</td>
</tr>
<tr>
<td>compulsory Conservative Dentistry and Endodontics, Pre-clinical I.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Odontotechnology and Prosthodontics Preclinical Course I.</td>
</tr>
<tr>
<td>compulsory Hungarian Dental Terminology II.</td>
<td>C4L0P4</td>
<td>practice mark</td>
<td>Hungarian Dental Terminology I.</td>
</tr>
<tr>
<td>compulsory General Dental Preclinical Practice</td>
<td>C4L1P3</td>
<td>semi-final</td>
<td>General Dental Materials, Anatomy, Histology, Embryology II.</td>
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<tr>
<td>compulsory Physical Education IV.</td>
<td>C0L0P1</td>
<td>signature</td>
<td></td>
</tr>
<tr>
<td><strong>Total Credit</strong></td>
<td></td>
<td></td>
<td>25</td>
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</tbody>
</table>

### Explanation

- **15 credits** should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program.
- The grade influences the qualification of the diploma.
- 15 credits should be gained from the elective subjects during the 5-year studies.
- C = Credit point, L = Lecture (hours/week), P = Practice (hours/week)
LIST OF TEXTBOOKS (The list may change!)

5. A.Newbrun: Cariology Quintessence. ISBN 0867152052

Recommended textbooks:

8. Hermann Péter, Szentpétery András: Gnatológia (Semmelweis Kiadó, 2018)
MICROSCOPIC ANATOMY AND EMBRYOLOGY (I –) II.

Department of Anatomy, Histology & Embryology

Course Director: Dr. Andrea D. Székely

LEARNING OBJECTIVES

Aims of the lectures in embryology: Presentation of the early development from the differentiation of the germ cells to the formation of the human embryo (general embryology). Presentation of the development of the organs and functional systems parallel with the gross anatomical and histological lectures including the frequently occurring malformations.

Aims of the lectures in histology: Presentation of the cell, basic principles in cell biology (mitosis, cytoskeleton, cellular motility), detailed presentation of the basic (epithelial, connective, muscle and nervous) tissues. Complementing gross anatomy with a detailed presentation of the fine structure of organs, including the ultrastructural details together with the molecular background. Important chapters: basic tissues, viscera, central nervous system.

Aims of the practical sessions in the histology room: Facilitate the understanding of ground (epithelial, connective, muscle and nervous) tissues and the fine structure of the organs through the observation and interpretation of histological specimens.

LECTURES: 2 × 45 min in both semesters
PRACTICAL CLASSES: I.: 3 × 45 min; II.: 2 × 45 min.
ECTS CREDITS: Altogether 9 (I.: 5; II.: 4).
MIDTERM TESTS: written (e-learning type)

ACCEPTENCE OF THE SEMESTER:
Active participation in lectures, and dissection room sessions is obligatory for every student. Students should attend at least 75% of the scheduled hours to gain a signature proving the validity of the semester. Absences are therefore limited in 25%. Attendance will be recorded in the lectures and in the dissection room classes.

Midterm tests will have to be passed to gain acceptence of the semester. In case the midterm tests are unsuccessful, two (2) consecutive retake times are offered.
Diligence of students will be evaluated by the instructor and this mark will form part of the semifinal/final examination.

TYPE OF EXAMS: oral and written
I.: semifinal examination, II.: final exam

Semifinal and final examinations consist of written and oral parts
1. Written pretest (e-learning module – access to SeKA account is obligatory)
2. Oral test in Microscopic Anatomy: identification of structures on virtual histological specimens including relevant theoretical questions

LIST OF TEXTBOOKS

1. The Developing Human – Clinically Oriented Embryology, 10th ed. by KL Moore, TVN Persaud and M Torchia, Saunders, 2015; ISBN 9780323313384

Recommended textbooks:
COURSE DESCRIPTION

Microscopic Anatomy and Embryology II.

Lectures in Histology and Embryology; practical classes in Histology

Subject matter

Histology: Microscopical structure of the CNS and PNS (cerebrum, cerebellum, brain stem, spinal cord, ganglia) organs of special senses (apple of eye, inner ear), endocrine glands (pineal, pituitary, thyroid, suprarenal glands) skin and appendages, lymphatic system and the mammary gland.

Embryology: Development of the central and peripheral nervous systems, development of the organs of senses together with their malformations

Credits: 4

Prerequisites:  Macroscopic Anatomy I-II.
Microscopic Anatomy I.
Cell Biology

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Histology laboratory</th>
</tr>
</thead>
</table>
| Week 1 | 1. Cellular components of lymphatic tissue. Thymus, tonsils, MALT  
2. Structure and circulation of lymph nodes and spleen | Thymus, tonsils |
| Week 2 | 3. Microscopy of the CNS – fine structure of the spinal cord  
4. Microscopy of the CNS – spinal reflexes, receptors, effectors, monosynaptic/proprioceptive reflexes | Lymph node, spleen |
| Week 3 | 5. Microscopy of the CNS – Nociceptive (withdrawal) and autonomic reflex arcs  
6. Microscopy of the CNS – Fine structure of the cerebral cortex. Cortical fields, Brodmann areas | Histology of the peripheral nervous system (peripheral nerve, motor end plate, spinal cord) |
| Week 4 | 7. Microscopy of the CNS – Diencephalon, thalamic nuclei  
8. Microscopy of the CNS – Sensory systems, epicritical and protopathic pathways | Histology of the central nervous system |
| Week 5 | 9. Microscopy of the CNS – Motor systems, pyramidal tract  
10. Microscopy of the CNS – Structure and connections of the basal ganglia. Motor pathways arising from the brain stem | Endocrine system |
| Week 6 | 11. Microscopy of the CNS – Microscopy of the cerebellum, pathways. Functional considerations  
12. Microscopy of the CNS – Hypothalamus, the hypothalamo-hypophysial system. | 1. Midterm test (Histological slides of weeks 1-5) |
| Week 7 | 13. Microscopy of the CNS – Brainstem monoaminergic systems  
14. Microscopy of the CNS – Limbic system | Microscopy of the CNS - consultation |
16. Differentiation of the brain vesicles | Microscopy of the CNS - consultation |
| Week 9 | 17. Formation and derivatives of the neural crest and placode ectoderm  
18. Development of the skull | 2. Midterm test  
Microscopy of the CNS  
Development of the nervous system |
| Week 10 | 19. Development of the vertebral column, limb development  
20. Skin and appendages. Mammary gland | Histology of palm skin, scalp skin  
Mammary gland |
| Week 11 | 21. Fibrous and vascular coats of the eyeball. Lens, chambers of the eye, vitreous body, accommodation  
22. Inner coat of the eyeball, retina | Organs of special senses I.  
Eyeball, retina, lacrimal gland |
| Week 12 | 23. Optic nerve, visual pathway, visual cortex, disorders. Visual reflexes  
24. Middle ear - tympanic cavity, tympanic membrane, auditory ossicles | Organs of special senses II.  
Organ of Corti |
| Week 13 | 25. Bony and membranous labyrinth. Vestibular system  
26. Spiral organ of Corti. Auditory pathway, auditory cortex | Revision |
| Week 14 | 27. Microscopy of the CNS – Olfactory and gustatory systems  
28. Histology revision | Histology test |
TOPICS OF THE FINAL EXAMINATION
Topic list of the semifinal examination (see there)
+
Topic list of the present semester (see below)

**Lymphatic organs**
- Histological structure of lymph nodes
- Spleen (fine structure and circulation)
- Thymus
- Tonsils, MALT

**Development of the nervous system and organs of special senses**
- Development and primary differentiation of the neural tube
- Development of brain vesicles
- Development of the peripheral nervous system (neural crest, placodes)
- Development of the organ of vision
- Development of the organ of hearing\&equilibrium

**Development of the locomotor system**
- Membranous and cartilaginous neurocranium and viscerocranium
- Development of the limbs and vertebral column
- Development of the muscular system

**Neurohistology**
- Histology of the neurons developing from the neural tube
- Glial cells
- Histology of the neurons and supporting cells developing from the neural crest
- Fine structure of peripheral nerves
- Receptors and effectors
- Interneuronal synapses

**Microscopy of the central nervous system**
- Fine structure (microscopy) of the spinal cord
- Proprioceptive reflexes
- Nociceptive reflexes
- Autonomic reflexes
- Fine structure of the medulla oblongata
- Fine structure of the pons
- Fine structure of the midbrain
- Classification of cranial nerve nuclei
- Tracts of the brain stem
- Reticular formation, monoaminergic systems
- Fine structure of the cerebellum
- Cerebellar afferents and efferents
- Fine structure of the thalamus
- Hypothalamo-hypophyseal system
- Fine structure of the basal ganglia
- Fine structure of the cerebral cortex, cortical fields
- Tracts of the protopathic sensibility (anterolateral system)
- Tracts of the epicritic sensibility (posterior funiculus/medial lemniscus)

**Endocrine organs**
- Gross and microscopical anatomy of the pituitary gland; development of the posterior lobe
- Blood supply, histology and development of the anterior and intermediate lobes of the pituitary gland
- Microscopical anatomy of the pineal gland
- Microscopical anatomy and the development of the thyroid gland
- Microscopical anatomy and the development of the parathyroid gland
- Microscopical anatomy and the development of the suprarenal gland
- Histology of the islands of Langerhans

**Organs of special senses**
- Microscopical structure of the skin (scalp and palm)
- Histology of the mammary gland (lactating and non-lactating)
- Coats of the eyeball
- Chambers of the eye, vitreous body
- Lens, accommodation
- Visual pathway, visual reflexes
- External ear, tympanic membrane. Tympanic cavity, auditory tube, hearing ossicles.
- Organ of Corti. Auditory pathway
- Vestibular system
- Bony and membranous labyrinth
- Cochlea and cochlear duct
- Organs of olfaction and taste
DENTAL BIOCHEMISTRY II.

Department of Medical Biochemistry

Credits: 3
Total number of hours: 42; lectures (hours): 28; practices (hours): 14
Type of the course: obligatory
Academic year: 2020/2021
Code of the course
Course Director: Dr. Kraszimir Kolev
Contact details: H-1094 Budapest, Tűzoltó u. 37-47. tel: +36-1-459-1500#60010 email: Kolev.Krasimir@med.semmelweis-univ.hu
Position: Professor
Date of habilitation: 2008 Ref.: 266

Aim of the course:
The aim of the course is to comprehensively describe metabolic processes in the human body, from a medical point of view. The main theme of the semester is to elaborate further on carbohydrate and lipid metabolism commenced in Medical Biochemistry I, elaborate on amino acid and nucleotide metabolism, examine more thoroughly intermediary metabolism including the integration of processes throughout the organs and the human body as a whole. Furthermore, this course aims to afford to medical students the skills of being able to interpret complex physiological processes in the human body at a molecular level. During practices they discuss rapidly developing, promising areas of medicine ("tomorrow's medicine"). The medical biochemical orientation of the course is based on the presentation of molecular bases of diseases that pose serious public health problems (cardiovascular, neurodegenerative, cancer states), with particular emphasis on discussing potential molecular targets of therapy.

Location of the course (lecture hall, practice room, etc.):
Premises located in the Basic Medical Sciences building (laboratory rooms located on the first floor and lecture halls located on the ground floor).

Upon the successful completion of the curriculum, the student should be able to:
Identify biochemical structures, know and understand the reactions in which medically important molecules participate; know and understand inter-organ biochemical processes; know and understand integrated metabolic functions of the human body. Overall, such knowledge is essential for understanding physiological and pathological processes and, consequently, for making sound professional decisions.

Prerequisite(s) for admission to the course: Medical Biochemistry I.
Terms and Conditions for Starting Student Course (Minimum, Maximum), Student Selection Method: Not applicable for compulsory subjects.
How to apply for the course: Application is through the Neptun online system.

The course in thematic details:
Lectures: weekly 1x90 min (2 hours)
Lecturers: Prof. Ádám Veronika (ÁV), Prof. Csanády László (CSL), Prof. Kolev Kraszimir (KK), Dr. Komorowicz Erzsébet (KE), Dr. Szöllősi András (SZA), Dr. Töröcsik Beáta (TB), Prof. Trettter László (TL)
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures: weekly 1x90 min (2 hours)</th>
<th>Practices (P): 2 hours every other week</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Biosynthesis and degradation of heme. Iron homeostasis (KK, TL)</td>
<td>P: Vitamin B12 deficiency and methylmalonic acidemias</td>
</tr>
<tr>
<td>4</td>
<td>Structure and function of nucleotides. The fate of nucleotides obtained through diet. Formation and elimination of uric acid; its metabolic role in humans. Synthesis and degradation of purine and pyrimidine nucleotides. Effects of cytostatic drugs on nucleotide metabolism. (KK, TL)</td>
<td>P: Vitamin B12 deficiency and methylmalonic acidemias</td>
</tr>
<tr>
<td>6</td>
<td>The starvation-feeding cycle and its regulation. Regulation of hepatocyte metabolism in starvation. (TL, TB)</td>
<td>P: Acute and chronic liver disease</td>
</tr>
<tr>
<td>7</td>
<td>General overview of blood clot formation and elimination. Fibrinogen and fibrin. Prothrombin activation and regulation of thrombin activity. Triggers of blood clotting, amplification of the initiation.</td>
<td>P: Tumor metabolism</td>
</tr>
<tr>
<td>8</td>
<td>Fibrinolysis. Activation of plasminogen. Inhibitors of plasmin. (KK, KE)</td>
<td>P: Tumor metabolism</td>
</tr>
<tr>
<td>9</td>
<td>Inhibitors of blood coagulation and negative feedback mechanisms. (KK, KE)</td>
<td>P: Gut-brain interaction through metabolites of the intestinal flora</td>
</tr>
<tr>
<td>14</td>
<td>Glutamatergic and GABA-ergic neurotransmission. (TL,TB).</td>
<td>The relationship between metabolism and the functions of the nervous system</td>
</tr>
</tbody>
</table>
Potential overlap(s) with other topics: none
 Requirement for special study: not applicable

Policy regarding attending practices; policy regarding absences:
Practices are mandatory. It is not possible to make up for missed practices. In case of absences amounting to more than 2 practices, the semester is not acknowledged. Arriving to a practice with a delay of more than 10 minutes is considered an absence.
Means of assessing acquired knowledge during the semester:
not applicable

Requirement for acknowledging the semester, and for allowing the student to take the final exam: In case of absences amounting to more than 2 practices, the semester is not acknowledged.

Exam Type: Final. Form: written test exam, based on material of the official textbook, lectures and practices published at the department’s website (http://semmelweis.hu/biokemia/en/).

Exam Requirements: The material for the written test exam is the material of the lectures and practices in the subject, with the corresponding textbook chapters.

Types and modes of grading:
The competition is held on week 13, and the structure of the competition is the same as that of the final.

The grade of the final exam is based on:

Written test:
This test consists of multiple choice questions (MCQs) from which max 65 points can be obtained.

Grade calculation of the semi-final exam:

60–65: grade 5 (excellent)
49–59: grade 4 (good)
41–48: grade 3 (satisfactory)
33–40: grade 2 (pass)

If 39 and below, then the grade of the semi-final exam is ‘fail’.

How to apply for the exam: The exam dates are announced on the 12th week of the semester. We provide at least one exam date each week. Applications are made in the Neptun system in accordance with the University Study and Exam Rules.

Opportunities to repeat the exam: an exam can be re-taken only after two calendar days.

Printed, electronic and online notes, textbooks, tutorials, and literature for online learning (html for online material):
Harper’s Biochemistry (30th edition, or latest)
Online material published in the department’s website (http://semmelweis.hu/biokemia/en/)
MOLECULAR CELL BIOLOGY II.

Department of Medical Chemistry, Molecularbiology and Pathobiochemistry
Detailed information on the subject is available on our website under http://semmelweis.hu/orvosi-vegytan/en/students/molcellbio1/

MEDICAL AND DENTAL PHYSIOLOGY

Department of Physiology
Subject code: FOKOELT187_1A, FOKOELT187_2A
Credit Points: 9 (I. semester) + 9 (II. semester)
Head of the Department: Dr. László Hunyady, Full Professor
Course Director: Dr. Péter Várnai, Full Professor
Tutor: Dr. András Balla

Aim of Medical and Dental Physiology course:
The goal of Medical and Dental Physiology course is to give the students the understanding of the concepts and principles of medical and dental physiology. The lectures provide the information base while the seminars and practices provide the student with an opportunity to assimilate and integrate the material. Appropriate clinical perspectives are presented throughout the course.

First semester

1. Introduction, body fluids. Functions of cellular membranes, transport across membranes. Transepithelial transports.
3. Ion channels and resting membrane potential. Action potential. Physiology of nerve cells, synaptic transmission in the central nervous system.
5. Cardiac cycle. Regulation of cardiac output. Electrocardiography (ECG).

Second semester

16. Humoral immunity. Cellular immunity. Regulation of immune response, blood groups
17. Endocrine regulations. The hypothalamo-adenohypophyseal system; growth hormone, somatomedins.
22. Introduction to neurophysiology. Physiology of nerve & glia cells.
23. Sensory functions.
24. Physiology of hearing and equilibrium.
25. Physiology of vision.
27. Integration of autonomic responses.
28. Electroencephalogram (EEG); sleep phenomena. Learning and memory. Regulation of behavioral mechanisms, motivation; emotion.

**Practices, I. semester:**
- Typing of Blood Groups, Blood Coagulation Test
- Blood cell counting, determination of hemoglobin concentration and hematocrit
- Leukocyte differential count on peripheral blood smear
- Electromyography (EMG), nerve conduction velocity
- Recording and analyzing the human ECG
- Blood pressure measurement in humans
- Evaluation of acid-base parameters with the Siggaard-Andersen nomogram

**Practices, II. semester:**
- Circulatory and respiratory reflexes in rabbit
- Human pulmonary function tests
- Smooth muscle of rabbit small intestine
- Oral glucose tolerance test (OGTT)
- Electrooculography (EOG) and investigation of the vestibular system
- Computer simulation: Studies on circulatory reactions of a virtual rat
- Computer simulation: neuromuscular junction

*Attendance at classes:* The lecture hours per week are 6; the practice hours per week are 3.5. The attendance of a minimum of 75% of lectures and practices (including seminars) is necessary for the end-term signature.

*Absences:*
No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. Missed sessions must be reported to the teacher the week after. There are no extra practices.

**Grading Performance in Seminars and Practices:**
The knowledge of the students is tested in a written form on a weekly base. The written short tests cover the material of lectures of the previous week. The following rules will be enforced during the short tests: electronic devices must be kept in the baggage; any form of communication is disallowed; students not complying with these rules will be disqualified immediately. Evaluating the work of the student is based on his/her classroom tests and performance practice in the regular period of the semester. Missed tests cannot be repeated. The evaluation of the weekly written test will be expressed as a percentage. The average of percentages of the nine best written tests and the practical grade (also is expressed as a percentage) result a five-point scale:

- 0-54 % = 1
- 55-64 % = 2
- 65-74 % = 3
- 75-84 % = 4
- 85-100 % = 5

This grade is taken into account in the exams.
Obtaining signatures:
The attendance of a minimum of 75% of lectures and seminars (including seminars) is necessary for the end-term signature. Students must write a lab report for each practice using an A4 size exercise booklet. The booklet should be signed by the teacher not later than one week after the practice. Participation in the practices is compulsory. No more than three absences from seminars (6 lecture hours) and 1.5 absences (5 lecture hours) are allowed for any reason; otherwise the semester will not be credited.

Semi-final and final exams:
In the examination period the students have to give semi-final exam in the first semester and final exam in the second semester.

Type and grading of exams:
The semi-final exam is oral exam. The oral exam consists of two theoretical questions (I-II). The overall result of the oral exam is based on the two theoretical grades and the lab work grade.
The final exam consists of written and oral part. The written and oral part of the final exam is held on the same day. The oral part consists of two theoretical questions (I-II). The mathematical average of four grades (lab grade, written exam grade, and two oral exam grades) gives the grade of the final exam.
Lists of the theoretical questions are listed in the webpage in the Department of Physiology. The following rules will be enforced during the exams: electronic devices must be kept in the baggage; baggage and overcoats should be placed next to the wall of the lecture halls; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Requirements of the exams:
Semi-final exam: material of the Medical and Dental Physiology I.
Final exam: material of the Medical and Dental Physiology I. and Medical and Dental Physiology II.

Registration for the exam:
Registration for the exam must be recorded through the NEPTUN system.

Modification of the registration for the exam:
Modification in the registration must be recorded through the NEPTUN system not later than 48 hours before the start of the exam.

Absences from the exams:
Failing to certify absence or denying it cause registering “absence” = “nem jelent meg” in the lecture book and/or in the Neptun system.

List of textbooks:

CONSERVATIVE DENTISTRY AND ENDODONTICS, PRE-CLINICAL I.

Department of Conservative Dentistry
Head of Department: Dr. Zsuzsanna Tóth D.M.D., Ph.D.

Second Semester

Phantom-course (Pre-clinical laboratory course)

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

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

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

**Note:** The maximum number of absences in a semester is 3.
During the semester 3 midterm examinations should be passed.
Practical course grade.
GENERAL DENTAL PRECLINICAL PRACTICE

Department of General Dental Preclinical Practice
Head: Prof. Dr. Krisztina Márton D.M.D., Ph.D.

Second Semester

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

The Department of General Dental Preclinical Practice is responsible for the preparation of dental students for the practical stages of the clinical practice requiring high precision and excellent manual skills. The aim of this special education is to provide the students with a professional preclinical conservative dentistry, prosthodontics, periodontology, oral surgery and orthodontics manual and theoretical training, which will be used in the clinical treatment procedures. It consists of the simulation of the clinical stages on phantom heads, but furthermore students also have the opportunity to study the basics of minimal- and micro invasive dentistry and the most important rules of infection control.

Theoretical lessons:
1. Oral diseases.
2. Establishment of the Dental Clinic. Instrumentation of the Dental Office.
3. Dentistry in the Field of the Life Sciences. Role of Dental Science in Human Medicine. The Dental Team.
5. Infection Control. Disinfection and Sterilization in Dentistry.
6. Organization of the Dental Team. Fluid Control, Four-handed Dental Treatment.

Recommended textbook:
INTRODUCTION TO ODONTOTECHNOLOGY AND PROSTHODONTICS
PRE-CLINICAL COURSE I-II.

Department of Prosthodontics
Head of Department: Prof. Dr. Péter Hermann
Lecturer: Dr. Ida Barbara Kispélyi

Since the creation of an independent training, the Stomatological curriculum has put great emphasis on a preclinical foundation course, the Prosthodontics Propaedeutic course, the syllabus of which has also included mastery of dental techniques, indispensable for a dentist. Until the visit of the EU Committee in the late 90s, the course was structured in such a manner that in the first and second semester of the second academic year students had 3 hours of practices and one hour of lecture per week; during the first semester treatment of complete edentolousness was simulated through fabrication of complete dentures, while in the second semester students prepared 3-unit bridges and single crowns on partial edentolous moulages. During both semesters, medical and dental laboratory steps followed each other just like in real life, and students performed alternatively medical work phases and dental laboratory tasks, for one week each. After the proposal of the EU Committee on the amendment of several courses (including the Prosthodontics Preclinical course), dental laboratory and medical work phases had to be separated sharply, while an independent Odontotechnology course had to be included in the curriculum. According to the request, this Odontotechnology course was built into the theoretical module in order to provide the earliest possible recognition and consolidation of the chosen profession.

Taken more than ten years of experience into account, while maintaining the values that undoubtedly resulted from these changes, we wish to modify those controversial points that in our opinion can be still improved. A sharp separation of the two disciplines (dental techniques and dentistry) rather confuses students, thus they fail to get a grip of the process, and it is the essence that is lost, since these processes are based each on the other. The essence of the new syllabus is the integration of the two courses that are currently taught separately, and thus new and crucial areas (not taught so far) can be emphasized, with concomitant reduction of teaching hours and credit points.

The curriculum of the course concludes with a comprehensive examination at the end of the first semester of the third academic year.

Timing of the Odontotechnology and Prosthodontics Preclinical course:
3rd, 4th and 5th Semester

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module I:
General Dental Material Science

Preliminary studies requested for the course of Odontotechnology and Prosthodontics preclinical course module II:
Odontotechnology and Prosthodontics preclinical course module I

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module III:
Odontotechnology and Prosthodontics Preclinical course module II
Odontotechniology and Prosthodontics preclinical course I.

Topics of the lectures:

1. Primary impression, primary cast
2. Special trays
3. Labside and chairside steps of making complete denture
4. Types of casts, casting as a kind of information transfer
5. Secondary impression
6. The occlusal rim, centric occlusion
7. Articulators, jaw registration
8. Fabrication of the trial denture, and the try in procedure
9. Fitting of dentures, Short time and long time recall procedures.
10. Types of the prosthetic appliances
11. Gnatological aspects in making complete denture
12. Partial edentulousness, and partial dentures (RPD)
13. Labside and chairside steps of making partial and complex denture
14. Consultation

Topics of the Practices:

1. Introduction, Instrument Delivery,
2. Impression Taking for Maxillary and Mandibular Complete Dentures
3. Impression Taking for Maxillary and Mandibular Complete Dentures
4. Outlining The Borders of The Special Trays,
5. Fabrication of Special Trays
7. Fabrication of Maxillary and Mandibular Occlusal Rims
8. Jaw Registration
9. Mounting of Articulators
10. Setting Up Teeth
11. Setting Up Teeth
12. Setting Up Teeth
13. Processing Dentures, Insertion
14. Consultation
Odontotechnology and Prosthodontics Preclinical II.

**Topic of the lectures** (weekly, numbered):

1. Types of the fixed dental restorations
2. Labside and chairside steps of making fixed appliances
3. Fundamentals of tooth preparation, periodontal aspects
4. Impression taking for fix appliances, sectional models, and dies
5. Fabrication of wax pattern, casting of fix appliances, trial of the metal framework of the fix appliances
6. Dowel core restorations
7. Tooth Shade Determination
8. Temporary Dental Restorations
9. Veneering of fixed appliances
10. Metal free fixed restorations, CAD/CAM technology
11. History of implant dentures, labside and chairside steps
12. Explanation of different kind of implant systems. Impression methods of implant cases
13. Dental cements
14. Consultation

**Practical sessions**

1. Handing out of the instruments introduction
2. Tooth preparation 24 and 27 for fixed partial denture
3. Tooth preparation 24 and 27 for fixed partial denture
4. Tooth preparation 24 and 27 for fixed partial denture
5. Tooth preparation 24 and 27 for fixed partial denture
6. Two-phase impression
7. Antagonistic impression, bite-registration
8. Preparation of the sectional model, mounting of the average value articulator
9. Waxing up of the four-unit bridge: Adapta deep drawing
10. Wax pattern fabrication of the four-unit bridge: outlining and shaping of the occlusal surface
11. Wax pattern fabrication of the four-unit bridge
12. Spruing of the wax pattern, preparation for investing
13. Wax pattern fabrication for a four unit porcelain fused to metal four unit bridge
ELECTIVE SUBJECT for Dentistry 2nd year

Title: CULTURE IN MEDICINE, CULTURE OF MEDICINE – Popular Themes of Current Clinically Applied Medical Anthropology

Institute of Behavioral Sciences
Course Director: Prof. Dr. Ferenc Túry
Lecturer: Dr. László Lajtai

Prerequisite: Dental Psychology

Second Semester

Weekly topics of the seminars:
1. „We have never been modern?” – An initiation to critical approaches to evidence base in medicine – How to respond? / / Discussion of the semester: Requirements and timescale.
2. Alternatives 1: Narratives and explanatory models – Confusions and the lay perspective
3. Alternatives 2: Complementary medicine – Competition at our doorstep
4. Alternatives 3: Healing and folk medicine – Wisdom or beliefs?
5. Alternatives 4: Biomedicine for anthropology, or the twist of perspectives
6. Challenges 1: Migrants, refugees and minorities
7. Challenges 2: Reproduction, sex, age, death and other trends in „western” medicalization
8. Challenges 3: Nutrition and taboos - biopower and social body
9. Challenges 4: Placebo, pharmaceuticals and the rule of pharmaceutical industry
10. Challenges 5: Public medicine, private medicine and the reproduction of inequities
11. Favourite themes 1: Alcohol, drug, and AIDS at crossroads of culture and law
12. Favourite themes 2: Shrinks and madness – CBS and the mirage of the normal
Recapitulation, feedback and evaluation.
LANGUAGE COURSE

Language Communication Center

Term 3 Hungarian Dental Terminology I

Hungarian Dental Terminology I is a course for students who completed the course Hungarian Medical Language. Course objectives are to extend the range of basic knowledge and skills, as well as to improve the ability to use what has been learnt so far. Students are introduced to dental language to ensure that they use it correctly in practice.

Topic
- Students will be introduced to further topics of dentistry and grammar issues during the course.
- Vocabulary: undergraduate studies at the Faculty of Dentistry, structure of the tooth, at the dentist, appointments, medical history, dental examination, treatment, underlying diseases, etc.
- Grammar: possessive (have and belong to), genitive construction, indefinite and definite verb conjugations in the past.
- The course consists of 56 hours (4 hours per week). Students receive 2 credit points for the course.
- Evaluation is based on two written tests and active participation in classes.

Textbooks
M. Győrffy: Mi a panasz?
R. Halász: Anamnézis magyarul
Á. Silló: Szituációk
A. Marthy – Á. Végh: Egészségére!

Term 4 Hungarian Dental Terminology II

Hungarian Dental Terminology II is a course for students who completed the course Hungarian Dental Terminology I. Course objectives are to extend the range of basic knowledge and skills, as well as to apply creatively what has been learnt so far. Students focus on professional communication and learn expressions of dental documentation.

Topic
- Students will be introduced to further topics and grammar issues during the course to help professional communication with patients who students will see in the third year.
- Vocabulary: properties, comparisons, paediatrics, doctor’s surgery, medical history, pain, disease, tooth extraction, etc.
- Grammar: comparative, prepositions, spatial relationships, date indication, imperative and genitive
- The course consists of 56 hours (4 hours per week). Students receive 4 credit points for the course.
- Evaluation is based on two written tests and active participation in classes.
- A written and oral examination is taken at the end of the 4th term.

Textbooks
M. Győrffy: Mi a panasz?
R. Halász: Anamnézis magyarul
Á. Silló: Szituációk
A. Marthy – Á. Végh: Egészségére!
J. Kovács: A fogászati szaknyelv alapjai
I. Gera: Doctor – Patient, Doctor – Assistant Communication, compiled by Prof. Dr. I. Gera
M. Putz: Magyar fogorvosi szaknyelv I.
Introduction to English Dental Terminology I-II – elective course

Library Informatics - AOVKP088_1A

Lecturer: Dr. Lívia Vasas PhD. – Central Library
Institute: Semmelweis University Central Library, 1088 Budapest
Duration: One semester, 30×45 minutes (10×3 lessons)

SUGGESTED SEMESTER 5-10.

Exam-form Practical mark
Credit-value 3 credit-points
Minimum/maximum group-size 8/200

The aim of the subject: Teaching students how to use/search in literature sources of medicine, analyse the result of their work supporting the proper competencies.

Thematic: Medical e-catalogues, e-books, e-libraries, databases, scientific resources of internet

Assistant lecturer: Anna Berhidi, Edit Csajbók, Skultéti Attila, Szluka Péter
Student records officer: Application deadline: September 4-8, 2019
Precondition: There isn’t.

Introduction, technical details, VPN access, technical details, about the history of the Central Library’s Homepage: www.lib.semmelweis.hu and its facilities,

UpToDate, ClinicalKey, HS talks: Biomedical & Lifesciences Collections, EBSCOhost, ProQuest, Pharmacopoeia, Turnitin
Dissertations: Dart Europe, Open dissertations, OATD,

Catalogs: books, online books
Semmelweis University catalog Hunteka: http://hunteka.lib.semmelweis.hu/search
Online book catalog: https://lib.semmelweis.hu/nav/ekonyvek
National Library of Medicine (Bethesda, USA)
Worldcat: https://www.worldcat.org/
Copac: https://copac.jisc.ac.uk/
Books PPT

Scientific publishers and periodicals: printed/electronic/open access

Browser and matching searching, archive and the newest editions Characterization of periodicals/reviews/journals, ISSN, DOI, Crossmark, Article metrics - Online attention
Publishers: Springer, LWW, Wiley, video journal: JOVE
Nature: https://www.nature.com/
BMC https://www.biomedcentral.com/
PLOS https://www.plos.org/, DOAJ https://doaj.org/, etc.
New routes: Open Science, Open Access  
The dangers of publishing on Open Access https://lib.semmelweis.hu/nav/open_access_general_information  Support for Open Access  Communication at Semmelweis University https://lib.semmelweis.hu/nav/open_access_tamogatas  The Semmelweis repository https://repo.lib.semmelweis.hu/  The concept of plagiarism, its forms of appearance, Plagiarism Search: Turnitin, Copyright questions


OVID databases, online books, electronic periodicals, Evidence Based Medicine databases: the role of the EBM in research, full text journals in Ovid databases MEDLINE, PsycINFO, subject heading systems, value-added services, access to the full text version, WHO https://www.who.int/

Bibliographic and citation databases, search engine: Web of Science platform, Google Scholar; citations, general searching in the databases, bibliographic and citation searching on keywords, using Boolean operators, value-added services  Scientometrics: quality of journals: Clarivate Analytics InCites JCR (Science Edition and Social Science Edition), IF: calculating Impact factor; SCImago: SJR

Reference Manager: EndNote, EndNote Online; the role of reference softwares in modern publishing, Literature searching: Importing and exporting records (from Web of Science, OVID Medline, PubMed) creating own records search facilities within our records and from PubMed; data handling: creating groups, filtering duplicates  Semmelweis Knowledgebase, Scientific Discovery of the Internet: find medical information you can trust, Building search strategies, Google Scholar, Medworm

Summary of the course, Test writing

Consultation, Retake the 1st/2nd test OR Renewal opportunity for each tests
Syllabus of Physical Education

Department of Physical Education
Subject: Physical Education III.
Type of Subject: Compulsory
Code of Subject: FOKOTS1007_3A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year I. semester:

1 – 2 weeks: General information
Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra-curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.

3 – 4 weeks: Stamina Development
Long-term (at least 45 – 60 minutes) running and skipping exercises.

5 – 6 weeks: Balls skill development
Practicing the fundamentals of volleyball (serves, over – and underhand touches, movements, etc.)

7 – 8 weeks: Strength development
Overall strength development using the circle-training method-setting up different stations working on different muscle groups.

9 – 10 weeks: Coordination enhancing exercises
Jumping rope exercises in place and in motion.

11 – 12 weeks: Posture correction
Stick exercises, in various position and motion.

13 – 14 weeks: Stretching – relaxation exercises
Stretching exercises using large medicine-balls in sitting, standing, kneeling and recumbent positions.

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!
Subject: Physical Education IV.
Type of Subject: Compulsory
Code of Subject: FOKOTS1007_4A
Credit: 0
Name of the Lecturer: Várszegi Kornélia

The objectives of Physical Education:
One aim of the course is to improve the health status of medical students, maintaining and increasing physical performance, creating the conditions for better physical quality of life. The syllabus reduced to bi-weekly scheduled double-classes (90 minutes).

The syllabus (preferably a week and numbered):
Reduced to bi-weekly scheduled double-classes (90min.).

II. St. year II. semester:

1 – 2 weeks: General information
Accident, fire and environmental knowledge. Requirement for acceptance of the semester system, the structure of the classes and the presentation of the university recreational sports opportunities for extra-curricular activities. Theory and practical application of the warm-up as a sports injury risk significantly reducing factor. Common to the bench. Free exercises.

3 – 4 weeks: Cardio – vascular system development
The floorball: Using the basic elements of the game dribbling, passing, shooting, etc. Playing against each other in the interval system on high intensity level.

5 – 6 weeks: Posture corrective exercises
Exercises on floor mats, focusing on the core muscles in various body-positions.

7 – 8 week: Coordination enhancing exercises
Special education and practice material for spatial vision, perception of body schema, right-left orientation, muscle development and perception of coordination at the technical skills of playing sports (tennis, badminton).

9 – 10 weeks: Strengthening exercises
Using manual and other exercises equipment (dumbbells, boxes, bench, wall bars, etc.)

11 – 12 weeks: Balls skill development
Exercise of basic technical elements of football. Learning and practicing tactical elements. During locomotion ball control exercises, skill development.

13 – 14 weeks: Stretching – relaxation exercises
Various stretching relaxing exercises after the meditative practices and knowledge (yoga, tai chi, etc.)

Requirements to participate in the sessions and the potential for absences:
Active participation in sport classes.

The method of proof for the workshops and the exam absence:
The absence can not be proved, should make up for the lost lessons.

Requirements for signature at the end of semester (including the number of tasks to be solved learning outcomes and type):
Active participation in six classes approved by the staff.

How to prove absence regarding the exam:
Absence must be retaken!

IMPORTANT NOTE: You can only register to any third year subject after completing the Basic Module!
## PRE-CLINICAL MODULE

### 5th semester

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics, Pre-clinical II.</td>
<td>C4L1P3</td>
<td>final#</td>
<td>Anatomy (Maxillofacial Anatomy) IV. conservatory Dentistry and Endodontics, Pre-clinical I. General Dental Preclinical Practice</td>
</tr>
<tr>
<td>compulsory</td>
<td>General and Oral Microbiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>General and Oral Pathophysiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Basic Immunology</td>
<td>C3L2P1</td>
<td>semi-final</td>
<td>Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Hungarian Dental Terminology III.</td>
<td>C2L0P4</td>
<td>practice mark</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery, Pre-clinical course</td>
<td>C2L0P2</td>
<td>practice mark</td>
<td>Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pathology</td>
<td>C5L3P2</td>
<td>final#</td>
<td>Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Preventive Dentistry I.</td>
<td>C3L1P2</td>
<td>practice mark</td>
<td>Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Odontotechnology and Prostodontics Preclinical Course III.</td>
<td>C3L0P3</td>
<td>final#</td>
<td>Odontotechnology and Prostodontics Preclinical Course II. General Dental Preclinical Practice</td>
</tr>
<tr>
<td>compulsory</td>
<td>Medical Aspects of Disaster Preparedness and Response I.</td>
<td>C0L2 hours/sem</td>
<td>signature</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credit**: 30

Explanation:
- **15 credits** should be gained from the elective subjects during the 5-year course.
- The grade influences the qualification of the diploma.
- C = Credit point
- L = Lecture (hours/week)
- P = Practice (hours/week)
### PRE-CLINICAL MODULE

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics I.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Internal Medicine I.</td>
<td>C3L2P2</td>
<td>practice mark</td>
<td>General and Oral Pathophysiology</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery I.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Oral and Maxillofacial Surgery, Pre-clinical course, Pathology</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Biology</td>
<td>C5L3P2</td>
<td>final#</td>
<td>General and Oral Pathophysiology, General and Oral Microbiology, Anatomy (Maxillofacial Anatomy) IV.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Genetics and Genomics</td>
<td>C2L2P1</td>
<td>final#</td>
<td>Biochemistry, Molecular and Cellbiology III., Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Pathology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>Pathology, General and Oral Microbiology, General and Oral Pathophysiology</td>
</tr>
<tr>
<td>compulsory</td>
<td>Preventive Dentistry II.</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Preventive Dentistry I., Conservative Dentistry and Endodontics, Pre-clinical Course II., Odontotechnology and Prosthodontics Preclinical Course III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Prosthodontics I.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Odontotechnology and Prosthodontics Preclinical Course III., Conservative Dentistry and Endodontics, Pre-clinical II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Radiation protection</td>
<td>C2L1.5P1</td>
<td>semi-final</td>
<td>Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Hungarian Dental Terminology IV.</td>
<td>C2L0P4</td>
<td>final</td>
<td>Hungarian Dental Terminology III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Diagnostics I.</td>
<td>C2L1P1</td>
<td>semi-final</td>
<td>Pathology, General and Oral Pathophysiology</td>
</tr>
<tr>
<td>compulsory</td>
<td>Medical Aspects of Disaster Preparedness and Response II.</td>
<td>C0L2</td>
<td>signature</td>
<td>Medical Aspects of Disaster Preparedness and Response I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Dento-Alveolar practice (summer, minimum 1 week)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>prerequisite of registering to the 7th semester</td>
</tr>
</tbody>
</table>

**Total Credit**: 33

# The grade influences the qualification of the diploma  
C = Credit point  
L = Lecture (hours/week)  
P = Practice (hours/week)
LIST OF TEXTBOOKS (The list may change!)

## GENERAL AND ORAL PATHOPHYSIOLOGY

**Department of Oral Biology**

**Lecturer:** Prof. Dr. Gábor Varga  
**Tutor:** Dr. Kristóf Kádár M.D.

### First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathophysiology of gastric disorders. GERD, Peptic - and duodenal ulcer. Intestinal digestion and absorption. Diseases and regulation of exocrine pancreas. Acute and chronic pancreatitis</td>
<td>Gastric function</td>
</tr>
<tr>
<td>Shock. Circulatory failure in shock. Various mediators in shock. Depressed functions in various tissue in shock.</td>
<td>ECG-1 (Rhythm, frequency, axis, development of various waves on the normal ECG)</td>
</tr>
<tr>
<td>Regulation of blood pressure in hypertension. Risk factors and definitions in hypertension. Processes leading to elevation in blood volume and total peripheral resistancy. Consequences of hypertension</td>
<td>ECG-2 (Defects of excitation. ES)</td>
</tr>
<tr>
<td>Lipid metabolism. Absorption and metabolism of lipids. Regulatory and endocrine effect of WAT.</td>
<td>Urine analysis, renal function tests</td>
</tr>
<tr>
<td>Atherosclerosis. Risk factors and epidemiological aspects. Various theories for the development of atherosclerosis (lipid theory, connective tissue theory, immune theory, thrombogene theory, response to injury etc)</td>
<td>Proteins, malnutrition astric function</td>
</tr>
<tr>
<td>Endocrin disorders. Regulation of hormone activities; hypothalamic hormones. Hormone receptor sinthe brain, Pituitary- hormones, Panhypopituitarism. Changes in the release and activity of thyroid hormones and glucocorticoids. Short and long feed backs</td>
<td>Salt and water metabolism</td>
</tr>
<tr>
<td>Acute and chronic complications and oral side of diabetes. (Oral manifestations in diabetes.)</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Pain sensation: central and oral mechanisms.</td>
<td>Clinico-chemical assays for endocrine disorders</td>
</tr>
<tr>
<td>Pathophysiology of malignancies.</td>
<td>Molecular laboratory diagnostic</td>
</tr>
</tbody>
</table>

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

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

First Semester

**Lectures**
(3 hours per week)

**Lecture**
Introduction. Historical backgrounds.
Acute inflammation. Vascular and cellular events.
Acute inflammation Morphological patterns.
Chronic inflammation.
Extracellular matrix. Repair. Wound healing.
Transplantation. Immunodeficiency. Autoimmune diseases.
Neoplasia. Classification. Histological diagnosis. Invasion and metastasis.
Growth patterns.
Carcinogenesis.
Epidemiology of malignancies. Preblastomatosis. Screening.
Tumor therapy. Tumor immunology.
Benign and malignant tumors of epithelial and mesenchymal origin.
Developmental and genetic diseases.
Environmental and nutritional pathology
Hemodynamic diseases. Water and electrolyte disturbances.
Edema. Shock.
Embolism. Infarct.
Infectious and parasitic diseases. Viral and bacterial diseases.
Tuberculosis. Syphilis. Leprosy. Diseases caused by fungi, nematodes, cestodes.
Aneurysms. Tumors.
Heart diseases. Congenital, ischemic, hypertensive heart diseases.
Respiratory system. Pathology of larynx and trachea. Lung cancer.
Lesions affecting lung parenchyma.
Small and large intestine. Peritoneum.
Acute and chronic hepatitis.
Liver cirrhosis. Toxic injury. Tumors
Urinary tract and male reproductive system
Gestational throphoblastic disease.
Pathology of the breast.

**Practices**
(2 hours per week)

**Laboratory**

**Laboratory**

AUTOPSY

Schemical meditors.

AUTOPSY

HISTOLOGY

AUTOPSY

HISTOLOGY

AUTOPSY

AUTOPSY

HISTOLOGY

AUTOPSY

HISTOLOGY

Consultation.

**EXAMINATION (FINAL)**

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

**Note:** Lectures will be held in the lecture hall of the 1st Institute of Pathology and Experimental Cancer Research. Autopsy and Histopathology practices will be held in the 1st Institute of Pathology and Experimental Cancer Research. During the histopathology exercises 100 slides will be studied. The list of slides will be available at the beginning of the semester. The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester two midterm examinations should be passed.
ORAL PATHOLOGY

1st Department of Oral, Dental and Maxillofacial Surgery
Lecturer: Dr. Attila Zalatnai

Second Semester

Lectures (2 hours/week) Practices (2 hours/week)

Developmental disturbances in number of teeth. Developmental disturbances in shape and size of teeth.
Developmental disturbances in structure of the teeth.
Growth disturbances of teeth. Premature eruption, delayed eruption.
Disturbances of situation of the teeth. Impacted and embedded teeth. Lobodontia.
Developmental disturbances of the jaws and the temporomandibular joint.
Developmental anomalies of the face and soft oral tissue.
Developmental disturbances of the salivary glands. Etiology of malformations.
Discoloration of the teeth. Dental plaque. Dental calculus.
Hypercementosis. Resorption of the teeth.
Diseases of the pulp. Periapical lesions.
Homoiootransplantation.
Inflammation of the oral mucosa and tongue. Halitosis (Stink of the mouth.)
Cysts of jaws.
Cysts of the oral floor, neck and salivary glands.
Focal infection. Diseases of the jaws.
Physical, heat, chemical and electrical injuries of oral and paraoral structures.
Diseases of microbial origin of oral and paraoral structures.
Diseases of the blood and blood forming organs.
Injury from inorganic chemicals and disturbances of metabolism of oral and paraoral structures.
Avitaminosis. Mucocutaneous disorders.
Diseases of accessory nasal sinus. Diseases of the temporomandibular joint.
Diseases of the nerves and muscles, facial hemihyperplasia and hemihypoplasia.
Premalignant lesions
Benign oral epithelial tumors. Benign oral mesenchymal tumors.
Odontogenic tumors. Benign tumors of the jaws.
Malignant tumors of epithelial origin.
Malignant tumors of mesenchymal origin.
Malignant lymphomas.
Malignant odontogenic and non-odontogenic tumors of the jaws.
Staging and grading of oral tumors. Spread of oral and paraoral tumors.
Regional and general metastases of oral and paraoral tumors.
Etiology of paraoral tumors.
Diseases of oral and paraoral lymphoid tissue. Joining of diseases.
Diseases of salivary glands.
Benign tumors of salivary glands.
Malignant tumors of salivary glands.
Oral and paraoral syndromes.
General manifestations of oral diseases.
Forensic oral pathology.

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester
# GENERAL AND ORAL MICROBIOLOGY

**Department of Medical Microbiology**  
Program Director: *Dr. Dóra Szabó*  
Tutor: *Dr. Ágoston Ghidán*

## First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to microbiology. General bacteriology (morphology, physiology and cultivation of bacteria)</td>
<td>Introduction to basic microbiology. Microscopic examination of bacteria (staining procedures).</td>
</tr>
<tr>
<td>Infections and diseases (pathogenesis of bacterial infection, virulence, importance of biofilm formation). Specific and non-specific host defences. Active and passive immunization.</td>
<td>Cultivation of aerobic and anaerobic bacteria (culture media, colony morphology of bacteria).</td>
</tr>
<tr>
<td>Sterilization and disinfection. Antibacterial chemotherapy (mode of actions, resistance, side effects).</td>
<td>Methods used for sterilization and disinfections (physical and chemical possibilities).</td>
</tr>
<tr>
<td>Gram-positive facultative and obligate anaerobic cocci. Gram-negative facultative anaerobic, microaerophilic and obligate anaerobic cocci and coccobacilli.</td>
<td>Antibiotic susceptibility of bacteria</td>
</tr>
<tr>
<td>Gram-negative facultative anaerobic rods. Gram-negative anaerobic rods.</td>
<td>Gram-positive and -negative cocci and coccobacilli</td>
</tr>
<tr>
<td>Spirochetes. Importance of bacterial infections involving the oral, perioral tissues and salivary glands.</td>
<td>Gram-negative rods (Enterobacteriaceae)</td>
</tr>
<tr>
<td>Medical importance of fungi (general mycology, chemotherapy of fungal infections). Importance of fungal infections involving the oral and perioral tissues.</td>
<td>Gram-negative anaerobic rods (Bacteroides, Prevotella, Porphyromonas, Fusobacterium, Leptotrichia). Gram-positive spore-forming aerobic and anaerobic rods (Bacillus, Clostridia)</td>
</tr>
<tr>
<td>Important respiratory pathogen viruses. Important enterally transmitted viruses.</td>
<td>Medically important protozoa. Medically important helminths.</td>
</tr>
<tr>
<td>Hepatitis viruses. Retroviruses (AIDS). Viruses and cancer.</td>
<td>General virology (cultivation of viruses, cell-virus interactions, serological tests and molecular techniques used in laboratory diagnosis of viral diseases)</td>
</tr>
</tbody>
</table>

More than 3 semester absences invalidate the semester.
BASIC IMMUNOLOGY

Department of Genetics, Cell and Immunobiology
Course director: Prof. Dr. Edit Buzás  
Tutor: Dr. Marianna Csilla Holub
Subject code: FOKGEN037_1A
Prerequisite subject: Anatomy (Maxillofacial Anatomy) IV., Biochemistry, Molecular and Cellbiology III.; Medical and Dental Physiology II
Credits: 3

<table>
<thead>
<tr>
<th>Lectures (2 hr / week)</th>
<th>Practicals / Seminars (1 hr / week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The role, processes, organs and cells of the immune system</td>
<td>Basic terms, the immune system in the lab</td>
</tr>
<tr>
<td>2. Principles of natural immunity</td>
<td>Methods based on antigen-antibody interactions I. Immunoserology</td>
</tr>
<tr>
<td>3. The complement system; inflammation and acute phase reaction</td>
<td>Methods based on antigen-antibody interactions II.</td>
</tr>
<tr>
<td>4. Antigen, antigen presentation and MHCs</td>
<td>Methods based on antigen-antibody interactions III.: Flow cytometry</td>
</tr>
<tr>
<td>5. Antigen receptors and their formation</td>
<td>Complement assays</td>
</tr>
<tr>
<td>6. T lymphocytes and cell-mediated immune response</td>
<td>HLA typing</td>
</tr>
<tr>
<td>7. B lymphocytes and humoral immune response</td>
<td>Vaccination I.</td>
</tr>
<tr>
<td>8. Mucosal immunity</td>
<td>Vaccination II.</td>
</tr>
<tr>
<td>9. Immune response in infections</td>
<td>Biological therapies I.</td>
</tr>
<tr>
<td>10. Immunodeficiencies</td>
<td>Biological therapies II.</td>
</tr>
<tr>
<td>11. Hypersensitivity</td>
<td>Hypersensitivity I</td>
</tr>
<tr>
<td>12. Tolerance and autoimmunity</td>
<td>Hypersensitivity II-IV.</td>
</tr>
<tr>
<td>12. Antitumor immunity</td>
<td>Screening methods for autoantibodies</td>
</tr>
<tr>
<td>13. Immunology of transplantation</td>
<td>Case studies</td>
</tr>
<tr>
<td>14. Immunology of transplantation</td>
<td>Case studies II.</td>
</tr>
</tbody>
</table>

The sequence of lessons may change.

**75% minimum attendance of both the lectures and practical lessons is necessary for the end-term signature.** Retake for the midterm will be organized for those students, how miss the midterm because an acute disease, but they have to show up the medical record.

**Midterm:** written test once in the semester. The midterm is not a requirement for the validity of the semester. Retake (one make up day) will be organized for those students, who miss the midterm because an acute disease, but they have to show up the medical record.

**Exam:** written test in the exam period. The exam grade will be calculated from the sum of midterm scores and exam scores. For passing you have to reach more than 50% of both the exam scores and total scores.

**Literature:**
KUBY Immunology • W. H. Freeman and Company • New York • 2013
Immunology seminars (e-book): http://gsi.semmelweis.hu (The user name and password is on the course datasheet of the Neptun.)
CONSERVATIVE DENTISTRY AND ENDODONTICS

Department of Conservative Dentistry
Head of Department: Dr. Zsuzsanna Tóth D.M.D., Ph.D.

CONSERVATIVE DENTISTRY AND ENDODONTICS, PRECLINICAL II.

First semester

Lectures (1 hour per week):
1. Indirect restuarations (inlay, onlay),
5. Pathosis in consequence of caries. Pathology and therapy of the periapical region.
6. Indications, contraindications of endodontic therapy, urgency.
7. Trepanation, extirpation. Instruments of root canal treatment
9. Cleaning and shaping, chemical adjuncts, medication.
10. Midterm
13. Patient assesment and treatment plan.
14. Equipments of the dentist’s office, orders of the clinical practical courses.

Manual training (3 hours/week):
Indirect restorations: inlays, onlays (metal and esthetic); preparation in artificial teeth.
Root canal treatment in extracted teeth (front, bicuspid, molar).

List of textbooks:

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed. Practical exam and practical course grade. Final oral exam: questions from two topic groups and identification of an extracted tooth.
CONSERVATIVE DENTISTRY AND ENDODONTICS I.

Second semester

Lectures (1 hour per week):

1. Guidelines to case reports
2. Dental photography
3. Four-handed dental treatment
4. Cariesdiagnostic methods
5. Dental anaesthesia
6. Isolation in conservative dentistry and endodontic treatments
7. Dental materials: composites
8. Adhesive systems
9. Class I and II restorations and matrix systems
10. Demonstration (Midterm)
11. Therapy of caries: Class III and IV restorations
12. Lesions in the cervical area of the tooth
13. Glassionomer cements, compomer materials
14. Infection control, patients requiring special care

Clinical practice (3 hours per week).

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed. Practical grade: consists of midterm, „small tests”, and evaluation of work and knowledge presented at clinical practice.
PREVENTIVE DENTISTRY I.

Department of Conservative Dentistry
Tutor: Dr. Károly Bartha

First Semester

Lectures 1 (hour/week)

| 1. | Primary, secondary and tertiary prevention. Health-protection, health-education: collective, group and individual prophylaxis. Dental-prophylaxis |
| 2. | Caries. Caries-indexes and epidemiological relations. Characteristics of Hungarian epidemiology |
| 4. | Caries incipient and remineralisation |
| 5. | Oral hygiene |
| 9. | Midterm exam |
| 10. | Fluorides |
| 11. | Systemic and local fluoride-prevention |
| 12. | Fissure-sealing |
| 13. | Infection control |
| 14. | Other possibilities in caries prevention |

Practices (2 hours/week)
Seminar or clinical practice
PREVENTIVE DENTISTRY II.

Second Semester

Lectures 1 (hour/week)

| 1.  | Prevention in pregnancy and in the intrauterine life to the age of three |
| 2.  | Dental plaque - Biofilm |
| 3.  | Oral hygiene – toothpastes |
| 4.  | Organization and realization of collective prevention |
| 5.  | Cervical sensitivity, dentinal hypersensitivity and erosion |
| 6.  | Integrated preventive dentistry – prosthodontics |
| 7.  | Integrated preventive dentistry – preventive fillings |
| 8.  | Integrated preventive dentistry – Finishing, polishing of fillings |
| 9.  | Midterm exam |
| 10. | Integrated preventive dentistry – orthodontics |
| 11. | Dental public health programs. Primary and secondary prevention in screening program for oral cancer |
| 12. | Care of handicapped and hospitalized patients |
| 13. | The role of dental hygienists in dental practice |
| 14. | Iatrogenic damaging factors |
## PROSTHODONTICS I.

### Second Semester

1. The reasons and the consequences of tooth loss
2. Complains, medical history, extra-oral and intra-oral examination, treatment plans and prognosis at edentulous patient
3. Infection control in dentistry. The upper and the lower denture bearing area
4. First impression, casting, outline of the special tray
5. Second (working) impression, mucostatic and mucodisplacive techniques. Beading and boxing, casting of working impression
6. Basic gnathology (OVD, RVD, freeway space, RCP, ICP, Posselt diagram)
7. Basic gnathology (canine guidance, unilateral and bilateral balanced occlusion)
8. Jaw registration (type of articulators, face bow registration)
9. Mounting in articulator, setting up the teeth
10. Try-in procedure, flasking and packing (processing) at complete denture
11. Fitting and advice to the patient. Short time and long time recall procedures
12. Complex functional approach. Implant techniques
14. Relining, rebasing, repairing of complete denture

**Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester two midterm examinations should be passed. Practical course grade.
INTRODUCTION TO ODONTOTECHNOLOGY AND PROSTHODONTICS PRE-CLINICAL COURSE III.

Department of Prosthodontics
Head of Department: Prof. Dr. Péter Hermann
Lecturer: Dr. Ida Barbara Kispélyi

Since the creation of an independent training, the Stomatological curriculum has put great emphasis on a preclinical foundation course, the Prosthodontics Propaedeutic course, the syllabus of which has also included mastery of dental techniques, indispensable for a dentist. Until the visit of the EU Committee in the late 90s, the course was structured in such a manner that in the first and second semester of the second academic year students had 3 hours of practices and one hour of lecture per week; during the first semester treatment of complete edentolousness was simulated through fabrication of complete dentures, while in the second semester students prepared 3-unit bridges and single crowns on partial edentolous moulages. During both semesters, medical and dental laboratory steps followed each other just like in real life, and students performed alternatively medical work phases and dental laboratory tasks, for one week each. After the proposal of the EU Committee on the amendment of several courses (including the Prosthodontics Preclinical course), dental laboratory and medical work phases had to be separated sharply, while an independent Odontotechnology course had to be included in the curriculum. According to the request, this Odontotechnology course was built into the theoretical module in order to provide the earliest possible recognition and consolidation of the chosen profession.

Taken more than ten years of experience into account, while maintaining the values that undoubtedly resulted from these changes, we wish to modify those controversial points that in our opinion can be still improved. A sharp separation of the two disciplines (dental techniques and dentistry) rather confuses students, thus they fail to get a grip of the process, and it is the essence that is lost, since these processes are based each on the other. The essence of the new syllabus is the integration of the two courses that are currently taught separately, and thus new and crucial areas (not taught so far) can be emphasized, with concomitant reduction of teaching hours and credit points.

The curriculum of the course concludes with a comprehensive examination at the end of the first semester of the third academic year.

Timing of the Odontotechnology and Prosthodontics Preclinical course:
3rd, 4th and 5th Semester

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module I:
General Dental Material Science

Preliminary studies requested for the course of Odontotechnology and Prosthodontics preclinical course module II:
Odontotechnology and Prosthodontics preclinical course module I

Preliminary studies requested for the course of Odontotechnology and Prosthodontics Preclinical course module III:
Odontotechnology and Prosthodontics Preclinical course module II
ODONTOEHCNOLOGY AND PROSTHODONTICS PRECLINICAL COURSE –practices

First Semester

Odontotechnology and Prosthodontics Preclinical III.

Topics of the practices:

1. Delivering of the instruments
2. Tooth preparation for solo crown, tooth 13
4. Tooth preparation for porcelain veneer, tooth 21
5. Midterm. Tooth preparation for porcelain veneer, tooth 21, Grading
6. Wax pattern fabrication for acrylic crown, tooth 21.
7. Fabrication of light cured acrylic solo crown, tooth 13
8. Finishing and polishing of the acrylic crown, made for tooth 21
9. Grading
10. Midterm. Finishing and polishing of the light cured crown made for the 13 tooth. steps of constructing metal based removable partial dentures. Wax pattern fabrication a mandibular metal base plate.
11. Wax pattern fabrication for a maxillary metal base plate. Grading
12. Steps of making an implant retained dental prosthesis. Impression taking for an implant retained prosthesis (open special tray method)
14. Practical final examination
INTERNAL MEDICINE I.

1st Department of Internal Medicine

Second Semester

**Lectures** (2 hours per week)

- Introduction to internal medicine.
- History taking.
- Physical examination

- Tumors of the lung.
- Disorders of the cardiovascular system. Physical examination.
- Examination of the peripheral blood vessels.
- Coronary heart disease.
- Chronic heart failure.
- Rheumatic fever. Valvular heart disorders.
- Infective endocarditis. Disorders of the pericardium.
- Cor pulmonale.
- Cardiac arrhythmias. Conduction disturbances.
- Hypertension.
- Atherosclerosis. Thromboangiitis obliterans.
- Raynaud’s phenomenon.
- Headache. Dental relation of the heart diseases

**Practices** (2 hours per week)

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

**Note:** The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. Practical course grade
ORAL AND MAXILLOFACIAL SURGERY, PRE-CLINICAL COURSE

Tutor: Dr. Attila Szűcs

First Semester

Practices (2 hours per week)

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

**Second Semester**

**Lectures** (1 hour per week)  
The history of oral surgery  
Clinical examination and diagnostics  
Pain control. The physiologic and psychologic aspects of pain  
The mode of action of local anaesthetics.  
The pharmacological properties of local anaesthetic drugs  
The technique of local anaesthesia Part I. (anaesthesia of teeth)  
The technique of local anaesthesia Part II. (Matas, block of n. alv. sup. ant., anaesthesia of the tongue, the lip, the bucca)  
The technique of local anaesthesia Part III. (Inflamed tissues, trismus)  
Summerising clinical implications /video/  
Complications of local anaesthesia.  
Conscious sedation in dentistry  
Indication and contraindication of tooth removal  
Operation technique of dentoalveolar surgery Part I. (surg. tools, flaps, suturing)

**Practices** (3 hours per week)  
Surgical anatomy of the jaws and teeth  
Local anesthesia  
Oral and maxillofacial surgical instruments  
Clinical diagnosis, medical examination of the patients

Midterm demonstration  
Practicing simple tooth extraction  
Practicing simple tooth extraction  
Practicing tooth extraction  
Minor oral surgery  
Minor oral surgery  
Midterm Demonstration

**Note:** Lectures will be held in the lecture hall of the Department of Maxillofacial Surgery and Dentistry.  
The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester.  
During the semester three midterm examinations should be passed.  
Practical course grade (five-scale).
## ORAL BIOLOGY

**Lecturer:** Prof. Dr. Gábor Varga  
**Tutor:** Dr. Beáta Kerémi D.M.D.

### Second Semester

<table>
<thead>
<tr>
<th>Lectures (3 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
</table>
Cellular components of the whole blood  
The function of the individual cells.  
Normal blood cell values  
Cellular elements of the bone marrow  
Methods for examining the peripheral blood smear and the bone marrow. |
| Mechanism of biological calcification – Principles of demineralization-remineralization- phenomena  
The inorganic and organic composition of teeth – Role of fluoride and carbonate in calcium and dental tissue phosphate solubility demineralization -remineralization-phenomena | Hematology II.  
Immature cellular forms  
The red and white blood cell series |
| Abnormal development and mineralization of renamel, dentin and cementum – Pulpal mineralization and dentin-pulp phenomena; dentin permeability – Nutrition and hormonal influences on the oral mineralized tissues | Hematology III.  
White blood cell disorders  
Disorders related to segmented cells.  
Disorders related to mononuclear cells |
| The salivary glands and saliva – Ultrastructure and innervation – The physiology of salivary gland secretion | Hematology IV. Malignant white cell disorders  
**Part I.** Classification of leukemias. Acute leukemias  
Cytochemical differentiation of acute leukemias  
Plasma cell dyscrasias |
| Neurological and pharmacological control of salivary gland secretion – Chemical composition and physical properties of saliva – Influences of saliva on oral tissues. | Hematology V.  
Malignant white cell disorders.  
**Part II.** Chronic leukemias. The importance of oral symptoms in the early diagnosis of leukemias |
| Nutritional and hormonal influences on salivary gland function and saliva composition. – Immune and non-immune defense mechanisms – Salivary secretion of drugs – S. gland regeneration sideoblastic, hemolytic anemia. | Hematology VI.  
Abnormalities of red blood cell production.  
Classification of anemias.  
Aplastic, iron deficiency, Abnormalities of red blood cell production. Platelet disorders |
| Oral motor and sensory system – Ultrastructure of temperature, touch, pressure and taste receptors of the oral cavity.  
– Physiology of pain in the oro-facial region and its control.  
Polycythemia, erythrocytosis. |
| Biomechanics and structure of the temporomandibular joint – Neuro-physiology of mastication  
– Kinesology and electromyography of oral musculature – Phenomenon of deglutition  
– Microcirculation and Innervation of the tongue – Role of the tongue in speech and other oral phenomena. Physiology of olfaction – Food consistency and its effects on oral phenomena | Midterm exam of hematology |
<p>| The oral mucosa and periodontium – Ultrastructure of oral mucosa – epithelial cell and oral mucosa metabolism – Epithelial cell adhesion and aggregation Bacterial tooth and epithelial interaction. Transmucosal absorption. – The physiology and composition of sulcular fluid. – Microcirculation of the gingiva and periodontium – The biochemistry of the structure proteins of the periodontium – Ultrastructure of alveolar and associated bone – Physiology of bone remodeling, mechanical effects on bone – Physiology of bone remodeling, mechanical effects on bone Eruption and resorption – Oral immunological mechanism – Nutritional and hormonal influences on the oral mucosa and periodontium | Determination of salivary flow rate and collection of samples for analysis |</p>
<table>
<thead>
<tr>
<th>Lectures (3 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging Nutrition Part Two Hemostasis and fibrinolysis – Physiology and biochemistry – Activators and inhibitors of blood clotting and fibrinolysis – Thrombosis and bleeding disorders: etiology, pathomechanism, oral symptoms, differential diagnosis</td>
<td>Oral clearance measurements Oral cytology</td>
</tr>
</tbody>
</table>

**Note:** A final exam will be organized at the end of the semester. During the semester one midterm examination (hematology) should be passed. The mark of that will also be considered when establishing the mark of the final. During the final examination there are the following requirements:

- a.) to reach the minimum level of a written theoretical evaluation,
- b.) to present orally two of the main theoretical questions, and also,
- c.) to present one question of the subject-specific practices.

In the case of an invalid midterm the examination will start with assessing the knowledge of hematology. Under the minimum level of passing hematology (mark 2) there is no possibility of continuing the final. A failed exam can be retaken at least one week after the first one.

The maximum number of absences from practice in a semester is 3! More than 3 absences invalidate the semester.
RADIATION PROTECTION

Department: Independent Division of Radiology
Lecturer: Prof. Dr. Csaba Dobó Nagy
prerequisites: basic module

Third year second semester

Lectures (1,5 hours per week)
Atomic structure, radioactivity
Ionization, Dosimetry
Health physics
Protection against external exposure
Measurement of exposure at work
General rules of application of ionization
Types and levels of exposure
Radiation protection legislation
Regulation of accident prevention at work
Controlling system of the radiation supervisory authority
Protection of patients
Dose limits
X-ray equipments
Consultation
Written exam

Practices (1 hour per week)
Measurement and calculation effective dose of the patient receiving intraoral x-ray
Importance of collimation, receptors
Operating the equipment

Notes: maximum number of absences in a semester is 3.
more than 3 absences invalidate the semester.
closing semi-final
ORAL DIAGNOSTICS I.

Department of Oral Diagnostics
Address: Bp. VIII., Szentkirályi u. 47. 1088
Phone: 459-1500/59161, 317-1044
Tutor: Prof. Dr. Csaba Dobó Nagy
E-mail: oral@fok.usn.hu

Third year 2nd semester

Week Lecture (1 hour/week) Practice (1 hour/week)
1. Introduction to Oral Diagnostics. Importance and rules of dental diagnostics and document.
3. Examination of oral mucosa. Stomato-oncological screening.
6. Fábián and Fejéró Classification of partially edentulous arches.
7. Orthodontic Diagnostics and treatment plan.
9. Endodontic Diagnostics and emergency interventions
12. Role of diagnostics in Esthetic Dentistry. Optical and formal characteristics of the teeth. Diagnostics and rehabilitation with the harmony of dentures and the face.
13. Diagnostic failures in general praxis.
14. Early diagnosis and preventive approach

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

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

SEMELWEIS UNIVERSITY / FACULTY OF DENTISTRY
Faculty of Dentistry Exam:
Practical hours should be visited during 2 days. The time of practices is between 8.00 a.m – 1.00 p.m. Semifinal exam will be organized at the end of third year, second semester.
Minimal expectations: reaching the minimum level of the written theoretical evaluation (mark 2) presentation of three written case-demonstrations reaching the minimum quality level (mark 2) Non-performance of the minimal expectations invalidate the semester!
Textbook:

Recommended books:
3. “hand-outs” will be prepared and presented for the students by the lecturers

GENETICS AND GENOMICS

Department of Genetics, Cell- and Immunobiology

Course director: Prof. Dr. Edit Buzás
Course coordinator: Dr. F. Ágnes Sensei
Subject code: FOKGEN181_1A
Prerequisite subject: Medical Biochemistry, Molecular and Cell Biology III., Medical and Dental Physiology II
Credit: 2

Lectures (2 hours per week):
1. Introduction to human genetics, the human genome
2. Monogenic inheritance (Autosomal inheritance)
3. Role of sex in inheritance
4. Genetic variations
5. Chromosomal aberrations I.
6. Chromosomal aberrations II.
7. Epigenetics
8. Introduction to genomics. Methods in genomics
9. Genomic approach of complex inheritance
10. Pharmaco- and nutrigenomics
11. Midterm
12. Gene and genome manipulation
13. Genetics of biological processes
14. Population genetics and genomics; Genome and environment

Practices (1 hour per week):
1. Cytogenetics I.
2. Cytogenetics II.
3. Molecular genetic methods and applications in human genetics I.
4. Molecular genetic methods and applications in human genetics II.
5. Pedigree analysis: autosomal inheritance I. (AD)
6. Autosomal inheritance II. (AR)
7. Sex-linked inheritance I. (XR)
8. Sex-linked inheritance II. (XD, mitochondrial)
9. Complex inheritance
10. Consultation
11. Case studies
12. Genetic aspects of cell cycle and cell division disorders
13. Meiosis, gametogenesis; pre-implantation genetic testing
14. From genes to bedside

Important notes:
Students must visit at least 75% of the lessons. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.
There is one midterm during the semester. Spare midterm is organized for those students, who miss the midterm because an acute illness, but they have to show up the medical record to the tutor in one week. There is no opportunity to improve the midterm scores.
After the course there is a written exam (single choice and essay questions, family tree, karyogram, evaluation of molecular genetic studies etc.). The exam grade is calculated from the sum of midterm scores (maximum 40) and exam scores (maximum 60). Students have to reach more than 50% of both the exam scores and total scores to pass the exam. In the third exam midterm scores are not calculated.

Core text: Medical Genetics and genomics (e-book)
Lecture and practice presentations and additional texts are available on the homepage: http://gsi.semmelweis.hu (The user name and password is on course datasheet of the Neptun)
MEDICAL ASPECTS OF DISASTER PREPAREDNESS
AND RESPONSE I-II.

Directorate for Safety Technology
Department for Disaster Management and Education

Supervisor: Pál Kocsik
Lecturer: Csaba Csendes
Type of Course: indispensable
Credit value: 0

First and Second Semester

Purpose of the lecture:
The goal of the subject is to provide basic knowledge of the definition, mission, reasons and circumstances of establishment of civil protection/disaster management, on its place and role in the country’s defense/protection system; to provide information on the types of disasters and their features. Based on experience gained in real incidents, to provide information on the peculiarities of disaster management and the tasks of medical authorities in this context.

The syllabus:
5th semester, 2 teaching hours: (M1) Concept, mission, tasks and establishment of civil protection and disaster management in Hungary. Types and features of disasters, the disaster vulnerability of Hungary, the organizational system of the protection against disasters, command and control of protection, the role of medical authorities.

6th semester, 2 teaching hours: (M2) The early warning system and signals of disaster management. The elimination of the consequences of disasters, the staff work applied during protection. Features and activities of Hungarian disaster management organizations and authorities, international possibilities of disaster management and the lessons learnt, demonstrated by examples.

Requirements and the potential for absences to participate in the sessions:
The subject consists of 4 modules. Module 1 does not have any prerequisites; module 2 anticipates the fulfillment of module 1. Students must register to attend the course announced as required. Those who are unable to fulfill module 1 or 2 (do not attend), may participate in a supplementary lesson in the 1st semester of the following year.

The method of certificate for the workshops and the exam absences:
Certificate of absence: medical, official – court of justice, local government, Students’ Union, etc.

The mid-term controls’ (reports, midterm) number, topic and date, replacements and repairs:
Method of making up for the absence justified by certificate: participation in a supplementary lesson.

Requirements for the signature:
Students must participate in the lesson announced to acquire signature, or in case of absence justified by certificate, in a supplementary lesson. Only registered students may participate in a supplementary lesson announced.

The method of grading: signature

Type of examination: none
Requirements: none, students must fulfill the obligation to attend the lessons.
Application for exam: none
Changing procedure for exam application: none
Absence from the examination: none
Notes, textbooks, study aids and literature list: to be issued later


**LANGUAGE COURSE**

Language Communication Center

**Term 5 Hungarian Dental Terminology III**

Hungarian Dental Terminology III is a course for dental students who completed the course Hungarian Dental Terminology II and passed the examination. Students see and treat patients in the fifth term.

**Topic**

Students will be introduced to the most important topics of dentistry in Hungarian to help them with professional communication. Special emphasis is placed on communication. Grammar which has been acquired is practiced with dental vocabulary and in situations orally.

*Vocabulary:* teeth (name and structure), dental equipment, dental history (drugs and diseases), dental care, dental examination, etc.

The course consists of 56 hours (4 hours per week). Students receive 2 credit points for the course.

Evaluation is based on two written tests and active participation in classes.

**Textbooks**

J. Kovács: *A fogászati szaknyelv alapjai*

I. Gera: *Doctor – Patient, Doctor – Assistant Communication*, compiled by Prof. Dr. I. Gera,

M. Putz: *Magyar fogorvosi szaknyelv I.*

*Supplementary Materials*, compiled by staff members of the Centre for Languages and Communication.

**Term 6 Hungarian Dental Terminology IV**

Hungarian Dental Terminology IV is a course for students who completed the course Hungarian Dental Terminology III. The course concludes with a final examination at the end of the term.

**Topic**

Students will be introduced to further dental topics and situations to help professional communication in practical classes. In addition, they prepare for their final examination. Special emphasis is placed on communication with patients. Grammar which has been acquired is practiced with dental vocabulary and in situations orally.

*Vocabulary:* dental treatment (dental caries, root canal treatment, gingivitis and tartar), prosthodontics (tooth extraction and tooth replacement), oral hygiene, tooth whitening and orthodontic treatment.

The course consists of 56 hours (4 hours per week). Students receive 2 credit points for the course.

Evaluation is based on two written tests and active participation in classes.

**Textbooks**

J. Kovács: *A fogászati szaknyelv alapjai*

I. Gera: *Doctor – Patient, Doctor – Assistant Communication*, compiled by Prof. Dr. I. Gera

M. Putz: *Magyar fogorvosi szaknyelv I.*

*Supplementary Materials*, compiled by staff members of the Centre for Languages and Communication
COMPULSORY SUMMER PRACTICE

MINIMUM 1-WEEK (30 hours) – MAXIMUM 4-WEEK PROGRAM IN DENTO-ALVEOLAR SURGERY

Practicing tooth extractions
Practicing local anesthesia
Assisting at minor oral surgical procedures
Practicing post-surgical patients’ management
Carrying out surgical tooth extraction under supervision
Carrying out minor dento-alveolar surgical procedures under supervision
Students should work at the assigned hospital or dental clinic 6 hours a day, five days a week.

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!
CLINICAL MODULE
## STUDY PROGRAMME

### CLINICAL MODULE

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>General and Dental Radiology</td>
<td>C4L2P2</td>
<td>final#</td>
<td>Radiation protection, Pathology, General and Oral Microbiology</td>
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<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics II.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics I., Prosthodontics I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Internal Medicine II.</td>
<td>C3L2P1</td>
<td>semi-final</td>
<td>Internal Medicine I., Genetics and Genomics</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery II.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Oral and Maxillofacial Surgery I., Oral Pathology Radiation protection</td>
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<tr>
<td>compulsory</td>
<td>Periodontology I.</td>
<td>C2L1,5P0,5</td>
<td>semi-final</td>
<td>Oral Biology, Pathology, Oral Pathology</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pharmacology, Toxicology I.</td>
<td>C2L1,5P1,5</td>
<td>semi-final</td>
<td>Pathology, Biochemistry, Molecular and Cellbiology III. Medical and Dental Physiology II.</td>
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<tr>
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<td>Prosthodontics II.</td>
<td>C7L1P6</td>
<td>semi-final</td>
<td>Prosthodontics I., Conservative Dentistry and Endodontics I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Orthodontics Pre-Clinical</td>
<td>C1L0P1</td>
<td>practice mark</td>
<td>Oral Biology, Pathology, Oral Pathology</td>
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<tr>
<td>obligatory elective</td>
<td>Neurorology</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Psychiatry</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Internal Medicine I.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Dental Ethics</td>
<td>C2L2P0</td>
<td>semi-final</td>
<td>Pathology</td>
</tr>
<tr>
<td>compulsory</td>
<td>Gnathology</td>
<td>C3L1P2</td>
<td>final#</td>
<td>Prosthodontics I., Conservative Dentistry and Endodontics I.</td>
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<tr>
<td>obligatory elective</td>
<td>Public Health</td>
<td>C3L1,5P2</td>
<td>final#</td>
<td>General and Oral Microbiology</td>
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<tr>
<td>compulsory</td>
<td>Community Dentistry I.</td>
<td>C0L0P1</td>
<td>signature</td>
<td>Oral Pathology</td>
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<tr>
<td>obligatory elective</td>
<td>Pediatrics</td>
<td>C1L1P0.5</td>
<td>semi-final</td>
<td>Internal Medicine I., Pathology</td>
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<td></td>
<td><strong>Total Credit</strong></td>
<td></td>
<td><strong>38</strong></td>
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</table>
# CLINICAL MODULE

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
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</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics III.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics II., Prosthodontics II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Internal Medicine III.</td>
<td>C1L1P0</td>
<td>final#</td>
<td>Internal Medicine II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery III.</td>
<td>C4L1P3</td>
<td>semi-final</td>
<td>Oral and Maxillofacial Surgery II, Pharmacology, Toxicology I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Periodontology II.</td>
<td>C4L1P3</td>
<td>semi-final</td>
<td>Periodontology I., Internal Medicine II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pharmacology, Toxicology II.</td>
<td>C3L1.5P1,5</td>
<td>final#</td>
<td>Pharmacology, Toxicology I.</td>
</tr>
<tr>
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<td>Prosthodontics III.</td>
<td>C4L1P3</td>
<td>practice mark</td>
<td>Prosthodontics II., Conservative Dentistry and Endodontics II.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Surgery</td>
<td>C3L2P1</td>
<td>final#</td>
<td>Internal Medicine I., Pathology</td>
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<tr>
<td>compulsory</td>
<td>Implantology I.</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Oral and Maxillofacial Surgery II, Periodontology I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Community Dentistry II.</td>
<td>C0L1P1,5</td>
<td>signature</td>
<td>Community Dentistry I.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Ophthalmology</td>
<td>C1L1P0,5</td>
<td>final#</td>
<td>Pathology, Anatomy (Maxillofacial Anatomy) IV.</td>
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<tr>
<td>obligatory elective</td>
<td>Otorhinolaryngology</td>
<td>C1L1P0,5</td>
<td>final#</td>
<td>Pathology, Anatomy (Maxillofacial Anatomy) IV.</td>
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<tr>
<td>compulsory</td>
<td>General Dentistry practice (summer, 4 weeks)</td>
<td>C0L0P30</td>
<td>signature</td>
<td>prerequisite of registering to the 9th semester</td>
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<tr>
<td>elective</td>
<td>Basic Restorative Digital Dentistry</td>
<td>C1L1P0</td>
<td>semi-final</td>
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</tr>
</tbody>
</table>

**Total Credit** 26

**Explanation**

15 credits should be gained from the elective subjects during the 5-year studies – see the elective list after the 3rd year study program

# The grade influences the qualification of the diploma

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

**LIST OF TEXTBOOKS** (The list may change!)

7. Rajna Péter: Ideg- és elmegyógyászati szakkifejezések
Recommended textbooks:

23. Hermann Péter, Szentpétery Andráš: Gnatológia (Semmelweis Kiadó, 2018)
PHARMACOLOGY, TOXICOLOGY I.

Lecturer: Dr. László Köles  
Tutor: Dr. Erzsébet Kató

First Semester

**Lectures** (1.5 hours per week)
1. Introduction to pharmacology
2. Pharmacokinetics
3. Basics of the neurotransmission of autonomic nervous system
4. Skeletal muscle relaxants
5. Sympatholytics
6. Local anesthetics
7. Antidepressants and antimanic drugs
8. Anxiolytics, sedative-hypnotics
9. Antipsychotics
10. Basic principles of the antibiotic therapy. Penicillins
11. Antibacterial drugs I. Protein synthesis inhibitors (50S): macrolides, ketolides, lincosamides, streptogramins, linezolid, chloramphenicol
12. Antibacterial drugs II. DNA gyrase inhibitors, antifolates.
   Antiprotozoal drugs.
13. Antituberculotics
14. Antiviral drugs

**Practices** (1.5 hours per week)
1. Pharmacodynamics I.
2. Pharmacodynamics II.
3. Parasympathomimetics. Parasympatholytics
4. Sympathomimetics
5. Pharmacology of the respiratory tract
6. General anesthetics
7. 1st midterm exam, prescription writing
8. Antiepileptics
9. Drugs for neurodegenerative diseases, nootropic drugs
10. Carbapenems, monobactams, β-Lactamase inhibitors. Cephalosporins, glycopeptide antibiotics and other cell wall damaging antibiotics
11. Aminoglycosides, tetracyclines, glycycyclines, metronidazole, nitrofurantoin
12. 2nd midterm exam
13. Antifungal and antihelmintic drugs. Desinfectants and antiseptics
14. Consultation, prescription writing
PHARMACOLOGY, TOXICOLOGY II.

Second Semester

Lectures (1,5 hours per week)

1. Anticoagulants
2. Diuretics
3. Inhibitors of the renin-angiotensin-aldosterone system. Calcium channel blockers and other vasodilators
4. Treatment strategy of ischemic heart disease, congestive heart failure and hypertension.
5. Drugs acting on glucose homeostasis, parenteral antidiabetic preparations
6. Oral antidiabetics
7. Drugs acting on bone homeostasis
8. Gluco- and mineralocorticoids
9. Opioids
10. Drugs used in the treatment of peptic ulcer and reflux disease
11. Histamine and antihistamines. Antiemetic agents..
13. Immunopharmacology
14. Toxicology in the dental practice

Practices (1,5 hours per week)

1. Inhibitors of platelet aggregation, fibrinolytics, treatment of bleeding. Drugs acting on erythropoiesis
2. Antihyperlipidemic drugs. Drugs used in the treatment of peripheral vascular diseases. Local circulation improving drugs. Prescription writing
3. Antiarrhythmic drugs
4. Nitrates and positive inotropic drugs
5. 1st midterm exam. Prescription writing
10. Pharmacology of digestion, liver and biliary tract. Drugs used in diarrhea and constipation.
11. 2nd midterm exam. Prescription writing
12. Cytostatic agents
14. Consultation. Prescription exam
INTERNAL MEDICINE II.

1st Department of Internal Medicine

First Semester

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

Immunologic principles. Lymphocytic system.
Immunoglobulins. Types of immunologic reactions.
Polycythemia. Agranulocytosis. The leukemias.
Plasma cell disorders. Multiple myeloma.
Waldenström’s macroglobulinemia.
Heavy-chain disease. Amyloidosis.
Hemostatic disorders. Thrombocytopenia.
Thrombocytosis. Vascular purpuras. Disorders of the coagulation mechanism.
Autoimmunity. Systemic lupus erythematosus.
Sjögren’s syndrome.
Drug allergy. Contact dermatitis.
Immunodeficiency diseases.

Rheumatoid arthritis. Juvenile rheumatoid arthritis.
Reiter’s syndrome. Bechet’s syndrome.
Systemic sclerosis. Polymyositis and dermatomyositis. Wegener’s granulomatosis.
Hypothalamic and pituitary disorders. Hyperpituitary syndromes. Anterior pituitary insufficiency.
Diabetes insipidus. The adrenal cortex.
Cushing’s syndrome. Addison’s disease.

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

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

Second Semester

Lectures (1 hour per week)

Diseases of the kidney. Physical examination.
Urine analysis.
Primary glomerular disorders. Nephritic syndrome.
Interstitial nephritis. Tubular disorders.
Acute and chronic pyelonephritis. Nephrolithiasis.
Acute and chronic renal failure.
Disorders of the digestive system. History
taking and physical examination. Special techniques
for diagnosing disorders of the digestive system.
Disorders of the esophagus. Peptic ulcer disease.
Tumors of the stomach.
Crohn’s disease. Chronic ulcerative colitis.
The malabsorption syndrome.
Colonic and rectal neoplasms.
Acute abdomen. Mechanical obstruction and ileus.
Disorders of the liver. Physical examination.
Diagnostic procedures.
Jaundice. Cirrhosis of the liver.
Acute and chronic hepatitis.
Disorders of the gall bladder and the biliary tract.
Disorders of the pancreas.

Note: The maximum number of absences in a semester is 3.
More than 3 absences invalidate the semester
Final examination
CONSERVATIVE DENTISTRY AND ENDODONTICS II.

Department of Conservative Dentistry
Head of Department: Dr. Zsuzsanna Tóth D.M.D., Ph.D.

First semester

Lectures (1 hour per week):
1. Preventive endodontics: significance of pulp protection
2. Endodontic microbiology
3. Endodontics: Access preparation and length determination
4. Endodontics: cleaning and shaping of root canals
5. Shaping of the Root Canal System: hand and rotary instrumentation techniques
6. Obturation techniques (cold and warm gutta-percha techniques)
7. Evaluation of Endodontic Outcomes
9. Endodontic management of traumatic dental injuries
10. Demonstration (Midterm)
11. Definitive restorations of root canal treated teeth, post and core build-up, single crowns
13. Radiology in Conservative Dentistry
14. Planning of complex treatments

Clinical practice (3 hours per week).

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, „small tests”, and evaluation of work and knowledge presented at clinical practice.
CONSERVATIVE DENTISTRY AND ENDODONTICS III.

Second semester

Lectures (1 hour per week):
1. Evidence based dentistry
2. Microscope in endodontic treatments
3. Special cavity preparations
4. Core build-up
5. Esthetic inlays
6. Dental CAD/CAM
7. Bleaching of teeth
8. Thesis defence
9. Esthetic veneers
10. Demonstration (midterm)
11. Surgical treatment of multiplex cervical lesions
12. Difficulties during root canal treatments and their solutions
13. Endodontic and Periodontal interrelationships
14. Surgical procedures in restorative dentistry

Clinical practice (3 hours per week).

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, „small tests“, and evaluation of work and knowledge presented at clinical practice.
PROSTHODONTICS II.

First Semester

Topic of the lectures (weekly, numbered):

1. The reasons and the consequences of tooth loss
2. Infection control in prosthodontic
3. Preparation for fixed restorations
4. Fixed temporary restorations
5. Impression for fixed restorations
6. Minimal invasive prosthodontic treatment
7. Removable partial dentures
8. Major connectors of upper and lower RPD
9. Indirect and direct retainers of RPD
10. Gnatological aspect of fixed and removable partial dentures
11. Clinical and laboratory steps of fixed partial dentures
12. Fix appliances, types of crown and bridges
13. Prosthetic aspects of implantology
14. Consultation

PROSTHODONTICS III.

Second Semester

Topic of the lectures (weekly, numbered):

1. Diagnosis and treatment planning
2. Classification of the partially edentulous dental arches
3. Tooth space determination
4. Treatment planning for the class 0. dental arch
5. Treatment planning for the class 1A. and 1B. dental arches
6. Treatment planning for the class 2A. dental arches
7. Treatment planning for the class 2B. dental arches
8. Treatment planning for the class 2A/I. and 3. dental arches
9. Maxillo – facial prosthetics
10. Implants in prosthodontics
11. Parodontologic aspects of Prosthetic Treatments
12. Construction of Complex Dentures
13. Consultation
BASIC RESTORATIVE DIGITAL DENTISTRY

Second Semester

Department of Prosthodontics
Head of Department: Prof. Dr. Péter Hermann
Lecturer: Dr. Judit Borbély

Topic of the lectures (weekly, numbered):

1. Introduction of Io scanners- in vitro scan
2. Direct and indirect CAD CAM workflow
3. Intraoral scanning systems with lab connection
4. Full contour and framework design and materials
5. Digital communication between the dentist and the lab, layering and staining, virtual articulators
6. Layer technologies- 3D prototyping-
7. Prosth planning for navigated implant surgery
8. Dental system Lab CAD I
9. Dental system Lab CAD II
10. Dental designer chairside CAD I
11. Dental designer chairside CAD II
12. Implant studio I
13. Implant studio II
14. Test
### SURGERY

I. Department of Surgery  
Department Section of Surgery

**Second Semester**

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

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

Department of Oro-Maxillofacial Surgery and Stomatolgy
Tutor: Dr. Kinga Körmöczi

First Semester

Lectures (1 hour per week)

- Odontogenic inflammation I.
- Pathology, pathophysiology and microbiology of pyogenic inflammation
- Work safety protection training.
- Odontogenic inflammation II.
- Clinical features, diagnostics, therapy. The question of dental foci.
- Odontogenic inflammation III.
- Maxillofacial inflammation
- Odontogenic cysts I.
- Clinical classification of odontogenic cysts, the pathogenesis of their formation. Diagnosis, differential diagnosis
- Odontogenic cysts II.
- The surgery of odontogenic cysts. Cystectomy, cystostomy, decompression methods
- Endodontic surgery
- Indications and operative technique of apicectomy.
- Retrograde root filling. The hemisection of teeth
- Oral surgical aspects of the maxillary sinus I.
  (Pathology, diagnostics)
- Oral surgical aspects of the maxillary sinus II.
  (Sinus apertus)
- Written midterm
- The surgery of impacted teeth I.
- Disorders of the eruption of third molars. Clinical aspects of the prognosis of third molars. Diagnostics of mandibular third molars
- The surgery of impacted teeth II.
- Surgical technique of the removal of mandibular third molars. Post operative follow-up treatment of mandibular third molars, complications of their removal.
- Clinical features of maxillary third molars
- The surgery of impacted teeth III.
- Disorders of the eruption of upper canines. Prognosis, diagnosis and surgical treatment. Clinical features of other impacted and supernumerary teeth.
- Special need dentistry

Practices (3 hours per week) Practising minor oral surgery

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

Department of Oro-Maxillofacial Surgery and Stomatology

Second Semester

Lectures (1 hour per week)
Developmental anomalies I.
Complex therapy of cleft lip and palate. Craniofacial malformations.
Developmental anomalies II.
Surgical management of dysgnathia.
Dentoalveolar trauma.
Injuries of neighbouring soft tissues, principles of management.
Clinical aspects of tooth replantation: indication, technique, prognosis.
Maxillofacial surgical aspects of peripheral nerve disorders.
Diseases of the temporomandibular joint.
(Diagnosis and management)
Non-odontogenic cysts.
Preprosthetic surgery I.
Principles.
Preprosthetic surgery II.
Written midterm
Salivary gland diseases. Diagnostics and therapy
Consultation

Practices (3 hours per week)
Practising minor oral surgery

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

Department of Orthodontics and Pediatric Dentistry
Head of Department: Dr. Noémi Katinka Rózsa D.M.D., Ph.D.
tel: (1)-4591500/ 59268
E-mail: noemirozsa65@gmail.com
Tutor: Dr. László Miklás Kaán D.M.D., PhD.
Phone: (1)-4591500 / 59270
E-mail: kaanm@dent.semmelweis-univ.hu

First semester

The aim of training
Preparing the dental students for the practical education of orthodontic health care, focusing primarily on the development of the manual skills.

Training form and time frame
Practical education: 1 hour/week
Form of examination: practical mark based on the practical performance
Comment: The practical education takes place in 7x2 hours. Training starts in the autumn semesters only.

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

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

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

Department of Prosthodontics
Lecturer: Prof. Dr. Csaba Dobó Nagy

First Semester

**Lectures** (2 hours per week)  
Radiation physics  
Dental caries  
Pulp cavity  
Extraction of the teeth  
Root canal therapy  
Periapical lesions  
Periodontal disease  
Cysts of the jaws  
Hypercementosis  
Excessive bone formation  
Injuries to teeth  
Osteomyelitis  
Tumors  
Apicoectomy  
Anomalies  
Salivary gland diseases  
Resorption of the teeth  
Radiation biology  
Health physics  
Long-cone paralleling technique  
Traditional extraoral radiographic examinations  
Panoramic technique I.  
Panoramic technique II.

**Practices** (2 hours per week)  
Normal radiographic anatomy: Tooth anatomy (lecture)  
Normal radiographic anatomy: Anatomic landmarks of the maxilla (lectures)  
Normal radiographic anatomy: Anatomic landmarks of the mandible (lecture)  
Development of the teeth, Deciduous teeth (lect.)  
Recognition of the teeth, anatomic landmarks and caries  
Development of the teeth, deciduous teeth, extraction of the teeth  
Periapical lesions  
Periodontal disease  
Cysts of the jaws  
Hypercementosis  
Excessive bone formation  
Injuries to teeth  
Osteomyelitis  
Tumors, apicoectomy  
Review  
Review  
Viewing of the examination radiographs I.  
Viewing of the examination radiographs II.

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

Tutor: Dr. János Réthelyi
Department of Psychiatry and Psychotherapy

Lectures: 1/week

Examination: Semi-final

Textbook:

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

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. Semi-final exam: written exam (multiple choice)
NEUROLOGY

Tutor: Dr. Sándor Ilniczky

First Semester

Classroom lectures:

Cranial nerves and the brainstem
The motor system
The sensory system, pain syndromes
Altered consciousness. Emergency in neurology
Diagnosis and treatment of cerebrovascular disorders
Epilepsy and sudden loss of consciousness
Movement disorders
Inflammatory disorders and tumors of the nervous system

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

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

Basic reading:

Suggested reading:
PERIODONTOLOGY I, II.

Department of Periodontology

First Semester

Lectures (1.5 hours per week)
Practices (0.5 hour per week)
Credit 2

Exam: semi-final

Second Semester

**Lectures** (1 hour per week)

- Introduction to Periodontology
- The morphology of the periodontium, histology and embryology of the periodontium
- The dental plaque. Its origin and role in the periodontal diseases. Periodontal microbiology
- Oral immunobiology
- Oral immunopathology
- Drugs and chemicals used in the periodontology
- Pathomechanism of the periodontal disease
- Clinical forms of periodontal diseases
- Acute necrotizing ulcerative gingivitis
- Pregnant gingitis, Periodontal diseases with endocrine background.
- Non-plaque related periodontal conditions
- Oral mucous membrane diseases located on the gingiva
- Periodontal diseases of the child and adolescents
- Epidemiology of the periodontal diseases
- Periodontal diseases and the patients’ behavior
- Periodontitis as a behavioral disease
- Oral prophylaxis and prevention of periodontal diseases
- Measures of individual and group education and motivation
- Periodontal charting, periodontal indices
- Medical and dental history of the periodontal patients
- General appraisal of the etiology of periodontal disease
- Rational for therapy.
- Consultation

**Practices** (3 hours per week)

- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Midterm Demonstration
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Midterm Demonstration
- Clinical practice
- Clinical practice
- Clinical practice

**Note:** The maximum number of absences in a semester is 3.
More than 3 absences invalidate the semester.
During the semester two midterm demonstrations should be passed.
Semi-final
# PUBLIC HEALTH

**Tutor:** Dr. András Terebessy

**English Dental**

<table>
<thead>
<tr>
<th>Lectures (1.5 hours per week)</th>
<th>Practicals (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of Public Health; Past, present and future of Public Health</td>
<td>Introduction Basic demographical data</td>
</tr>
<tr>
<td>Demography: International and Hungarian situation</td>
<td>Public Health Program of EU</td>
</tr>
<tr>
<td>General epidemiology Analytical and intervention methods on field of chronic non-communicable diseases</td>
<td>Visit into the Central Kitchen of the University</td>
</tr>
<tr>
<td>Lifestyle: smoking, alcohol consumption, drug-abuse</td>
<td>Practical aspects of epidemiological investigations: study-planning and analysis</td>
</tr>
<tr>
<td>Epidemiology and prevention of non-communicable diseases I</td>
<td>Dentist’s task on prevention of non-communicable diseases I: smoking, alcohol consumption and drug-prevention</td>
</tr>
<tr>
<td>Epidemiology and prevention of non-communicable diseases II</td>
<td>Dentist’s task on prevention of non-communicable diseases II: HBP-prevention</td>
</tr>
<tr>
<td>Epidemiology and prevention of Cancer</td>
<td>Dentist’s task on prevention of non-communicable diseases III: cancer-prevention Screening-screening programs</td>
</tr>
<tr>
<td>Environmental health: water, soil, air</td>
<td>Dentist’s task on environmental health problems</td>
</tr>
<tr>
<td>Occupational health</td>
<td>Dentist’s task on occupation diseases prevention</td>
</tr>
<tr>
<td>Basics of healthy diet; Nutrition disorders</td>
<td>Assessment of nutritional status; nutritional disorders;</td>
</tr>
<tr>
<td>Mother-, child and youth health care</td>
<td>Basics of healthy diet; Computer planning and controlling diet in public catering</td>
</tr>
<tr>
<td>General Epidemiology of communicable diseases – International and Hungarian aspects</td>
<td>Family planning, Youth health</td>
</tr>
<tr>
<td>Nosocomial Infections Reemerging, emerging and deliberately emerging infections</td>
<td>General epidemiology of communicable diseases Immunization, Vaccination programs</td>
</tr>
<tr>
<td>Ethic of Public Health</td>
<td>Sterilization, disinfection Laboratory investigations in case of communicable diseases Nosocomial infections</td>
</tr>
<tr>
<td>Structure and financing of Health Care Systems</td>
<td>Food-hygiene; food-borne diseases</td>
</tr>
</tbody>
</table>
DENTAL ETHICS

First Semester

Bioethics
Course Syllabus.

Institute of Behavioral Sciences
Course Director: Prof. Dr. József Kovács
(28 hours)

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

Lectures

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

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

3. week
The basic principles of dental ethics.
The principle of respect for autonomy.
The principle of non-maleficience.
The principle of beneficience.
The principle of justice.
Arguments against „principalism”.

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

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

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

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

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

10. week
Ethical questions of animal experimentation.
History of the thinking about the moral status of animals.
The philosophical significance of the Darwinian conception of nature.
The views of Peter Singer: antispeciesism.
The views of Tom Regan: animal rights.
Ethical questions of experimentation on animals on the basis of a moderate animal protectionist’s view.
Critical anthropomorphism.
Alternatives to animal experimentation.
11. week
**Euthanasia** and the withholding of life-sustaining treatment
Definitions.
The sanctity of life versus the quality of life doctrine.
Is there any difference between active and passive euthanasia?
Refusal of life sustaining treatment by competent and incompetent patients.
Possibilities to extend the autonomy of patients: living will, durable power of attorney, substituted judgement, etc.
The concept of medically futile treatment.
Ethical problems of the treatment of handicapped newborns. (The debate about the treatment of spina bifida babies, the Baby Doe case, the legal situation, etc.)

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

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

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

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

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

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

Textbook:
Conrad Fischer—Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141

Important:
To participate on at least 75% of the total number of lessons is a prerequisite of getting the signature. Doctor’s certificate is required to justify absence from the lessons and the exam.
Exam type: semi-final
Sign up for the exam: through the Neptun system.
GNATHOLOGY – lectures and practices

Department of Prosthodontics
Lecturer: Prof. Dr. Péter Hermann

First Semester

Lecture (1 hour/week)
Practice (2 hours/week)

Topic of the lectures (weekly, numbered):

1. Introduction To The Physiology Of The Stomatognathic System
2. Morphology Of The Stomatognathic System
3. Jaw Positions
4. Intercuspal Position, Retruded Contact Position, Occlusal Alterations
5. Mandibular Movements
6. Occlusal Concepts
7. Articulators
8. Face-bow Transfer. Mounting Of Articulators
9. Periodontal Considerations Of Occlusion. Occlusal Trauma
10. Gothic Arch Tracing. Ultrasonic Registration And Examination Of The TMJ
11. Examinations And Differential Diagnosis Of Occlusal Problems
12. Role Of Occlusion In The Clinical Practice. Parafunctions
13. Temporomandibular Disorders
14. Test

IMPLANTOLOGY I. – lecture

Department of Oro-Maxillofacial Surgery and Stomatology
Lecturer: Dr. Árpád Joób-Fancsaly

Course Syllabus:

Semi-final examination
COMMUNITY DENTISTRY

Department of Community Dentistry
Head of department and supervisor of the subject: Dr. Péter Kivovics
Tutor: Dr. Orsolya Németh

1st semester: only practice
2nd semester: lecture and practice

Time: 14 × 1,5 hours

The purpose of the subject is that the dental student would be able to recognize and cope with the possible daily emergency cases at the dental practice.
In the 21st century dental emergency does not mean extractions. It also includes Conservative Dentistry, Prosthetics, Pedodontics, Orthodontics as well as Peridodontics aspects.
The curriculum of the Community Dentistry is an integral part of the other subjects.
It is necessary to teach this special field of dentistry separately. Introduction of individual cases in community dentistry helps with understanding other fields of dentistry as well.
This subject is especially important for graduates as they do not possess enough theoretical and practical knowledge yet. It would make them capable to solve any emergency case with ease.
Department of Community Dentistry is responsible for all Budapest and Pest region dental care, therefore is able to provide sufficient number of patients for practical education.

COMPULSORY SUMMER PRACTICE

4-weeks (120 hours) at a Dental Office
(Conservative Dentistry of Periodontology)

The student has to practice whole-scale comprehensive dental treatment including: Oral Prophylaxis, Restorations, Root Canal Therapy and Minor Prosthodontics as well as Er. Management.

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!
CLINICAL MODULE
## STUDY PROGRAMME

### CLINICAL MODULE

<table>
<thead>
<tr>
<th>subjects code</th>
<th>subjects</th>
<th>credit code</th>
<th>examination</th>
<th>prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry I.*</td>
<td>C2L0P6</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics IV</td>
<td>C3L0P3</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics III., Prosthodontics III.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Forensic Dentistry</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Pharmacology, Toxicology II.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery IV.</td>
<td>C5L1P5</td>
<td>practice mark</td>
<td>Oral and Maxillofacial Surgery III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Implantology II.</td>
<td>C2L1P1</td>
<td>final#</td>
<td>Oral and Maxillofacial Surgery III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Orthodontics I.</td>
<td>C5L1P4</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Pedodontics I.</td>
<td>C5L1P4</td>
<td>practice mark</td>
<td>Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Periodontology III.</td>
<td>C3L1P2</td>
<td>practice mark</td>
<td>Periodontology II.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Prehospital Emergency Medicine</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Internal Medicine III., First Aid</td>
</tr>
<tr>
<td>compulsory</td>
<td>Prosthodontics IV.</td>
<td>C3L0P3</td>
<td>practice mark</td>
<td>Prosthodontics III., Conservative Dentistry and Endodontics III.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Diagnostics II.</td>
<td>C1L0P1</td>
<td>semi-final</td>
<td>Oral Diagnostics I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral Medicine</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Pharmacology and Toxicology II.</td>
</tr>
</tbody>
</table>

*Total Credit 32

*at the Dept. of Prosthodontics or at the Dept. of Conservative Dentistry

#The grade influences the qualification of the diploma.

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

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

<table>
<thead>
<tr>
<th>subjects code</th>
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<th>credit code</th>
<th>prerequisites code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>compulsory</td>
<td>Clinical Dentistry II. *</td>
<td>C3L0P6</td>
<td>practice mark</td>
<td>Clinical Dentistry I.</td>
</tr>
<tr>
<td>compulsory</td>
<td>Conservative Dentistry and Endodontics V</td>
<td>C3L0P3</td>
<td>final#</td>
<td>Conservative Dentistry and Endodontics IV., Prosthodontics IV.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Dermatology</td>
<td>C1L1P0.5</td>
<td>final#</td>
<td>Pharmacology, Toxicology II.</td>
</tr>
<tr>
<td>obligatory elective</td>
<td>Obstetrics and Family Planning</td>
<td>C1L1P0</td>
<td>semi-final</td>
<td>Internal Medicine III., First Aid</td>
</tr>
<tr>
<td>compulsory</td>
<td>Oral and Maxillofacial Surgery V.</td>
<td>C4L1P3</td>
<td>final#</td>
<td>Oral and Maxillofacial Surgery IV.</td>
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<tr>
<td>compulsory</td>
<td>Orthodontics II</td>
<td>C6L1P5</td>
<td>final#</td>
<td>Orthodontics I.</td>
</tr>
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<td>C6L1P5</td>
<td>final#</td>
<td>Pedodontics I.</td>
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<td>Periodontology IV.</td>
<td>C3L1.5P2</td>
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<td>Periodontology III.</td>
</tr>
<tr>
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<td>Prosthodontics V.</td>
<td>C3L0P3</td>
<td>final#</td>
<td>Prosthodontics IV., Conservative Dentistry and Endodontics IV.</td>
</tr>
</tbody>
</table>

**Total Credit** 30

Diploma work C20

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**Explanation**

15 credits should be gained from the **elective subjects** during the 5-year studies – see the elective list after the 3rd year study program.

# The grade influences the qualification of the diploma

C = Credit point

L = Lecture (hours/week)

P = Practice (hours/week)
LIST OF TEXTBOOKS (The list may change!)


Recommended textbooks:

8. Online: www.lib.sote.hu – Adatbázisok, adattárák – OVID – Books@OVID – Dermatology – Fitzpatrick’s Dermatology in General Medicine
10. European federation of Periodontology – efp.org
International Team for Implantology – iti.org
ITI Treatment Guide – iti.org/ITI-Treatment-Guide
CLINICAL DENTISTRY I.-II.

The aim of the practice is to teach the sequence of the dental treatment like operative dentistry and endodontics, prosthodontics in the same patient. To teach the theoretical background and practical knowledge of operativ dentistry and endodontics, prosthodontics. To teach how to integrate these two disciplines in treating one patient.

No lectures

OTORHINOLARYNGOLOGY AND HEAD AND NECK SURGERY

Lecturer: Prof. Dr. László Tamás
Tutor: Dr. Beáta Bencsik

First Semester

<table>
<thead>
<tr>
<th>Lectures (1 hour per week)</th>
<th>Practices (0.5 hour week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of otorhinolaryngology in dentistry and medicine. Clinical anatomy of the ear. Diseases of the external ear.</td>
<td>Routine clinical examinations in practice.</td>
</tr>
</tbody>
</table>
PEDIATRICS

2nd Department of Pediatrics
Tutor: Dr. Judit Müller

First Semester

Lectures (1 hour per week) Practices (0.5 hour week)
Development and Growth
Childhood Nutrition and its Disorders
Fluid and Electrolyte Disorders
Newborn Infant: Diseases and Disorders
Genetic Disorders
Congenital Heart Diseases
Respiratory Diseases
Neurologic and Muscular Disorders
Endocrine Disorders
Infectious Diseases, Immunization
Gastrointestinal Tract Disorders
Hematologic Disorders
Malignant Diseases in Childhood
Kidney and Urinary Tract Diseases
Allergic Diseases

PROSTHODONTICS IV-V.

First Semester

Clinical practices, Integrated practices
Treatment of partial edentulousness, fixed and removable dentures.
No lectures.

Second Semester

Clinical practices integrated with the conservative dentistry. Complex treatment of different cases.
No lectures.
CONSERVATIVE DENTISTRY AND ENDODONTICS IV.

First semester

No lectures, Clinical practice (3 hours per week), Clinical dentistry (6 hours per week):
Practice of thorough patient examination, taking medical and dental history, stomatooncologic screening. Preparing a treatment plan for complete rehabilitation of the oral cavity. Rehabilitation of oral hygiene and scaling.
Root canal treatment of single or multi rooted teeth, their definitive restoration with onlay or solo crown. Revision of root canal fillings.

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, „small tests”, and evaluation of work and knowledge presented at clinical practice.

CONSERVATIVE DENTISTRY AND ENDODONTICS V.

Second semester

No lectures, Clinical practice (3 hours per week), Clinical dentistry (6 hours per week):
Practice of thorough patient examination, taking medical and dental history, stomatooncologic screening. Preparing a treatment plan for complete rehabilitation of the oral cavity. Rehabilitation of oral hygiene and scaling.
Root canal treatment of single or multi rooted teeth, their definitive restoration with onlay or solo crown. Revision of root canal fillings.

List of textbooks:
3  Newbrun A.: Cariology Quintessence. ISBN 0867152052

Note: The maximum number of absences in a semester is 3. More than 3 absences invalidate the semester. During the semester a midterm exam must be passed and one documented clinical case must be presented to validate the semester by earning the signature. Practical grade: consists of midterm, „small tests”, and evaluation of work and knowledge presented at clinical practice. Final oral exam: students (A) must present the best three well-documented clinical cases validated by the practice teacher done at conservative or clinical practice during the entire time of their gradual course, (B) choose one-one question from three topic groups (dental materials, conservative dentistry, endodontics) and (C) receive an intraoral X-ray from which they must recognize the teeth, set up diagnosis and suggest a therapy.
ORAL AND MAXILLOFACIAL SURGERY IV.

Tutor: Dr. Attila Szűcs

First Semester

Lectures (1 hour / week)
- Precanceroses.
- Benign tumors of the soft tissues in the head and neck region.
- Benign tumors of the bone tissues in the head and neck region.
- Malignant tumors of the head and neck region. I. (Diagnostics, pathology, epidemiology)
- Malignant tumors of the head and neck region. II. (Surgical therapy)
- Malignant tumors of the head and neck region. III. (Complex therapy)
- Secondary treatment of cleft lip and palate. Orthognatic Surgery
- Biomaterials.
- Esthetical consideration in maxillofacial surgery
- Risk patient treatment in oral surgery I. (internal diseases, fainting, antifebrile and painkiller treatment)
- Sinus lifting.
- Dentoalveolar deformities.
- Guest speaker
- Consultation

Practices (5 hours / week)
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
- Practicing minor oral surgery
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- Practicing minor oral surgery
- Practicing minor oral surgery

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

Second Semester

Lectures (1 hour / week) Practices (3 hours / week)
Diseases of the temporomandibular joint Part I. (Pathology, diagnostics)
Diseases of the temporomandibular joint Part II. (Therapy)
Peripheral nerve disorders in the head and neck region. Rehabilitation after the paresis of the Facial nerve
Antibiotic treatment in dental surgery
Maxillofacial reconstructive surgery Part I. (Reconstruction of soft tissues and bone by local flaps)
(Reconstruction by microvascular grafts)
Modern diagnostic methods in oral and maxillofacial surgery
Systematic diseases in the head and neck region
The promotion of the osteogenesis by distraction methods
Biomaterials in the maxillofacial surgery
Guest speaker
Consultation

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

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

Department of Orthodontics and Pediatric Dentistry

Head of Department: Dr. Noémi Katinka Rózsa D.M.D., Ph.D.
Phone: (1)-4591500/ 59268
E-mail: noemirozsa65@gmail.com

Tutor: Dr. László Miklós Kaán D.M.D., PhD.
Phone: (1)-4591500 / 59270
E-mail: kaanm@dent.semmelweis-univ.hu

First Semester

Lectures (1 hour/week)

1. The subject, the connection and significance of pedodontics.
2. Induction of caries, caries theories, and indices.
4. Possibilities of caries prevention and fluoride prophylaxe.
5. Development of the teeth, anatomy and dentition of primary teeth.
7. Disturbances of development of the permanent and primary teeth.
9. Consecutive illnesses of caries of primary teeth.
10. Mechanism of second dentition.
11. Physiological and pathological phenomena in second dentition.
15. Consultation.

Practice (4 hours/week)

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

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radiology in pedodontics.</td>
</tr>
<tr>
<td>2</td>
<td>Minor oral surgery in pedodontics, local anaesthesia.</td>
</tr>
<tr>
<td>3</td>
<td>General anaesthesia.</td>
</tr>
<tr>
<td>4</td>
<td>Prothesis in pedodontics.</td>
</tr>
<tr>
<td>5</td>
<td>Traumatic injuries of primary and permanent teeth.</td>
</tr>
<tr>
<td>6</td>
<td>Complex therapy of traumatic injuries of permanent teeth.</td>
</tr>
<tr>
<td>7</td>
<td>Parodontology and oral diseases in childhood.</td>
</tr>
<tr>
<td>8</td>
<td>Administration of medicine in pedodontics.</td>
</tr>
<tr>
<td>9</td>
<td>Diagnostic competition.</td>
</tr>
<tr>
<td>10</td>
<td>Organizing of pedodontic treatment and nursing.</td>
</tr>
<tr>
<td>11</td>
<td>Administration and documentation.</td>
</tr>
<tr>
<td>12</td>
<td>Significance of agegroup in pedodontics.</td>
</tr>
<tr>
<td>13</td>
<td>Consultation.</td>
</tr>
</tbody>
</table>

Practice (5 hours/week)

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

Department of Orthodontics and Pediatric Dentistry
Head of Department: Dr. Noémi Katinka Rózsa D.M.D., Ph.D.
tel: (1)-4591500/ 59268
E-mail: noemirozsa65@gmail.com
Tutor: Dr. László Miklós Kaán D.M.D., PhD.
Phone: (1)-4591500 / 59270
E-mail: kaanm@dent.semmelweis-univ.hu

First Semester

Lectures (1 hour/week)
The subject, the significance of orthodontics, and its relation to caries and parodontology.
Etiology, acquired and hereditary anomalies.
Orthodontic elements, terminology.
Relationship between function and anomalies. Angle diagnostic system.
X-ray diagnosis, evaluation of teleradiogram.
The date of the beginning of treatment and the length of treatment time.
Basic principle of orthodontic treatment. Biological and mechanical fundamentals.
Classification of orthodontic appliances. The appliances’ historical survey.
Removable appliances. Active and passive plates.
Removable appliances. Functional jaw orthopedic appliances.
Elements of fixed appliances.
Types and characters of orthodontic arches.
Multiband systems I. (edgewise, light-wire, twin-wire)
Multiband systems II. (bioprogressive, straightwire)
Appliances used rarely in Hungary (head-gear, face-bow, quad helix, hyrax)

Practice (4 hours/week)
Treatment of patients.
Type of evaluation: Practical grade (1-5 grading system)
ORTHODONTICS II.

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (1 hour/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Direct bonding.</td>
</tr>
<tr>
<td>2</td>
<td>Treatment of Angle class I. anomalies. Local anomalies.</td>
</tr>
<tr>
<td>3</td>
<td>Treatment of Angle class I. general anomalies.</td>
</tr>
<tr>
<td>4</td>
<td>Treatment of Angle class II. anomalies.</td>
</tr>
<tr>
<td>5</td>
<td>Treatment of Angle class III. anomalies.</td>
</tr>
<tr>
<td>6</td>
<td>Orthodontic treatment by missing teeth.</td>
</tr>
<tr>
<td>7</td>
<td>Complex therapy of cleft lip and palate.</td>
</tr>
<tr>
<td>8</td>
<td>Extraction in orthodontics.</td>
</tr>
<tr>
<td>9</td>
<td>Ambulant surgical interventions in orthodontics.</td>
</tr>
<tr>
<td>10</td>
<td>Surgical and orthodontic treatment of mandibular and maxillar prognathism.</td>
</tr>
<tr>
<td>11</td>
<td>Adult treatment in orthodontics.</td>
</tr>
<tr>
<td>12</td>
<td>Early treatment in orthodontics.</td>
</tr>
</tbody>
</table>

Practice (5 hours/week)

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

Department of Periodontology

First Semester

**Lectures** (1 hour/week)
- Introduction: What is the clinical periodontology is?
- The rational of periodontal cause related therapy
- Clinical and radiological periodontal diagnostics
- Oral hygienic, Gingival and Periodontal indices
- The treatment of periodontal emergency cases
- The stages of the comprehensive periodontal treatment I.
- The stages of the comprehensive periodontal treatment II.
- Professional oral hygiene I. Supragingival scaling
- Professional oral hygiene II. Supragingival scaling
- Professional oral hygiene III. Correcting plaque retention factors
- Oral hygienic education, tooth brushing
- The instruments of the individual oral hygiene
- Reevaluation of the patients. Antibiotics.
- Rational of periodontal surgery
- Cause related periodontal surgery I. Gingivectomy
- Cause related periodontal surgery II. Modified Widman
- Flap operations

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

**Practices** (2 hours/week)
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice

**Midterm Demonstration**
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice
- Clinical practice

**Midterm Demonstration**
- Clinical practice
- Clinical practice
## PERIODONTOLOGY IV.

### Second Semester

**Lectures (1.5 hours / week)**

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

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

Department of Oral Diagnostics

Address: Bp. VIII., Szentkirályi u. 47. 1088
Phone: 459-1500/59161, 317-1044
Tutor: Prof. Dr. Csaba Dobó Nagy
E-mail: oral@fok.usn.hu

Lecturer: Dr. Csaba Dombi

First Semester

Lectures (1 hour/week)

Week Lectures

1. Vesiculo-bullous oral diseases
2. Oral signs and symptoms of benign tumors
3. Precancerous conditions in the oral cavity
4. Leukoplakia
5. Malignant tumors of the oral mucous membrane
6. Oral signs and symptoms of hematological diseases
7. Clinical differential diagnosis of gingival enlargements
8. Lichen oris
9. The diseases of the lip
10. The diseases of the tongue
11. The diseases of the salivary glands
12. The oral considerations of HIV infection and viral hepatitis
13. The role of the vitamins in the etiology of oral mucosal disorders
14. Written final exam

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

IMPLANTOLOGY II.

Department of Oro-Maxillofacial Surgery and Stomatology
Lecturer: Dr. Árpád Joób-Fancsaly

Lectures (1 hour/week) Practices (1 hour/week)

Course Syllabus:
ORAL DIAGNOSTICS II.

Department of Oral Diagnostics

Address: Bp. VIII., Szentkirályi u. 47. 1088
Phone: 459-1500/59161, 317-1044
Tutor: Prof. Dr. Csaba Dobó Nagy
E-mail: oral@fok.usn.hu

Fifth year 1st semester

Lecture -0 Practice (1 hour/week)

Rules of practices

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

Exam: Practical hours should be visited during 2 days. The time of practices is between 8.00 a.m – 1.00 p.m. Semifinal exam will be organized at the end of fifth year, first semester.
Minimal expectations: reaching the minimum level of the written theoretical evaluation (mark 2) presentation of three written case-demonstrations reaching the minimum quality level (mark 2) Non-performance of the minimal expectations invalidate the semester!

Textbook:

Recommended books:
PREHOSPITAL EMERGENCY MEDICINE

National Ambulance Service
Program Director: Dr. Gábor Gőbl
Tutor: Dr. László Gorove

First Semester

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

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

Lecturer: Prof. Dr. Márta Marschalkó
Tutor: Dr. Bernadett Hidvégi

Department of Dermatology, Venerology and Dermatooncology

Second Semester

Lectures (1 hour per week) Practices (0.5 hour week)

Lecture
Introduction to Dermatology.
Diagnostic procedures, anatomy, functions of skin comparing to oral mucosa.
Elementary lesions. Autoimmune bullous diseases.
Sexually transmitted diseases (syphilis, gonorrhoea, NGU, HPV).
AIDS, herpes virus infections.
Skin tumors. Malignant melanoma, basal cell carcinoma, squamous cell carcinoma.
Benign tumors, paraneoplastic syndromes.
Allergic skin diseases, drug allergy.
Dermatitis, eczema, implication for dentists.
Atopic dermatitis, urticaria, psoriasis.
Bacterial skin diseases.
Cutaneous and mucosal diseases caused by fungi.
Treatment modalities.
Dermatological treatment.
Seborrheic dermatitis, acne.
Cutaneous and oral manifestations of internal diseases.
Final examination
OBSTETRICS AND FAMILY PLANNING

2nd Dept. of Obstetrics and Gynecology
Head of Department: Prof. Dr. Nándor Ács

Second Semester

Lectures (1 hour/week)

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

Semi-final examination
OPHTHALMOLOGY

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

First Semester

Lectures (1 hour/week)
Introduction. History of ophthalmology.
Conjunctivitis (“red eye”).
Keratitis (“red eye”).
Uveitis (“red eye”). Differential diagnostic approach of the “red eye”.
Basics of optics.
Glaucoma (pathomechanismus).
Glaucoma (conservative and surgical treatment).

Practical guide (0.5 hour/week)
Anatomy of the eye. Patient’s history.
Objective and subjective symptoms of eye-diseases.
Eyelids and lacrimal system.
Examination of the anterior segment of the eye (focal light, slit lamp).
Refractive errors. Checking of visual acuity.
Basics of orthoptics.
Examination of the refractive media and retina. (Ophthalmoscope)
Diagnosis of glaucoma (perimetry, checking of intraocular pressure, gonioscopy.
Treatment of glaucoma.
First aid in cases of ocular injuries.
First aid in sudden visual loss.
Differential diagnostic approach of the “red eye”.
Differential diagnostic approach of the “painful” eye.
Consultation.

Semi-final examination
FORENSIC DENTISTRY

Department of Forensic Medicine
Tutor: Dr. Zoltán Szőlősi

First Semester

Lectures (1 hour/week)

The discipline of forensic medicine, relation to law, the legal aspects of dentistry
Injuries
Asphyxia
Identification
Toxicology I.
Toxicology II.
Alcohol and narcotics
The legal aspects of clinical medicine I.
The legal aspects of clinical medicine II.
Facial and cranial injuries
Sudden death, SIDS
Risk and malpractice in dentistry
Forensic psychiatry
Autopsy demonstration
Autopsy demonstration

Semi-final examination
ELECTIVE SUBJECTS FOR Dentistry 3\textsuperscript{rd}, 4\textsuperscript{th} and 5\textsuperscript{th} year

PREVENTION AND CLINICAL SCREENING OF ORAL MALIGNANCES

Department of Oral Diagnostics
(Orális Diagnosztikai Osztály, Bp. VIII., Szentkirályi u. 40. 1088
Phone: 317-6600; 317-0951; fax: 317-9199)
Tutor: \textit{Prof. Dr. Gábor Nagy D.M.D., Ph.D}

I. Theoretical background

Incidence of intraoral tumours is very high, and Hungary has a leading position in Europe. Among men this is the third in ranking the causes of death, and regarding the whole population it has the seventh place.

The two main risk factors are smoking and alcohol consumption, the combination of these multiple the risk rate. Nowadays it is noteworthy that the frequency of oral cancers is increasing in younger age groups and among women lacking the before mentioned risk factors.

II. Methods of oral cancer screening

1. \textit{Population based methods} – large number of people invited to take part in a cancer screening, which could be combined with a general dental health assessment.
2. \textit{Opportunistic screening}

This means the comprehensive dental examination of a particular patient attending a dental service. This screening is not only concentrating on detection of oral premalignancies oral malignancies, but also other developmental and inflammatory lesions.

Basic investigative methods of head and neck region
detailed case history (with special aspects on tumors, life style, persistant, non-healing lesions)
Precise extra- and intraoral physical examination
Novel visual examination procedures (e.g. Velscope)

Conclusion
Screening for oral malignancies is a very important part of dental examination. Lesions, persisting two weeks after eliminating any irritating factor a special clinical examination including histology is needed. In this way the survival possibilities of oral cancer patients could be enhanced largely.

This shows the extreme importance of this subject in dental and medical education as well.
THEMATICS

Contemporary diagnostics of oral premalignancies and cancers

1. Importance of oral malignancies
   Epidemiology, morbidites and mortality data
2. Etiological factor and pathomechanismus of oral tumors
3. Rate and efficacy of different screening methods (screen or not to screen)
4. Basic clinical signs and symptoms of oral malignancies and premalignancies I.
5. Basic clinical signs and symptoms of oral malignancies and premalignancies II.
6. Consultation
7. Possibilities of early detection and prevention
8. Diagnostic process of oral malignancies I. Traditional physical examination
9. Diagnostic process of oral malignancies II. Traditional physical examination
10. Diagnostic process of oral malignancies novel Procedures (e.g. lightning devices)
11. Contemporary diagnostical possibilities and a multidisciplinary cooperation
12. Social and dental rehabilitation after the treatment of oral cancer
13. Consultation / Examination

PEDODONTIC AND ORTHODONTIC PREVENTION

ORTHODONTIC DIAGNOSIS I-II. - both for the 5th year

Department of Pedodontics and Orthodontics

1 lecture / week
1 credit point
DIRECT AESTHETIC DENTISTRY 4th year

Department of Conservative Dentistry
Head of the Department: Dr. Zsuzsanna Tóth
Tutor: Dr. Kamil Al-Katib, Dr. Zsolt Döbrentey

Durations: 1 lecture and 3 practice
   Every class: 3h (4x45 min)
Credit value: 1 credit point
Maximum group size: 50

Direct Aesthetic Dentistry I. (basic course) - 1st semester (autumn)

This elective course is for dental students having finished successfully Conservative Dentistry III.

1st week: theory

2nd week: practice
   Anterior wax-up. Proper design of cervico - oro – vestibular - incisal dimensions. Perikymata, grooves, character lines, and its effect on the visual dimension of the tooth.

3rd week: practice
   Restorations in the front region. Preparation of a standardized full composite first incisor using the anatomical stratification technique.

4th week: practice
   Medium size restoration in the molar region. Creation of appropriate cusps-fissure relation.

Direct Aesthetic Dentistry II. (advanced course) - 2nd semester (spring)

This elective course is for dental students having finished successfully Direct Aesthetic Dentistry I.

1st week: theory

2nd time: practice
   Direct veneer for randomized middle-aged patients

3rd time: practice
   Rebuilding the veneer for elderly patient.

4th time: practice
   Large restoration in the molar region. Creation of appropriate cusp-fissure relation, using stain technique for making the restoration more life-like.
POSTGRADUATE COURSES

Head of Secretariat: Dr. János Gerle
Address: Budapest, district 8., Szentkirályi u. 47.
(7th floor., room no. 751.)
E-mail: szkepz@dent.semmelweis-univ.hu
E-mail: gerle.janos@dent.semmelweis-univ.hu
Phone: 266-7006
Fax: 266-4715

Administrators:
Ms. Erika Sviderszky Blahó
Office hours: Monday, Tuesday 13.30-15.30, Wednesday, Thursday 9.00-12.00
Phone: 266-7006, fax: 266-4715, e-mail: szkepz@dent.semmelweis-univ.hu

Ms. Veronika Gecse
Office hours: Monday, Tuesday 13.30-15.30, Wednesday, Thursday 9.00-12.00
Phone: 266-7006, fax: 266-4715, e-mail: szkepz@dent.semmelweis-univ.hu

Postgraduate courses are available at the Faculty of Dentistry at Semmelweis University, ending with a specialty exam in the following fields:
1. Pedodontics
2. Orthodontics
3. Periodontology
4. Dentoalveolar Surgery
5. Prosthetic Dentistry
6. Endodontics

The language of the postgraduate courses and the specialty exams is Hungarian. The courses convey theoretical knowledge and practical skills.

If you wish to take a specialty exam you must meet the following requirements:
you can take a specialty exam after 36 months of professional practice fulfilled as an employee, according to Hungarian law. To complete this practice, therefore, you must obtain a work permission.
professional practice includes theory and treating patients. You will need a good command of the Hungarian language to understand theory, and be able to communicate with patients
Non-European citizens must have their degree nostrificated
## STUDY PROGRAMME

### First Year

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>General and Inorganic Chemistry I. Practice GYASKASKG1A</td>
<td>–</td>
<td>5</td>
<td>5</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>General and Inorganic Chemistry I. GYASKASKE1A</td>
<td>4+1</td>
<td>–</td>
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<td>semi-final</td>
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<tr>
<td>Introduction to Health Informatics I. Practice GYINFBEIG1A</td>
<td>–</td>
<td>1</td>
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<tr>
<td>Introduction to Health Informatics I. GYINFBEIE1A</td>
<td>1</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
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<tr>
<td>Biophysics I. Practice GYFIZBIFG1A</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>–</td>
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<tr>
<td>Biophysics I. GYFIZBIFE1A</td>
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<td>–</td>
<td>3</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Biology I. Practice GYGENBILG1A</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Biology I. GYGENBILE1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
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<tr>
<td>Medical Terminology** GYLEKOTRG1A</td>
<td>–</td>
<td>2</td>
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<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Mathematics I. Practice GYEGYMATG1A</td>
<td>–</td>
<td>2</td>
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<td>–</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Mathematics I. GYEGYMATE1A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>–</td>
<td>semi-final</td>
</tr>
<tr>
<td>Physical Education I. GYTSITSNG1A</td>
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<td>History of Sciences, Propedeutics GYEGYTTPE1A</td>
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<tr>
<td>Hungarian Medical Terminology I. * GYLEKMSZG1A</td>
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**Total Credit** 33
<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
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<tbody>
<tr>
<td>General and Inorganic Chemistry II. GYASKASKE2A</td>
<td>3</td>
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<td>GYASKASKE1A General and Inorganic Chemistry I.</td>
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<td>Anatomy GYANTANAE1A</td>
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<td>Introduction to Health Informatics II. Practice GYINFBEIG2A</td>
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<tr>
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<tr>
<td>Pharmaceutical Botany I. GYNOVGYNG1A</td>
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<td>practical course grade</td>
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<td>GYEGYMATE1A GYINFBEIE1A Mathematics I. Introduction to Health Informatics I.</td>
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</tr>
<tr>
<td>Physical Education II. GYTSITSNG2A</td>
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<td>First Aid GYTRAELSE1A</td>
<td>1</td>
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<tr>
<td>Hungarian Medical Terminology II. * GYLEKMSZG2A</td>
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<td>practical course grade</td>
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<td><strong>Total Credit</strong></td>
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</table>

# The grade influences the qualification of the diploma
* Obligatory courses
** Obligatory elective courses: (2 credit points).
LIST OF TEXTBOOKS (The list may change!)

2. Genetics and Genomics (e-book)
7. Mihalik: Botany for Students of Pharmacy. (Szeged)
11. Körös: Inorganic Chemistry. (Szeged)

Recommended textbooks:

5. Belák E. Medical Terminology for Beginners (earlier title: Medical Latin), Bp. Semmelweis Kiadó
MATHEMATICS

University Pharmacy, Department of Pharmacy Administration
Tutor: Dr. Andrea Meskő

In the first year of the curriculum two hours of lectures are given to pharmacist students under the title above. The lectures are accompanied by practicals to help a better understanding and to get experienced in solving problems and exercises.

The title covers two, more or less independent, subjects. The majority of the lectures (over 60 per cent) is devoted to (classical) mathematics, the smaller part, however, in which biostatistics are given, is not of less importance.

The aim of learning classical mathematics is to understand biological, chemical, and physical processes dealt with in the subjects mentioned. The most appropriate mathematical model for the processes in nature are functions of one or more variables. To obtain the proper function for a particular process a differential equation is to be solved. The notion and the way of solution of differential equations is the central point of the course. The others namely limits, differential and integral calculus, discussion of functions, series etc. are, however, necessary preparatory steps for getting acquainted with differential equations.

Biostatistics, the other subject under this title, is a more recent branch of sciences. Its importance is permanently increasing in each field where data are present, i.e. quite everywhere in scientific work. Pharmacological investigations, clinical trials, epidemiological studies (etc, etc.) cannot be carried on without the statistical analysis of the data obtained. The results of the above mentioned studies are always derived by statistical inference. Statistics is an indispensable part of any research from planning the experiment to interpretation of the results. Statistical methods are essential even for students in their laboratory work.
MATHEMATICS I.

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

First Semester

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

Differential and differential coefficient. Rules for derivations of functions.
The derivative of the power function.
Derivation of composite and inverse functions. Differentiability of
the elementary functions. Higher order derivatives.
Application of differentiation for calculation of limits of fractions.
An iterative method to solve equations (Newton-method).
Expansion of differentiable functions to power series. The Taylor series of
exp x, sin x, cos x, ln x and other functions.
Qualitative examination of functions. Roots, extremes and inflexion points.
The multiplicity of a root.
The complete discussion of elementary functions.
Integration as the inverse operation of derivation. The indefinite integral.
Integration of power functions. Integration of simple elementary functions.
Integration of products (the rule of "partial integration"). Integration of
composite functions. Integration of rational fractions.
Area under a curve: the definite integral. Impropris integral.
The concept of a differential equation. Differential equations arising in physics,
chemistry, biology, botanics and other fields. The homogeneous linear
differential equation with constant coefficients: solution and proof of unicity.
Separation of variables as the method of solution. General and particular
solutions. Introduction of new variables.
Nonlinear differential equations of the first order.
Differential equations of the chemical reactions of 0th, 1st and 2nd order.
Functions of several variables. Partial derivatives of first and second order.
Differentiability and exact differential. Application of exact differential in error
calculations. Maxima and minima of two-variable functions.
Different kinds of integration of functions of several variables. Integration along
a line. Point functions and independence of the integral of the path.
Calculation of the integral along different curves.
MATHEMATICS II.

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

Second Semester

Lectures: 2 hours per week
Practicals: 1 hour per week

Introduction and information. The most common calculations in laboratory. Some hints for numerical calculations.
Measures of central tendency (mode, median, mean etc.) Applications of the weighted mean. Measures of dispersion.
Standard deviation and variance. The coefficient of variation. Error bounds. The standard error of the mean.
The concept of “regression line”. The linear regression: coefficients, interpretation, application.
The correlation coefficient: formula and interpretation. Uses and misuses of correlation coefficient. Lack of correlation vs. independence.
Spurious correlations. Coefficient of determination.
Sampling distributions. Important distributions derived from the normal one: t F, and chisquared distributions. The use of statistical tables.
Theoretical background of statistical inference. Qualitative and quantitative conclusions. Estimation; confidence interval for the expected value.
Testing hypotheses. The concept of “significance”. Errors of the first and of the second kind. The t-tests.
Analysis of variance. The Ftest. Discrete and dichotomous distributions; variables on a nominal scale. The Poisson distribution.
Analysis of qualitative data. Counting tables. Measures of association and statistical tests in fourfold tables.
Sets (finite and infinite). Natural, integral, rational, real and complex numbers.
Definition of a function.
General attributes of the functions. Classification of elementary functions.
Rational and irrational functions.
Transcendent functions: exponential, logarithmic, trigonometric and cyclometric functions.
Limits of functions. Continuous functions.
Radius of convergency.
### BIOLOGY I.

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

Course director: *Prof. Dr. Edit Buzás*

Course coordinator: *Dr. Orsolya Láng*

Subject code: GYGENBILG 1A (practice)

GYGENBILE1A (lecture)

Credit: 4

#### 1st Semester

Lectures: 2 hours per week

Practice: 2 hours per week

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

**Important notes:**

Students must visit at least 75% of the lessons. More than three absences from the practice or more than three absences from the lecture invalidate the semester, no signature is given. There are no extra practices.

There are two midterms during the semester. To get practice grade and signature the average of the midterms have to be 2.0. Missed or failed midterms might be repeated two times. No improvement of midterm grade.

Requirement of lecture signature is: practice grade and not more than three absences from the lectures.

Students having lecture and practice signature may give the exam. Exam is a written test (multiple choice, essay, drawing etc. similar to midterms) covering practice and lecture parts.
BIOLOGY II.

Department of Genetics, Cell- and Immunobiology
Course director: Prof. Dr. Edit Buzás
Course coordinator: Dr. Orsolya Láng
Subject code: GYGENBILG_2A (practice)
GYGENBILE_2A (lecture)
Prerequisite: Biology I.
Credit: 3
Lectures: 2 hours per week
Practices: 2 hours per week

Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Practices</th>
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<tbody>
<tr>
<td>1.</td>
<td>Meiosis</td>
<td>Typical and atypical mitosis</td>
</tr>
<tr>
<td>2.</td>
<td>Introduction to human genetics; human genom</td>
<td>Meiosis and gametogenesis</td>
</tr>
<tr>
<td>3.</td>
<td>Mutations and polymorphisms I.</td>
<td>Cytogenetics I.</td>
</tr>
<tr>
<td>4.</td>
<td>Mutations and polymorphisms II.</td>
<td>Cytogenetics II.</td>
</tr>
<tr>
<td>5.</td>
<td>Epigenetics</td>
<td>Introduction to humangenetics; special methods of humangenetics</td>
</tr>
<tr>
<td>6.</td>
<td>Cytogenetics I.</td>
<td>Molecular genetics I.</td>
</tr>
<tr>
<td>7.</td>
<td>Cytogenetics II.</td>
<td>Midterm I (written)</td>
</tr>
<tr>
<td>8.</td>
<td>Autosomal inheritance I.</td>
<td>Molecular genetics II.</td>
</tr>
<tr>
<td>9.</td>
<td>Autosomal inheritance II.</td>
<td>Molecular genetics III.</td>
</tr>
<tr>
<td>10.</td>
<td>Role of sex in inheritance</td>
<td>Application of genetic methods in the study monogenic inheritance I.</td>
</tr>
<tr>
<td>11.</td>
<td>Genetics of sex</td>
<td>Application of genetic methods in the study monogenic inheritance II.</td>
</tr>
<tr>
<td>12.</td>
<td>Relationship of genom and environment.</td>
<td>Complex inheritance</td>
</tr>
<tr>
<td>13.</td>
<td>Pharmacogenetics, -genomics</td>
<td>Midterm II.</td>
</tr>
<tr>
<td>14.</td>
<td>Gene and genom manipulation</td>
<td>Consultation</td>
</tr>
</tbody>
</table>

Important notes: see at Biology I.

Students having lecture and practice signature may give the final exam. Final exam is a written test (multiple choice, essay, drawing etc. similar to midterms) covering practice and lecture parts of Biology I and II.
BIOPHYSICS I.

Tutor: Dr. Károly Módos

First Semester

Lectures (2 hours per week)
Introduction; structure of matter; interactions
Gases, crystals, liquids, Boltzmann distribution
Properties of condensed matter
Liquid crystals, membranes
Structural organization of macromolecular systems
Radiations, light, optics
Wave and corpuscular nature of light
Light absorption and emission, light scattering, vision
Electromagnetic radiations, thermal radiation
Luminescence
Lasers

Laboratory (3 hours per week)
Laboratory safety rules
Data processing
Emission spectroscopy, Light sources
Spectrophotometry
Optical lenses; light microscope

Radiation detection of nuclear radiations
Oscilloscope
Radioactive power of an X-ray tube

Special light microscopes
Gamma energy determination
Electronic blood particle counting
Picoscale
Determination of skin-impedance
Concentration determination with refractometer
Isotope diagnostics
Repetition, consultation

X-radiation
Ionizing radiations, radioactive decay

Dosimetry
Sound, ultrasound, hearing
BIOPHYSICS II.

Second Semester

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

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

Repetition
GENERAL AND INORGANIC CHEMISTRY I.

Lecturers: Dr. Béla Noszál, Dr. István Szalai
Practical: Dr. Norbert Szoboszlai
Tutor: Dr. Krisztina Kurin-Csörgei

First Semester

Elementary particles: quarks, leptons, gauge particles, electron, proton, neutron.
The Bohr model of the atom.
Properties of the electron. Heisenberg’s uncertainty principle. Schrödinger’s
equation and the quantum numbers. Pauli’s exclusion principle and Hund’s rule.
Periodic table and periodic properties. Ionic bond and the types of ions.
Covalent bond and its representation in Lewis structures. Hybridization of
orbitals. The valence bond theory.
Molecular geometry, the VSEPR theory. The formation of molecular orbitals.
Bond polarity and moleculepolarity. Single and multiple bonds.
Electronegativity and its determination. The ionic character of covalent bonds.
Covalent radius, bonding energy, network covalent bonds. Metallic bonding.
Weak bonding forces. Dispersion, dipole forces and hydrogen bonding.
Multicentered bonds.
Chemical equilibria, the law of mass action. Kp and Kc. The Le Chatelier
principle. The temperature and pressure dependence of the equilibrium constant.
Acid/base equilibria. Conjugated acid-base pairs and their strengths.
The acid/base equilibria of water. The pH and its calculation. Strength of acids
and bases. Hydrolysis. Buffer systems.
Complex formation equilibria. Types of ligands. Mass balance equations,
calculation of complex equilibria. Heterogeneous equilibria, the solubility
product constant, solubility.
Chemical kinetics. Reaction order and molecularity. First order reactions.
Age determinations based upon radioactive decompositions. Second order,
pseudofirst order and zero order reactions. Reaction mechanisms.
The temperature dependence of the reaction rate, collision theory.
Catalysis. catalysts. Autocatalytic reactions. Enzyme catalysed, induced and
oscillatory reactions.
Thermochemistry. Hess’s law. Internal energy and enthalpy changes of reactions.
Entropy. Spontaneity of chemical reactions, the free energy. Coupled reactions
and their spontaneity.
Photochemistry and radiation chemistry. States of matter. Properties and kinetic
The phase diagram of water. Crystal structures, unit cell. The rate of
crystallization. Sublimation.
Determination of MM by colligative properties.
# PRACTICAL GENERAL AND INORGANIC CHEMISTRY

**First Semester**

<table>
<thead>
<tr>
<th>Lectures (4+1 hours per week)</th>
<th>Practicals (5 hours per week)</th>
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<tbody>
<tr>
<td>Methods of purification of chemical substances. Recrystallization. Sublimation.</td>
<td>Safety instructions. General instructions on the requirements. Recrystallization of ( \text{KAl(SO}_4\text{)}_2 \cdot 12 \text{H}_2\text{O} ). Sublimation of iodine.</td>
</tr>
<tr>
<td>Preparation of inorganic compounds. Stoichiometry of chemical reactions. Theoretical yield, actual yield and percent yield. Types of chemical reactions.</td>
<td>Distillation of hydrochloric acid. Preparation of ( \text{CuSO}_4 \cdot 5 \text{H}_2\text{O} ).</td>
</tr>
<tr>
<td>Acid-base reactions. Preparation of inorganic compounds by acid-base reactions.</td>
<td>Preparation of ( (\text{NH}_3)_2\text{SO}_4 \cdot \text{H}_3\text{BO}_3 ) from borax ( (\text{Na}_2\text{B}_4\text{O}_7) ).</td>
</tr>
<tr>
<td>Acid-base properties of salt solutions, hydrolysis.</td>
<td>Preparation of ( \text{CaHPO}_4 ). Observation of hydrolysis of some salts.</td>
</tr>
<tr>
<td>Thermal decomposition of inorganic compounds (acids, bases, salts).</td>
<td>Observation of thermal decompositions. Determination of the mass of a magnesium metal sample.</td>
</tr>
<tr>
<td>Preparation of inorganic compounds by oxidation-reduction reactions.</td>
<td>Preparation of metallic copper and metallic manganese. Reactions of metals.</td>
</tr>
<tr>
<td>Complex formation reactions. Naming of complex ions and coordination compounds.</td>
<td>Preparation of ( \text{Cu}_2\text{O} ) and ( \text{FeSO}_4 ).</td>
</tr>
<tr>
<td>Calculation of pH in solutions of acids and bases.</td>
<td>Preparation of a double salt (Mohr salt, ( (\text{NH}_3)_2\text{Fe(SO}_4\text{)}_2 \cdot 6 \text{H}_2\text{O} ).</td>
</tr>
<tr>
<td>Buffer solutions and their functions, calculation of pH of buffer solutions.</td>
<td>Preparation of a buffer solutions. Preparation of ( \text{Cu(NH}_3\text{)}_4\text{SO}_4 ) and ( \text{Co Hg(SCN)}_4 ) coordination compounds.</td>
</tr>
<tr>
<td>Problem-solving in general chemistry. (Calculation of molar masses of nonelectrolytes from colligative properties).</td>
<td>Dependence of the reaction rate on concentration and temperature. Observation of catalysis. Decomposition of hydrogen peroxide.</td>
</tr>
<tr>
<td>Problem solving in general chemistry (Electrochemistry)</td>
<td>Closing inventory. Problem-solving.</td>
</tr>
</tbody>
</table>
GENERAL AND INORGANIC CHEMISTRY II.

Lecturer: Dr. Szabolcs Béni

Second Semester

3 hours per week (lecture)

Weeks  Introduction


2  Chemistry of hydrogen, oxygen, nitrogen and carbon.


4  Chemistry of other nonmetallic elements
The noble gases. (He, Ne, Ar, Kr, Xe, Rn) and their compounds. The halogens (F, Cl, Br, I, At): occurrences, preparation, properties and uses. Oxyacids and oxyanions. The biological role of halogens.

5  The group 6A elements (S, Se, Te). General characteristics, occurrences, preparation, properties. Oxides, oxyacids and oxyanions of sulfur and selenium. Sulfur and selenium in biology.


Metals

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

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

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

Chemistry of coordination compounds


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

Metals in biology


13  Metals in biomineralization. Metal-induced toxicity. The biomedical use of metal complexes and metal complexation.

The chemistry of the environment

14  A brief overview of the chemistry of the lithosphere, hydrosphere and atmosphere.
## ANALYTICAL CHEMISTRY I.

### Qualitative Chemical Analysis

**Lecturer:** Dr. István Szalai, Dr. Norbert Szoboszlay  
**Practical:** Dr. István Szalai, Dr. Norbert Szoboszlay  
**Tutor:** Dr. Krisztina Kurin-Csörgei

### Second Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject and aims of analytical chemistry. Analytical chemistry and other sciences. Qualitative and quantitative chemical analysis. Chemical and physical methods of analysis.</td>
<td>General rules of work in the laboratory of analytical chemistry. Study of reactions of Group I cations. <strong>Part I:</strong> Bi^{3+}, Pb^{2+}, Cd^{2+}.</td>
</tr>
<tr>
<td>The characterization of analytical reactions. Specificity, selectivity and sensitivity of analytical reactions. Requirements for qualitative chemical reactions. Separation and identification of ions.</td>
<td>Study of reactions of Group I cations. <strong>Part II:</strong> Hg_{2}^{2+}, Hg^{2+}, Ag^{+}, Cu^{2+}. Identification of cations in mixture of Group I cations.</td>
</tr>
<tr>
<td>Solubility and complex ion equilibria and application in qualitative analysis of ions.</td>
<td>Analysis of Group III cations in unknown samples. Detection of cations in the mixture of the fourth and fifth analytical groups of cations.</td>
</tr>
<tr>
<td>Classification of anions into analytical groups. Group reagents for qualitative analysis of anions.</td>
<td>Study of reactions of the second and third analytical groups of anions.</td>
</tr>
<tr>
<td>Summary of reactions of common anions.</td>
<td>Special tests for mixture of anions.</td>
</tr>
<tr>
<td>Physical methods of qualitative analysis</td>
<td>Analysis of unknown simple substances.</td>
</tr>
</tbody>
</table>
### PHARMACEUTICAL BOTANY I.

**Department of Plant Anatomy**

**Tutor:** Dr. Gábor Kovács

**Second Semester**

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

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

Department of Anatomy, Histology and Embryology

Tutor: Dr. Ágnes Csáki
Coordinator: Dr. Katalin Kocsis
Subject code: GYANTANAG1A (practice)
GYANTANAE1A (lecture)

Second Semester

Course principles:
– to teach the terminology of the human anatomy to the future pharmacists;
– to discuss the special anatomical and physiological conditions that may influence the therapeutical considerations;
– to discuss the anatomical conditions that are necessary for the understanding of the further medical subjects of the pharmacists’ studies;
– to teach the terminology (Latin and English) of human body parts (at a gross and microscopical anatomical level) necessary for the understanding of the medical language during the communication between the pharmacists and the doctors.

Special attention is required concerning the anatomy of the central nervous system and the digestive tract, the absorption of medicines and their mechanism of action.

<table>
<thead>
<tr>
<th>week</th>
<th>ANATOMY LECTURES</th>
<th>PRACTICES (Makro: Dissecting room; Mikro: Histology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1. Introduction Locomotor System</td>
<td>Makro: Introduction, upper and lower limbs</td>
</tr>
<tr>
<td></td>
<td>2. Skull, vertebral column, head, neck muscles</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>3.-4. Basic Tissues, Skin</td>
<td>Mikro: basic tissues, skin</td>
</tr>
<tr>
<td>3.</td>
<td>5. The Immune System, the Lymphoid Organs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Blood, hematopoiesis</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>7. Heart, the Vascular System</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. The Respiratory System, the Mechanics of Breathing</td>
<td>Mikro: blood, lymphoid organs, vessels</td>
</tr>
<tr>
<td>5.</td>
<td>9. The Digestive System I, abdominal cavity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. The Digestive System II</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>11. The Liver, the Pancreas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12. The Kidneys and the Urinary Tract</td>
<td>Mikro: respiratory tract histology, gastrointestinal tract histology I.</td>
</tr>
<tr>
<td>7.</td>
<td>13. The Female Reproductive Organs, Cycle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14. The Male Reproductive Organs, Pelvis</td>
<td>MAKRO: heart, large vessels,</td>
</tr>
<tr>
<td>8.</td>
<td>15. Nervous System Introduction (Synapses, Neurotransmitters)</td>
<td>Mikro: gastrointestinal tract histology II. kidney and urinary tract histology</td>
</tr>
<tr>
<td>9.</td>
<td>17. Motor system, Sensory System, Limbic system</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>19. The Eyeball and Visual system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20. The Organ of Hearing and Equilibrium.</td>
<td>Mikro: mid-term genital organs histology, spermatogenesis, oogenesis</td>
</tr>
<tr>
<td>11.</td>
<td>21.-22. Hypothalamus, the Endocrine Organs</td>
<td>Mikro: urogenital system, pelvis</td>
</tr>
<tr>
<td>12.</td>
<td>23.-24. Germ cells, Fertilization, Development of the fetus, Placenta, Teratology</td>
<td>Mikro: nervous system and sensory organs histology</td>
</tr>
<tr>
<td>14.</td>
<td>27.-28. Repetition, complementary day for holidays</td>
<td>Mikro: endocrine organs, placenta</td>
</tr>
</tbody>
</table>
HISTORY OF SCIENCES, PROPEDEUTICS

Department of Pharmacognosy
Lecturer: Prof. Dr. Ágnes Kéry, Dr. Eszter Riethmüller
Tutor: Dr. Eszter Riethmüller

First Semester

Week Lectures (2 hours per week)

1 The place and importance of the subject in the curriculum.
   Profession’s history as bridge; methods, main fields.
   Symbols of medicine and pharmacy.
2 Knowledge of medicine and pharmacy in Babylonia-Assyria. Documented traditions of China, Japan, India, Indonesia.
   Knowledge of medicine and pharmacy in Egypt.
3 Knowledge of medicine and pharmacy in Greece. Hippocratic medical writings.
   Knowledge of medicine and pharmacy in Rome. Galenus.
4 The Arabs and the European Middle Ages. Transit ways of knowledge. Avicenna.
   Monastic medicine and pharmacy. The School of Salerno.
   Universities emerge, the birth of European professional pharmacy.
5 The idea of renaissance. Paracelsus and chemical drugs.
   Homeopathy as an example of medical sectarianism.
6 Development of pharmacy in Italy and France.
   Development of pharmacy in Germany and Britain.
7 Development of Pharmacy in Hungary.
9 Definition of drugs. Aspects of classification.
   Classification of drugs according to their origin and on the basis of strength.
10 Classification of drugs by their pharmaceutical action, use and by the place of application.
   Drugs and doses. Specially named doses.
12 Ordering of drug preparations. Drug utilization. How could the increased drug consumption be influenced?
   Pharmaceutical literature: treatises, pharmacopoeias, formularies, journals, periodicals.
14 Pharmacies, pharmaceutical factories.
   Personnel in the pharmacies: pharmacists, pharmacy assistants etc.
   Health for all – all for health.
FIRST AID

Department: Department of Traumatology
Lecturer’s name: Prof. Dr. Hangody László Professor Head of Department
Contact telephone: +36 1 467 3851
e-mail: trauma_office@med.semmelweis-univ.hu
Neptun code: GYTRAELSE1A

Number of lessons: 0
Credit points: 0

The objectives of the course:

First aid is the provision of initial care for an illness or injury. It generally consists of a series of simple and, in some cases, potentially life-saving techniques that an individual can be trained to perform with minimal equipment. All students who graduate from Semmelweis University, including pharmacists should have a knowledge of how to provide basic first aid to an injured or ill person. This curriculum is delivered to the students through e-learning material and practical training in resuscitation.

Recommended semester | Lectures per week | Practices per week | Seminars per week | Individual lessons | Total lessons | Semester | Consultation
---|---|---|---|---|---|---|---
1. | 0 | 0 | 1 | 0 | 1 | II. | 0

Thematic of the lectures:

**E-learning material:** (Semmelweis University’s E-learning portal - moodle)

1. Program and goal of first aid
2. Cardio-pulmonary resuscitation (CPR)
3. Bandaging methods
4. Mechanical injuries (fractures)
5. Bleeding and its control
6. Sport injuries
7. Thermal injuries
8. Shock
9. First aid in internal medicine
10. Respiratory diseases
11. Multiple casualty accident: organization and transport
12. Unconscious patient
13. Internal bleeding

Seminars, practices:

One practice at Uzsoki Hospital to learn how to perform CPR on CPR manikins. Students have the opportunity for the consultation of the typical and the more frequent first aid cases during the practices.

**Requirements of the course**

**Pre-requisites of the course:** -

**Accepted degree of absences:**

Completion of CPR practice is obligatory, without that (only by listening to the electronic curriculum and completing the short tests afterwards) the student will not receive a signature.

In case the student fails to attend CPR practice due to illness, a medical certificate has to be presented and the student has to attend another CPR practice on a date announced by the department.

**Interim controls:** The students are required to listen to the e-learning material and complete the tests after each lecture. In case of failing to do so, the student cannot take part in the CPR practice.

**Requisite of accepting the term:** Studying the entire e-learning material at Semmelweis University’s e-learning portal (moodle), and completing the short tests related to each lecture afterwards. At least 90% outcome of each test is required. In addition, during the semester, one CPR practice is obligatory for all students on one of the CPR practices organized by the Department of Traumatology.

**Course material:**

E-learning material and practical training in resuscitation
Semmelweis University’s E-learning portal (moodle)
INTRODUCTION TO HEALTH INFORMATICS I.

Name of the educational organizational unit: SE EKK Institute of Digital Health Sciences
Name of the subject: Introduction to health informatics I.
Type of the subject: 1 theory, 1 practice / week
code: GYINFBEIE1A (theory), GYINFBEIG1A (practice)
credit value: 2 (theory), 0 (practice)
Name of the lecturer of the subject: Dr. Miklós Szócska
Teachers: Dr. Ádám Zoltán Tamus (PhD, associate lecturer)
          Tamás Tóth (assistant lecturer)
          Péter Dombai (lecturer)
          Zoltán Sándor (assistant lecturer)
Administrator: Ms. Dóra Bacsa

Term: autumn

The exercise of the subject in the realization of the aim of the education:
To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences. The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Topics of the subject:
Topic of the theoretical lectures (broken down into weekly figures): 2×7 lectures = 14 lectures
1. Introduction: disruptive technologies in the healthcare
2. Medical data – definitions, their collection and use on the individual and population level
3. Medical information on the Internet
4. Informatics background of the ambulance care – mobilcommunication
5. The background of basic healthcare informatics – integrated healthcare systems
6. The active aging – lifestyle supported by informatics
7. The IT tasks of health care experts

Topic of the practical practices (broken down into weekly figures): 2×7 practices = 14 practices
Application of MS Excel in the pharmacist practice
        (functions, diagrams, advanced level) 4×2 lessons
Application of MS Word in the pharmacist practice 2×2 lessons
Execution of individual complex exercise 1×2 lessons

Requirements of participation of the lessons and the possibility of substitution of the absence:
According to rules of the Studies and Exam Code. Attendance at min. 75% of the classes (both lecture and practice). Max. 2 absence allowed from lectures. Max. 2 absence allowed from practices. Practices and lectures are evaluated separately!

The mode of the certificate in case of absence from the lessons:
According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term (including also the number and the type of the students’ exercises which are solved individual by them):
Suitable percentage of participation. Attendance on at least 5 of the 7 lectures and practices is mandatory.

The mode of acquisition of the mark:
Lecture: solution of a computer test (five-grade valuation).
Practice: signature and solution of a computer test

Type of the exam:
Colloquium.
Exam requirements:
Exam: solution of a computer test (five-grade valuation).

Mode of the application for the exam:
Via Neptun system.

Mode of the certification in case of absence from the exam:
By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:
The educational materials are available at http://dei-cloud.semmelweis.hu
Username and password is announced at the lecture/first practice.

Recommended literature:
2  Dinya Elek (szerk.): Humán gyógyszerfejlesztés, Medicina Könyvkiadó Zrt, 2006 ISBN 9632429982
INTRODUCTION TO HEALTH INFORMATICS II.

Name of the educational organizational unit: SE EKK Institute of Digital Health Sciences

Name of the subject: Introduction to health informatics II.

Type of the subject: 1 theory, 1 practice / week

code: GYINFBEIE2A (theory), GYINFBEIG2A (practice)

credit value: 2 (theory), 0 (practice)

Name of the lecturer of the subject: Dr. Miklós Szócska

Teachers: Dr. Ádám Zoltán Tamus (PhD, associate lecturer)
        Tamás Tóth (assistant lecturer)
        Péter Dombai (lecturer)
        Zoltán Sándor (assistant lecturer)

Administrator: Ms. Dóra Bacsa

Term: spring

The exercise of the subject in the realization of the aim of the education:
To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences. The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Topics of the subject:
Topic of the theoretical lectures (broken down into weekly figures): 2×7 lectures = 14 lectures
1. IT tools related to the lifecycle of medicines
2. Informatics of medicine planning – molecular modelling
3. Pharmacovigilance
4. Informatics of medicine-licencing
5. Medicine-data and -databases on the Internet
6. Functions of pharmacy software
7. Telemedicine and pharmaceutics – mobile phone applications connected with medicine

Topic of the practical practices (broken down into weekly figures): 2×7 practices = 14 practices
Database management (PuPha (MS Access)) 3×2 lessons
Practice with data representation and data visualisation
(MS Powerpoint, Prezi) 3×2 lessons
Execution of individual complex exercise 1×2 lessons

Requirements of participation of the lessons and the possibility of substitution of the absence:
According to rules of the Studies and Exam Code. Attendance at min. 75% of the classes (both lecture and practice). Max. 2 absence allowed from lectures. Max. 2 absence allowed from practices. Practices and lectures are evaluated separately!

The mode of the certificate in case of absence from the lessons:
According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term (including also the number and the type of the students’ exercises which are solved individual by them):
Suitable percentage of participation. Attendance on at least 5 of the 7 lectures and practices is mandatory.

The mode of acquisition of the mark:
Lecture: solution of a computer test (five-grade valuation).
Practice: signature and solution of a computer test
Type of the exam:
Colloquium.

Exam requirements:
Exam: solution of a computer test (five-grade valuation).

Mode of the application for the exam:
Via Neptun system.

Mode of the certification in case of absence from the exam:
By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:
The educational materials are available at http://dei-cloud.semmelweis.hu
Username and password is announced at the lecture/first practice.

Recommended literature:
2  Dinya Elek (szerk.): Humán gyógyszerfejlesztés, Medicina Könyvkiadó Zrt, 2006 ISBN 9632429982
TERMINOLOGY (1st semester)

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director: Zöldi Kovács Katalin PhD, Head of the Division

2 lessons per week, 2 credits

Assessment: 3 written tests

Role of subject in fulfilling the aim of training:
Students get familiarized with the Latin and Greek terminology of medicine in order to facilitate the acquisition of other subjects. Special focus is dedicated to anatomy, physiology, pathology and pharmaceutics. Furthermore, the course provides an introduction into general scientific terminology.

Brief description of subject:
The main aim of the subject is:
1. to acquire a knowledge of about 500-600 Latin words and phrases as a minimum vocabulary (basic vocabulary of medical and scientific language),
2. the correct application of
   a) anatomical names,
   b) names of diseases
   c) names of drugs,
3. to understand diagnoses and prescriptions;
4. to learn about abbreviations used in prescriptions.
5. to be able to make a clear distinction between medical terms of English and Latin/Greek.

Course content of practical lessons:
1. Grammar:
   Nouns: the 5 Declensions
   Adjectives - construction of the most important attributive structures with the vocabulary of anatomy, clinical subjects and of pharmaceutics.
   Prepositions (in anatomical, clinical and pharmaceutical phrases)
   Numerals: Usage on prescriptions.
2. Texts containing:
   a) anatomical names;
   b) clinical and patho-anatomical diagnoses;
   c) prescriptions
3. Vocabulary
   Latin and bilingual (Greek-Latin) nouns, adjectives, numerals and prepositions used in anatomy, the clinical subjects and pharmaceutics;

Course material, recommended text book(s), professional literature and supplementary reading(s)
Belák E. Medical Terminology for Beginners (earlier title: Medical Latin), Budapest: Semmelweis Kiadó.
Basics of Foreign Language (module 1.)

Magyar orvosi szaknyelv 1.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 4 credits

Assessment: end-term written and oral exam

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /survival language/ and in their academic studies. Raising students’ awareness of cultural differences is one of our top priorities.

Brief description of subject:
The first three modules are dedicated to learning basic general vocabulary and grammar. In the first module students acquire basic structures and the vocabulary for everyday topics / e.g. shopping, food, housing etc./, language for „survival.”. The course places special emphasis on phrases essential for everyday communications, e.g. introductions, greetings, getting/giving information etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:
Lesson 1-2: The alphabet
Lesson 3-4: Greetings
Lesson 5-6: Where are you from?
Lesson 7-8: Introducing people
Lesson 9-10: Numbers-phone numbers
Lesson 11-12: What time is it?
Lesson 13-14: Practising telling the time
Lesson 15-16: Days
Lesson 17-18: When do you study?
Lesson 19-20: What is it? - food
Lesson 21-22: Consolidation
Lesson 23-24: Test 1 + situations
Lesson 25-26: What is the food like? - adjectives
Lesson 29-30: I would like a tea
Lesson 31-32: Shopping for food
Lesson 33-34: Ordering food- in a café
Lesson 35-36: Rooms in the flat
Lesson 37-38: Furniture in the rooms
Lesson 39-40: Where are the furniture?
Lesson 41-42: As a guest
Lesson 43-44: Where can I find the library?
Lesson 45-46: When shall we meet?
Lesson 47-48: Asking for information, setting programs
Lesson 49-50: Places in the city
Lesson 51-52: Consolidation
Lesson 53-54: Test 2 + situations and communication practice
Lesson 55-56: Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)
Basics of Foreign Language (module 2.)

Magyar orvosi szaknyelv 2.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication
Programme director: Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,
Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /'survival language'/ and in their academic studies. Raising students’ awareness of cultural differences is one of our top priorities.

Brief description of subject:
The first three modules are dedicated to learning basic general vocabulary and grammar. In the second module students acquire basic structures and the vocabulary for everyday topics (e.g. family, relatives, at the doctor’s etc.) language for survival.”. The course places special emphasis on phrases essential for everyday communications, e.g. likes, dislikes, offering help, etc. Grammar is of less importance in this phase of language studies.

Course content of practical lessons:
Lesson 1-4: Forming questions
Lesson 5-6: Plural forms
Lesson 7-8: What do you like doing in your free time?
Lesson 9-10: I would like to......
Lesson 11-12: Communication skills
Lesson 13-14: A date – what do you like?
Lesson 15-16: I like dancing, swimming etc.
Lesson 17-18: I can ride a bike, drive etc.
Lesson 19-20: Communication practice
Lesson 21-22: Can I help you? In a clothes shop
Lesson 23-24: Can I give you something else?
Lesson 25-26: Communication practice
Lesson 27-28: Consolidation
Lesson 29-30: Test 1 + situations
Lesson 31-32: I have a headache- at the doctor
Lesson 33-34: At the chemist’s
Lesson 35-36: Communication practice- at the doctor, at the chemist’s
Lesson 37-38: My family, family members
Lesson 39-40: Family relations
Lesson 41-44: Communication practice- introducing your family
Lesson 45-48: My boss’ wife – social relations
Lesson 49-50: Consolidation
Lesson 51-54: Test 2 – situations, communication practice
Lesson 55-56: Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)

PHYSICAL EDUCATION I-II.

Department of Physical Education
Type of Subject: Compulsory
Credit: 0
Name of the Lecturer: Várszegi Kornélia
## STUDY PROGRAMME

### Second Year

#### 3rd semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) I.</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>GYASKANKG1A, GYEGYMAT2A, GYASKASK2A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physical Chemistry I.</td>
<td>4</td>
<td>–</td>
<td>4</td>
<td>GYASKASK2A, GYEGYMAT2A, GYFIZBI2A</td>
<td>semi-final</td>
</tr>
<tr>
<td>Pharmaceutical Botany II. Practice</td>
<td>–</td>
<td>3</td>
<td>2</td>
<td>GYGENBI2EA, GYNOVGYN1A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry I. Practice</td>
<td>1</td>
<td>–</td>
<td>2</td>
<td>GYGENBI2EA, GYNOVGYN1A</td>
<td>final #</td>
</tr>
<tr>
<td>Physical Education III.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td></td>
<td>signature</td>
</tr>
<tr>
<td>Hungarian Medical Terminology III. *</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZ2A</td>
<td>practical course grade</td>
</tr>
</tbody>
</table>

**Total Credit**: 27

#### 4th semester

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry (quantitative) II.</td>
<td>–</td>
<td>5</td>
<td>3</td>
<td>GYSZKSZKE1A, GYASKAKG1A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Analytical Chemistry (quantitative) II.</td>
<td>2</td>
<td>–</td>
<td>6</td>
<td>GYSZKSZKE1A, GYASKAKG1A</td>
<td>final #</td>
</tr>
<tr>
<td>Biochemistry I.</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>GYGENBI2EA, GYSZKSZKE1A, GYFIZBI2A</td>
<td>semi-final</td>
</tr>
<tr>
<td>Physical Chemistry II.</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>GYFZTIFKE1A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Colloid Chemistry I.</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>GYFZTIFKE1A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry II. Practice</td>
<td>–</td>
<td>5</td>
<td>4</td>
<td>GYSZKSZKE1A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Organic Chemistry II.</td>
<td>4</td>
<td>–</td>
<td>5</td>
<td>GYSZKSZKE1A</td>
<td>final #</td>
</tr>
<tr>
<td>Hungarian Medical Terminology IV. *</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>GYLEKMSZ2A</td>
<td>practical course grade</td>
</tr>
<tr>
<td>Physical Education IV.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td></td>
<td>signature</td>
</tr>
<tr>
<td>Summer Practice I. **</td>
<td>–</td>
<td>35</td>
<td>4</td>
<td>GYASKAKKE2A, GYSZKSZKE2A</td>
<td>Analytical Chemistry II.</td>
</tr>
</tbody>
</table>

**Total Credit**: 30+4

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


Recommended textbooks:

12. Experimental Organic Chemistry for students at the 2nd year of the Faculty of PharmacyCompiled by teaching staff of Department of Organic Chemistry under the supervision of Péter Mátyus, Department of Organic Chemistry, 2012
16. World of Molecules II, Compiled by Péter Mátyus, contribution by Gábor Krajosvzsky, formatted by Balázs Balogh, Department of Organic Chemistry, Semmelweis University, matyus.peter@pharma.semmelweis-univ.hu (2011)
# QUANTITATIVE ANALYTICAL CHEMISTRY I.

**Lecturer:** Dr. Krisztina Kurin-Csörgei  
**Tutor:** Dr. Krisztina Kurin-Csörgei

## First Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction.</strong> Review of some elementary concepts. Analytical Chemistry: definition, aim, methods and brief history. Titrimetric methods of analysis.</td>
<td><strong>Topic</strong></td>
</tr>
<tr>
<td>Neutralization analysis: Standard solutions and standardization. Possibilities for end point detection. Change of pH during the acid-base titration (calculation of titration curves for the reaction of strong acid/base with strong base/acid, weak acid/base with strong base/acid, polyprotic acid with strong base). Acid-base indicators. Indicator error.</td>
<td>Laboratory introduction; Safety and order in the laboratory; The schedule of the semester; Practical and theoretical requirements in the semester Practicing of use the laboratory tools; Calibration.</td>
</tr>
<tr>
<td>The main possibilities of determination in acidimetry and alkalinometry. (measurement of strong/weak acids, strong/weak bases, salts, „specific“ determinations, with examples).</td>
<td>Acid-Alkalimetry</td>
</tr>
<tr>
<td>Reactions in nonaqueous solutions. Classification of solvents. Advantages and disadvantages of using non-aqueous solvents</td>
<td>Acid-Alkalimetry</td>
</tr>
<tr>
<td>Nonaqueous titrations: standard solutions, end point detection, applications.</td>
<td>Acid-Alkalimetry</td>
</tr>
<tr>
<td>Complex formation with monodentate and polydentate ligands. The chelate and entropy effect. Complexometric titrations with monodentate ligands.</td>
<td>Chelatometry</td>
</tr>
<tr>
<td>Chelatometric titration curves. Calculation of p[Mn+] at different points and regions of the curve</td>
<td>Chelatometry</td>
</tr>
<tr>
<td>Chelatometric titrations: standard solutions and standardization. Methods for end point detection at direct and back titrations. Metal ion indicators.</td>
<td>Chelatometry</td>
</tr>
<tr>
<td>Types and applicability of EDTA titrations.: direct, back, displacement and indirect titrations.</td>
<td>Chelatometry</td>
</tr>
<tr>
<td>Precipitation equilibra. The solubility product and the common ion effect. Effect of pH and complex formation on the solubility of precipitates (examples).</td>
<td>Gravimetry</td>
</tr>
<tr>
<td>Gravimetry. Steps of gravimetry: precipitation, filtration, washing, treatment of precipitate, weighing, calculation. Applications of gravimetry: determination of different cations and anions (examples).</td>
<td>Gravimetry; Argentometry</td>
</tr>
<tr>
<td>The main methods of argentometric titrations (Mohr’s Volhard’s, Fayans’, Schulek’s method).</td>
<td>Supplements</td>
</tr>
<tr>
<td><strong>Supplements; Closing</strong></td>
<td><strong>Closing</strong></td>
</tr>
</tbody>
</table>
### QUANTITATIVE ANALYTICAL CHEMISTRY II.

**Second Semester**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction Permanganometry</strong></td>
<td>Safety and order in the laboratory Practical and theoretical requirements in the semester The schedule during the semester Redox titrations (permanganometry) Standardization of 0.1N potassium permanganate solution</td>
</tr>
<tr>
<td>Permanganometry</td>
<td>Determination of the total iron content by Zimmermann-Reinhardt method Permanganometric determination of bromide ions (Winkler’s method)</td>
</tr>
<tr>
<td>Chromatometry Bromatometry</td>
<td>Determination of Mohr salt with chromatometric titration Bromatometric determination of arsenic (III) (from As2O3) or antimony (III) compounds (in form of “tartar emetic”: antymonyl tartarate) Determination of azophene</td>
</tr>
<tr>
<td>Bromatometry Cerimetry</td>
<td>TEST I. Bromatometric determination of ascorbic acid (Vitamin C) in tablets (e.g., Vit C, Rutascorbin, Béres C) Cerimetric determination of amidazophene</td>
</tr>
<tr>
<td>Iodometry</td>
<td>Standardization of 0.01N sodium thiosulfate solution. Determination of phenol in water / acetyl salicylic acid content in tablets (e.g. Aspirin, Kalmopyrin, Istopyrin,...) by Koppeschaar’s method</td>
</tr>
<tr>
<td>Iodometry</td>
<td>Iodometric determination of copper (II)-ions Determination of mannitol by Malaprade’s reaction with periodate</td>
</tr>
<tr>
<td>Optional measurements</td>
<td>TEST II. One selection from “Other determinations”</td>
</tr>
<tr>
<td>Instrumental Analysis</td>
<td>Computer aided learning of modern instrumental analytical methods (HPLC; GC; UV-Vis Spectrophotometry)</td>
</tr>
<tr>
<td>Optional measurements</td>
<td>From “Potentiometric determinations” From “Other determinations”</td>
</tr>
<tr>
<td>Spectrophotometry Semi-quantitative analysis</td>
<td>Spectrophotometric determination of iron content in multivitamin tablets Spectrophotometric determination of phosphate content in egg shell Semi-quantitative analysis using “Merkoquant” testpapers</td>
</tr>
<tr>
<td>Optional measurements</td>
<td>From “Potentiometric determinations” From “Other determinations”</td>
</tr>
<tr>
<td>Final test Determination</td>
<td>TEST III. (Qualitative and quantitative analysis of complex samples) Quantitative determination of the sample</td>
</tr>
<tr>
<td>Supplements Closing</td>
<td>Supplements Closing</td>
</tr>
</tbody>
</table>
Potentiometric determinations:
1. Direct potentiometric determination of fluoride content in tooth paste
2. Potentiometric titration of bromide content of “Elixirium thymi composita”
3. Potentiometric titrations of iodide and chloride ions in presence of each other
4. Potentiometric titration using computer controlled burette:
   Determination of phosphoric acid content in “Coca Cola”

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

Complete name of the course: Szerves kémia I., II.
Name of the Programme: Pharmacy
Abbreviated name of the course: Org Chem
English name of the course: Organic Chemistry I, II.
Neptun Codes: GYSZKSZKE1A; GYSZKSZKE2A; GYSZKSZKG1A; GYSZKSZKG2A
Institute: Semmelweis University, Department of Organic Chemistry
Name of the tutor/lecturer: Dr. István Mándity Ph. D.
Contacts
Phone: +36-1-476-3600/53055
E-Mail mandity.istvan@pharma.semmelweis-univ.hu

Further tutors: Dr. Péter Tétényi Ph. D.
Dr. Gábor Krajsovszky Ph. D.

Credit points: 5; 5; 5; 4

Course principles: To satisfy the requirements of the Faculty of Pharmacy, the course in Organic Chemistry has two main purposes:

a) The presentation of modern concepts and subject-matter concerning the structures, syntheses, physical and chemical properties, structure – property relationships, and practical applications of organic compounds, with special emphasis on bioactive molecules. The presentation and practical applications of the most important methods and tools of organic chemistry.

b) To provide a solid molecular, organic chemical basis for subsequent subjects in the curriculum of students at the Faculty of Pharmacy.

Brief course summary:
The course includes and discusses the state-of-the-art knowledge of synthetic and structural organic chemistry subjects to develop problem-solving skills for organic chemistry and biomolecular sciences.

Course data

Recommended semester of completing the course 3.
Lecture (contact hrs/ week) 4 hours weekly
Practice (contact hrs/ week) 8 hours biweekly
Seminar (contact hrs/week) 2 hours biweekly
Individual lecture (introductory lecture) 1 hour weekly
Total number of contact hours/semester 70 (lectures+ introductory lectures) + 140 (seminars+ practices in 2 groups)

Semester
Spring semester*
Winter semester*
Both semesters*
Consultation as many times as students ask for
Semester 1 program

I. Lecture topics/week
4. week: Chirality, absolute configuration according to Cahn-Ingold-Prelog, enantiomers and diastereomers. Axial chirality, determination of absolute configuration. Prochiral compounds: alkenes, imines or carbonyl compounds.
5. week: Nomenclature of organic compounds. Classification of reactions: ionic or radical reactions. Electronegativity, reactivity of reagents: inductive, mesomeric and steric effects.
6. week: Alkanes and cycloalkanes: physical properties, preparations, reactions.
9. week: Isolated polycyclic compounds. Fused polycyclic compounds: direction rules in S$_{E}$Ar reactions. S$_{N}$Ar reactions of aromatic halogen compounds.
14. week: Oxo compounds.

II. Practice and seminar topics/week
1. week: –
2. week: –
3. week: Practice: Purification of 4-bromoacetanilide by recrystallisation, checking by TLC, laboratory glassware, how to carry out basic procedures, proper mounting, cleaning glassware. Test tube reactions.
4. week: Seminar: Molecular orbital (MO) theory, hybridization
5. week: Practice: Purification of ethyl acetate by extraction and distillation. Demonstration of melting point measurement
6. week: Seminar: Types of isomers
7. week: Practice: Preparation of 4-bromoacetanilide
8. week: Seminar: Stereochemistry: Cahn-Ingold-Prelog’s and Fischer’s convention, central (R, S, D, L) and axial chirality. Enantiomers and diastereomers
9. week: Practice: Preparation of diethyl (3,5-dimethylpyrrol-2,4-dicarboxylate)
10. week: Seminar: Stereochemistry of cycloalkanes. Prochiral molecules, enantiotropic and diastereotropic atoms, groups and surfaces with examples
11. week: Practice: Evaluation of spectra 1. (theoretical basis, analysis of spectra)
12. week: Seminar: Molecularity and kinetic order of reactions. Classification of organic chemical reactions (according to reagents, or from a kinetic aspect, according to polarity or by the reaction coordinate). Addition and elimination reactions (regio- and stereoselectivity). Kinetic and thermodynamic control.

13. week: Practice: Evaluation of spectra II. (complex analysis of spectra, problem solving)


Course data

Recommended semester of completing the course 4.

Lecture (contact hrs/ week) 4 hours weekly
Practice (contact hrs/ week) 8 hours biweekly
Seminar (contact hrs/week) 2 hours biweekly
Individual lecture (introductory lecture) 1 hour weekly
Total number of contact hours/semester 70 (lectures+ introductory lectures) + 140 (seminars+ practices in 2 groups)

Semester
Spring semester*
Winter semester*
Both semesters*
Consultation as many times as students ask for

Semester 2 program

I. Lecture topics/week
1. week: Carboxylic acids 1.
2. week: Introductory lecture: Preparation of the (organic chemical) electronic literature searching (e.g., DiscoveryGate, SciFinder Scholar, PubMed, PubChem, INTERNET and nomenclature) and molecular pharmaceutical informatics. Carboxylic acids 2.
3. week: Introductory lecture: Acetylsalicylic acid. 4-nitrobenzoic acid. (E,E)-1,5-Diphenyl-1,4-pentadien-3-one. Nomenclature of oxo compounds and of carboxylic acid derivatives.
5. week: Carboxylic acid derivatives 2. Carbonic acid derivatives
6. week: Carbohydrates.
7. week: Amino acids, peptide and proteins.
8. week: Heterocyclic nomenclature.
9. week: Heterocycles 1.
10. week: Heterocycles 2.
11. week: Heterocycles 3.
12. week: Heterocycles 4.
13. week: Nucleotides. Natural compounds (terpenes, steroids and alkaloids) 1.
14. week: Natural compounds (terpenes, steroids and alkaloids) 2.

II. Practice and seminar topics/week
1. week: –
2. week: –
3. week: Practice: Practice of electronic literature searching
4. week: Seminar: Ambident nucleophiles, electrophilic substitution (reactions of aldehydes and ketones)
5. week: Practice: Preparation of acetylsalicylic acid and 4-nitrobenzoic acid
6. week: Seminar: Substituent effects, acid-base theory, and structure-pKa relationship
7. week: Practice: Molecular pharmaceutical informatics practice
8. week: Seminar: Substitution reactions of carboxylic acid derivatives
9. week: **Practice:** Preparation of \((E,E)-1,5\)-Diphenyl-1,4-pentadien-3-one and cyclohexanone oxime
10. week: **Seminar:** Carbonic acid derivatives, chemistry of sugars
11. week: **Practice:** Special Chapters of Organic chemistry. Literature searching report
12. week: **Seminar:** Amino acids, and proteins
13. week: **Practice:** Preparation of methyl 4-nitrobenzoate and phthalimide
14. week: Extra practice **Double seminar:** Heterocyclic compounds (monocycles and fused compounds). Isoprenoids, alkaloids, and nucleotides

**Course requirements**

**Order of consultations:** as many times as students ask for consultation, at least 1 week before the date of consultation.

**Prerequisites:**
- GYASKANKG1A Analytical chemistry I. (qualitative)
- GYASKASKE2A General and inorganic chemistry II.
- GYINFBEIE2A Introduction to medical informatics II.
- GYSZKSZKE1A Organic chemistry I.

**Semester acceptation conditions:** (successful course attendance, mid-term tests, absence, etc.) Written examination at the end of the first semester

Students have to answer in written form questions on the subject-matter of the main lectures, the introductory lectures to the practicals and the practicals themselves, and on the spectroscopy discussed in the practicals and seminars.

**Final (written) examination at the end of the second semester**

Students have to answer in a written form questions on the theoretical and practical subject-matter from both semesters. The subject-matter involves all topics involved in the main lectures and the introductory lectures to the practicals, and related topics not necessarily directly indicated in the list of questions.

**Practical course grade**

On the basis of the attendance and the results described in the protocol, the performance of the practical tasks is validated by the signature of the leading instructor. Students are allowed to participate in the practicals only if they have participated in the corresponding introductory lecture. If necessary, students may make up for missed or unsuccessful experiments at a proper time after preliminary agreement with the leading instructor at the end of the semester. Without permission, the repetition of unsuccessful experiments is not allowed. The presence of the student at the main lecture is a necessary requirement for a consultation.

The grade for the practical course is awarded on the basis of the average of preparation mark. At least 75% of the compounds or experiments must be graded as acceptable. Evaluation of the compounds is based on their yield and purity, and the average of the marks for each preparation gives the preparation mark. The appropriate parts of the laboratory note-book should be prepared in advance and after the completion of each practical, the note-book should be submitted to the leading instructor, together with the product of the experiment.

At the beginning of each laboratory practical, students must write a short test on the theoretical and practical subject-matter of the experiment. These tests are immediately corrected by the leading instructor, and the practical work can be started only if the short test is accepted. If the test is not successful, the preparation in question can be performed only at the end of the semester.

**Knowledge testing during the semester:** Midterm tests would be held at each semester twice in written form, the dates of which are fixed at the beginning of the semesters. The value of the midterm test can be either ranging 2-5 or failed. If the test is failed, the student must attend at the following correction test. If the value of the any correction tests reach the passmark, then the midterm test is accepted. If the value of the any correction test is failed, then the student does not get signature for the semester, he/she is **not allowed to sit in the (semi-)final examination.**

**Requirements of the signature at the end of the semester:**

*Evaluation of the student’s performance at the seminars:*

at least one successful oral report at the seminars per semester is also required for the signature for the semester. Seminars are obligatory; if anyone has 2 or more absences, then he/she must have report from the missing seminars, and this report must be accepted.
Evaluation of the student’s presence during the lectures:
If anyone has more than 3 absences for lectures (6 hours), then he/she gets an aggravated exam (with considerably more questions). Attendance on at least 75% of the lectures is necessary for the signature by the end of each Semester. If the number of absences exceeds 25% of the lectures, then the given student must have report from the whole material of the Semester at the tutor of the subject, and this report must be accepted. Otherwise proof of completion the Semester cannot be provided by the signature for the Semester.

How to get a practical course grade:
The performance of the practical tasks is validated by countersign of the leading instructor. It must be at least passmark.

Individual activity of the student during the semester (protocol, etc.) each student work separately in the laboratory, must prepare himself/herself before entering to the laboratory, must strictly follow the prescriptions provided by us and must precisely demonstrate the experiments carried out by a complete laboratory note-book.

Performance control in the examination period (final, semi-final) students, who have got signature for the Semester, can sit in the examination. The examinations are evaluated by a mark 1-5 (5 is the best), and unsuccessful exams may be repeated not more than 3 times.

Performance control in the examination period (written, oral, written and oral) only written exams are held.

Prescribed external practice: no.

List of teaching materials: (List of textbooks, hand-outs, scripts, etc.)
4. Experimental Organic Chemistry for students at the 2nd year of the Faculty of Pharmacy Compiled by teaching staff of Department of Organic Chemistry under the supervision of Péter Mátyus Department of Organic Chemistry, Semmelweis University, Pharmaceutical Faculty, 2012
8. World of Molecules II Compiled by Péter Mátyus, contribution by Gábor Krajsovszky, formatted by Balázs Balogh, Department of Organic Chemistry, Semmelweis University, matyus.peter@pharma.semmelweis-univ.hu (2011)

The course description was prepared by dr. Péter Tétényi
PHYSICAL CHEMISTRY I.

First Semester

Lecturer: Dr. Tamás Turányi

Week  Lectures (4 hours per week),
1  Ideal gas and real gases
2  First Law of thermodynamics
3  2nd and 3rd Laws of thermodynamics
4  Phase transitions
5  Mixtures; chemical equilibrium
6  Surface phenomena; transport phenomena
7  Reaction kinetics
8  Electric properties of materials
9  The Boltzmann distribution; selection rules
10 Beer - Lambert's law; Raman spectroscopy; luminescence spectroscopy; photo electron spectroscopy
11 Vibrational spectroscopy; rotational spectroscopy
12 Magnetic properties; Nuclear Magnetic Resonance, NMR
13 Electrochemistry of ion activity; conductivity and transport number
14 Galvanic cells and electrochemical kinetics

PHYSICAL CHEMISTRY II.

Second Semester

Organizer: Dr. István Gyula Zsély

Week  Lectures (1 hour per week)
Practicals (4 hours per week)
1  Fire and work safety instructions
2  Thermal analysis of tin-lead alloys
3  Enthalpy of hydration of sodium acetate
4  Freezing point depression
5  Determination of the temperature dependence of the vapor pressure
6  Mid-term test
7  Thermometer calibration
8  Determination of ionization constant
9  Measurement of surface tension
10 Base Electrochemical measurement
11 Column chromatography
12 Kinetics of a second order reaction
13 Mid-term test
14 Supplementary week
COLLOID CHEMISTRY I.

Lecturer: Dr. Róbert Mészáros

Second Semester

Week | Lectures (2 hours per week)
--- | ---
1 | Colloids: definitions, nomenclature, historical perspective. Basic principles of colloid stability: intermolecular forces, interparticle forces, effect of the intervening medium.
2 | Macromolecular colloids and gels: the formation and structure of macromolecules, general properties of polymer solutions, determination of the molecular mass of macromolecules.
3 | Association colloids and self-assembly systems: micellisation, solubilisation.
4 | Thin films, foams and emulsions: film stability, film tension, foams, foaming and anti-foaming agents, froth flotation, emulsions and microemulsions.
6 | Interfaces: surface tension, surface energy, wetting phenomena. Adsorption: the Gibbs adsorption equation, the influence of adsorption on interparticle forces, the effect of the curvature of surfaces on equilibrium.
7 | Electrostatic forces and the electrical double layer, steric repulsion, the effect of adsorbed or anchored layers, the total interaction potential curve.
8 | Aggregation processes in colloidal dispersions: flocculation and coagulation of electrostatically stabilized dispersions, the DLVO theory, kinetics of coagulation.
9 | Sterically stabilized systems, reversible flocculation, bridging flocculation, depletion flocculation, heterocoagulation, structure of flocs and sediments, coalescence and particle growth.
10 | Some important properties of colloids: kinetic properties, electrokinetic phenomena, sedimentation and creaming.
12 | Rheology: viscosity, Newtonian and non-Newtonian systems, rheology of suspensions of colloidal particles.
13 | Cohesive colloidal systems. Gels, forces leading to gel formation, swelling properties of gels. The industrial importance of colloids.
# PHARMACEUTICAL BOTANY II.

**Department of Plant Anatomy**  
**Tutor: Dr. Gábor Kovács**

**First Semester**

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

Visit in the Botanical Garden of Eötvös Loránd University to learn taxonomy of higher plants. Field trip (1 day) to learn medicinal plants and fungi in the wild. Handing in of your own herbarium (collection of 30 medicinal plants, pressed and dried, mounted for permanent display with references).
**BIOCHEMISTRY I.**

Department of Medical Biochemistry

Lecturer: Dr Attila Ambrus

Tutor: Dr Erzsébet Maróthy-Tóth

Second Semester

**Lectures** (3 hours per week, 3 credits)

**Week 1-4.**

**Week 5-9.**
- Bioenergetics. High energy compounds. Digestion and absorption of carbohydrates.
- Oxidative decarboxylation of pyruvate. Citric acid cycle: reactions, regulation, catabolic and anabolic role.

**Week 9-14.**
- Digestion and absorption of lipids. Synthesis and degradation of triglycerides and phospholipids.
- Biosynthesis and significance of cholesterol and bile acids. Regulation of cholesterol and bile acid synthesis.
- Metabolism of lipoproteins. Synthesis of steroid hormones.
- Protein digestion and absorption. Important reaction types in amino acid metabolism.
Hungarian Medical Terminology III.

Magyar orvosi szaknyelv 3.

**Responsible organisational unit:**
Faculty of Health Sciences, Division of Foreign Languages and Communication

**Programme director:**
Zöldi Kovács Katalin PhD, Head of the Division

4 lessons per week, 2 credits,

**Assessment:** midterm (written) and endterm (written and oral) tests

**Role of subject in fulfilling the aim of training:**
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective communication in the language they use during their field practice both in their everyday life /survival language/ and in their academic studies. Raising students’ awareness of cultural differences is one of our top priorities.

**Brief description of subject:**
The first three modules are dedicated to learning basic general vocabulary and grammar. In the third module students acquire basic structures and the vocabulary for everyday topics / e.g. travelling in a city, travelling abroad, arranging accommodation etc. /, language for „survival.”. The course places special emphasis on phrases essential for everyday communications, e.g. past time activities, telephoning, buying/ordering tickets etc. Grammar is of less importance in this phase of language studies.

**Course content of practical lessons:**
Lesson 1-2: What was your weekend like?
Lesson 3-4: What did you yesterday?
Lesson 5-6: Did you like the city?
Lesson 7-8: Have you ever been to England?
Lesson 9-10: What did you do on Monday?
Lesson 11-12: Communication practice: What did you do?
Lesson 13-14: What did your neighbour say?
Lesson 15-16: Practising past tense
Lesson 17-18: He didn’t know that we were there. – Past tense
Lesson 19-20: Communication practice – Practising past tense
Lesson 21-22: Consolidation
Lesson 23-24: Test 1 + situation
Lesson 25-26: I’d like a ticket to London.
Lesson 27-28: Travelling by train
Lesson 29-30: Travelling abroad
Lesson 31-32: Communication practice: travelling
Lesson 33-34: Accommodation
Lesson 35-36: Booking accommodation
Lesson 37-38: Booking accommodation- conversations
Lesson 39-40: At a hotel
Lesson 41-42: Communication practise: travelling and booking accommodation
Lesson 43-46: Customs and festivities – modal auxiliaries
Lesson 47-48: At the dentist
Lesson 49-50: Healthy lifestyle
Lesson 51-52: Consolidation
Lesson 53-54: Test – situation, communication practice
Lesson 55-56: Assessment

**Course material, recommended text book(s), professional literature and supplementary reading(s)**
Hungarian Medical Terminology IV.

Magyar orvosi szaknyelv 4.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division
4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:
The fourth module is dedicated to learning basic medical vocabulary. Students acquire the skills needed in taking family, social, and medical history in internal medicine. They also learn how to address the patient during an examination and give advice for the treatment.

Course content of practical lessons:
Lesson 1-4: Revision
Lesson 5-6: Family history – asking for family members, names
Lesson 7-8: Family history – describing state
Lesson 9-10: Family history – communication practice
Lesson 11-12: Social history – habits
Lesson 13-16: Social history – expressing frequency
Lesson 17-18: Body parts, internal organs
Lesson 19-20: Symptoms
Lesson 21-22: Consolidation
Lesson 23-24: Test 1 + situation
Lesson 25-28: Asking the patient about the pain
Lesson 29-30: Describing pain and symptoms
Lesson 31-32: Names of diseases
Lesson 33-36: Taking medical history
Lesson 37-40: Medication
Lesson 41-48: Giving advice, doctor’s recommendations
Lesson 49-52: Consolidation
Lesson 53-54: Test – situation, communication practice
Lesson 55-56: Assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)
PHYSICAL EDUCATION III-IV.

Department of Physical Education
Type of Subject: Compulsory
Credit: 0
Name of the Lecturer: Várszegi Kornélia

SUMMER PRACTICAL TRAINING PROGRAM I.

Four weeks: 35 hours/week, min. 6/max. 8 hours/day. The aim of the summer practical training: getting acquainted with the pharmacy as a sanitary unit.

Duties and respects:
1 Survey of duties in a public pharmacy of drug dispensing.
2 Introduction to the structure of a public pharmacy: rooms, office, laboratories, stores etc., accessories.
3 Knowledge related to the storage of drugs in a pharmacy.
   Storage of drugs according to their activity, strength etc.
4 Accessories in a public pharmacy. Practising their use, working with pharmacy balances etc.
5 Examination of chemical and crude drugs already learnt in the 1st–4th semesters.
   (Knowledge of materials, organoleptic, physicochemical methods etc.)
6 Practising of some pharmaceutical technological manipulations: measuring, compounding, sieving, milling filtration, homogenization of powders, ointments etc.
   Getting acquainted with the equipments of these manipulations.
   Right selection of the accessories: scale, scale-relations, place etc.
7 Drug dispensing according to regulations. Corking of flasks for solutions, signal-signature, packing, presentation. Esthetic demunt.
8 Labour safety in a pharmacy. (Inflammable, explosive goods, acids, corrosive chemicals etc.)

Important note: Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!
STUDY PROGRAMME
### Third Year

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry II. Practice GYOIBIKKG2A</td>
<td>–</td>
<td>1,5</td>
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<td>GYSZKSZE2A GYOIBIKE1A</td>
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<td>Biochemistry II. GYOIBIKIE2A</td>
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<td>–</td>
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<td>Physiology I. Practice GYKIKELG1A</td>
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<td>2</td>
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<td>Physiology I. GYKIKGEL1A</td>
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<td>–</td>
<td>4</td>
<td>GYOBIKME1A GNYELATG1A</td>
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<td>Pharmaceutical Chemistry I. GYGYKGYG1A</td>
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<td>5</td>
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<td>Colloid Chemistry II. GYKOLKO1LG2A</td>
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<td>practical course grade</td>
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<tr>
<td>Hungarian Medical Terminology V. GYLEKMSZG5A</td>
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<td>Subjects</td>
<td>Lectures</td>
<td>Practices</td>
<td>Credit Points</td>
<td>Prerequisites</td>
<td>Examination</td>
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<tr>
<td>Physiology II. Practice GYKIKGELG2A</td>
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<td>1</td>
<td>2</td>
<td>GYOBIBIKE2A, GYKIKELE1A</td>
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<tr>
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<tr>
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</table>

# The grade influences the qualification of the diploma

** 4 weeks (140 hours) summer practice in elective place (accredited public / community pharmacy, Galenical laboratory, research institute, university department) after the second and third year.
LIST OF TEXTBOOKS (The list may change!)

6. Rácz: Drug Formulation (Bp.)
7. Rácz: Pharmaceutical Technology – Part One (Bp.)
8. Rácz: Pharmaceutical Technology – Part Two (Bp.)
9. Rácz: Pharmaceutical Technology – Part Three (Bp.)
15. European Pharmacopoeia (Council of Europe, Strasbourg)

Recommended textbooks:

# PHARMACEUTICAL CHEMISTRY I.

**Director:** Dr. Péter Horváth  
**Tutor:** Prof. Dr. Krisztina Takács–Novák

**First Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
<th>Practicals (5 hours per week)</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>Preliminary testing of organic compounds, classification Identification of organic functional groups</td>
<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
</tr>
<tr>
<td>3</td>
<td>General purity tests in Pharmacopoeias</td>
<td>Preliminary testing and systematization of inorganic and organic compounds official in Ph. Eur.</td>
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<tr>
<td>4</td>
<td>Structural and physical chemistry of drug action I.-II.</td>
<td>General reaction of organic functional groups Analysis of IR spectra</td>
</tr>
<tr>
<td>5</td>
<td>Structural and physical chemistry of drug action III-IV.</td>
<td>General purity tests of inorganic ions I.</td>
</tr>
<tr>
<td>6</td>
<td>Narcotics Sedato-hypnotics and anxiolytics</td>
<td>General purity tests of inorganic ions II.</td>
</tr>
<tr>
<td>7</td>
<td>Major analgetics</td>
<td>General purity tests of inorganic ions III.</td>
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<tr>
<td>8</td>
<td>Minor analgetics</td>
<td>Complete pharmacopoeial qualification of an inorganic compound official in Ph. Eur.</td>
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<tr>
<td>9</td>
<td>Psychopharmacons</td>
<td>Narcotics, sedato-hypnotics</td>
</tr>
<tr>
<td>10</td>
<td>UV-VIS spectroscopy in the analysis of drug mixtures ORD and CD spectroscopy in the analysis of drug mixtures</td>
<td>Major analgetics I.</td>
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<td>11</td>
<td>Separation techniques I.-V. Application of chromatographic methods for the drug analysis TLC</td>
<td>Major analgetics II.</td>
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<tr>
<td>12</td>
<td>GC, HPLC, CE</td>
<td>Minor analgetics I.</td>
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<tr>
<td>13</td>
<td>Cholinergic and adrenergic agents</td>
<td>Minor analgetics II.</td>
</tr>
<tr>
<td>14</td>
<td>Cholinergic and adrenergic agents</td>
<td>Nonsteroidal anti-inflammatory drugs</td>
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## PHARMACEUTICAL CHEMISTRY II.

**Second Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (4 hours per week)</th>
<th>Practicals (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proton speciation of drugs</td>
<td>Equipping, identification</td>
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<tr>
<td></td>
<td>Determination of protonation constants</td>
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</tr>
<tr>
<td>2</td>
<td>Optimization of pH-dependent processes</td>
<td>Psychopharmacons</td>
</tr>
<tr>
<td></td>
<td>Characterization of lipophilicity</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cardiac glycosides, sugars</td>
<td>Drugs acting on the vegetative nervous system I.</td>
</tr>
<tr>
<td></td>
<td>Analysis of cardiac glycosides, sugars</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Local anaesthetics</td>
<td>Drugs acting on the vegetative nervous system II.</td>
</tr>
<tr>
<td>5</td>
<td>Cardiovascular drugs: antiarrhythmic agents</td>
<td>Local anaesthetics</td>
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<tr>
<td></td>
<td>Cardiovascular drugs: antianginal agents</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cardiovascular drugs: antilipaemic agents</td>
<td>Digitalis glycosides, sugars</td>
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<tr>
<td></td>
<td>Cardiovascular drugs: antihypertensive agents</td>
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<tr>
<td>7</td>
<td>Cardiovascular drugs: anticoagulants</td>
<td>Determination of protonation macroconstants</td>
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<tr>
<td></td>
<td>Diuretics I.</td>
<td></td>
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<td>8</td>
<td>Diuretics II.</td>
<td></td>
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<tr>
<td></td>
<td>Vitamins I.</td>
<td></td>
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<tr>
<td>9</td>
<td>Vitamins II.</td>
<td>Determination of logP</td>
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<td>Quality assurance, GLP, validation</td>
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<td>10</td>
<td>Corticosteroids I.</td>
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<tr>
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<td>Corticosteroids II.</td>
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<tr>
<td></td>
<td>Sexual hormones II.</td>
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<td>12</td>
<td>Antidiabetics</td>
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<tr>
<td></td>
<td>Antihistamines</td>
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</tr>
<tr>
<td>13</td>
<td>MS NMR: phenomena</td>
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</tr>
<tr>
<td>14</td>
<td>NMR: d, J, T1, T2</td>
<td>Quality assurance, GLP, validation I.</td>
</tr>
<tr>
<td></td>
<td>NMR: multiplicity, 1D NMR</td>
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</tr>
<tr>
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<td></td>
<td>Quality assurance, GLP, validation II.</td>
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</tbody>
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PHARMACEUTICAL TECHNOLOGY I.

Department of Pharmaceutics
Director: Dr. István Antal
Tutor: Dr. Emese Bertalan-Balogh

First Semester

Lectures
1. The scope of pharmaceutical technology. History of pharmaceutical compounding.
2. Dosage forms as drug carrier systems. Classification of dosage forms and methods of administration.
3. Biopharmaceutical and pharmacokinetic bases of pharmaceutical technology.
5. Physico-chemical principles in the pharmaceutical technology. Basic compounding procedures.
8. Ideal and colloid solutions, aromatic water, syrup, mucilage.
10. Drops for internal (Gutta) and external use (Oto-nasogutta). Microbiological preservatives.

Practice
2. The prescription, its control and types. Nomenclature.
7. Preparation of composite solutions.
8. Directions of preparing the ophthalmic solutions. Preparation of eye drops.
11. Preparation of suspensions without excipients.
12. Preparation of suspensions with excipients.
13. Preparation of emulsions.
PHARMACEUTICAL TECHNOLOGY II.

Second Semester

**Lectures**
3. Dermal preparations.
7. Rectal and vaginal preparations
8. Preparation and tests of suppositories
9. Dosage forms prepared by aggregation (Pills, boluses, sticks, foams, medicated chewing gums)
10. Powders. Commination, powdering, sieving, mixing Compounding powder preparations
11. Compounding and technological aspects of the pharmacopoeia (Eur.Ph.)
12. Technological aspects of veterinary preparations
14. Incompatibility problems II. Other dosage forms.
15. Incompatibility problems III. Incompatibility problems of widely used drugs and excipients

**Practice**
1. Introduction, general information, labour safety. Formulae Normales: the guide for pharmaceutical compounding in Hungary.
5. Preparation of suppositories by cold compression and by moulding. Preparation of vaginal preparations.
10. Incompatibility problems of solutions. Incompatibility problems of powder mixtures.
11. Incompatibility problems of emulsions. Incompatibility problems of ointments.
**PHARMACOGNOSY I.**

**Director:**  *Dr. Szabolcs Béni*

**Lecturer:**  **Prof. Ágnes Kéry, Dr. László Kursinszki, Dr. Szabolcs Béni, Dr. Anna Blázovics**

**Tutor:**  *Dr. Anna Bucsy-Sólyomváry*

**Second Semester**

<table>
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<th><strong>Lectures</strong> (2 hours per week)</th>
<th><strong>Practicals</strong> (4 hours per week)</th>
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<tbody>
<tr>
<td>From plant to phytopharmaceutical (phytotherapy). Sources of drugs, factors involved in the production of drugs. Quality control.</td>
<td>General methods in pharmacognosy.</td>
</tr>
<tr>
<td>Compounds of primary metabolism. Carbohydrates. Mono- and oligosaccharides and their drugs. Homogenous polysaccharides and their drugs.</td>
<td>Vegetable drugs containing carbohydrates. (Starches, mucilages, etc.)</td>
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<tr>
<td>Heterogenous polysaccharides: gums, neutral and acidic mucilages, pectins; polysaccharides from microorganisms and fungi. Algae polysaccharides.</td>
<td>Plant acids and their drugs.</td>
</tr>
<tr>
<td>Compounds of special (secondary) metabolism. Plant phenolics in general. Phenols, phenolic acids, derivatives and crude drugs.</td>
<td>Phenolglycosides, flavonoids, anthocyanins and chief drugs II.</td>
</tr>
<tr>
<td>Coumarins and coumarin containing drugs. Medicinal application and toxicity.</td>
<td>Lignans, Coumarins and diarylheptanes.</td>
</tr>
<tr>
<td>Lignans, lignan containing drugs. Biological interest of lignans. Silybum marianum and its significance.</td>
<td>Tannins and chief tannin drugs.</td>
</tr>
<tr>
<td>Flavonoids, chemical structure and classification, biological properties, use of flavonoid-containing drugs, therapeutical significans.</td>
<td>I. Methods used in tannin chemistry. Tannins and chief tannin drugs II. Mass spectrometry of tannins, determination of procyanidins.</td>
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<tr>
<td>Chief flavonoid containing herbal drugs. (Crataegus species, Ginkgo biloba, etc.) Isoflavonoids, rotenoids, biological significance. Anthocyanins, chief anthocyanin-containing drugs.</td>
<td>Anthraglycoside containing crude drugs I. Chemical tests.</td>
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<tr>
<td>Phenoloids in Zingiberaceae family (diarylheptanoids and aylalkanones)</td>
<td>Anthraglycoside containing crude drugs II. Quantitative determinations.</td>
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BIOCHEMISTRY II.

Department of Medical Biochemistry
Lecturer:  Dr. Attila Ambrus
Tutor:    Dr. Erzsébet Maróthy-Tóth

First Semester

<table>
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<tr>
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<th>Practicals (3 hours every second week)</th>
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<tr>
<td>1</td>
<td>Hemostasis: blood clotting cascade, formation of fibrin gel.</td>
<td>Safety rules. Succinate dehydrogenase activity measurement</td>
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<td>Inhibition of thrombin.</td>
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<td>2</td>
<td>Fibrinolysis, formation of plasmin. Role of thrombocyte, endothel,</td>
<td>liver, neutrophil granulocyte.</td>
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<tr>
<td>3</td>
<td>Metabolism of xenobiotics. Cytochrome P450 system.</td>
<td>Blood coagulation: prothrombin time, APTT,</td>
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<tr>
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<td>Regulation of drug metabolism. Conjugation reactions.</td>
<td>fibrin stabilization</td>
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<tr>
<td>4</td>
<td>Signal transduction</td>
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<td>5</td>
<td>Neurochemistry: Glu, GABA, Gly, 5-HT metabolism, receptors,</td>
<td>Pyruvate kinase isoenzymes, midterm effects</td>
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<td>6</td>
<td>Neurochemistry: Ach, NA, DA metabolism, receptors, effects</td>
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<tr>
<td>7</td>
<td>Metabolic integration: red blood cell, intestine, kidney, muscle</td>
<td>Mitochondrial oxidation</td>
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<td>8</td>
<td>Metabolic integration: adipose tissue, liver, brain</td>
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<tr>
<td>9</td>
<td>Metabolism of nucleotides</td>
<td>Polyacrylamide gel electrophoresis of proteins</td>
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<tr>
<td>10</td>
<td>DNA replication and repair</td>
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<tr>
<td>11</td>
<td>RNA and protein synthesis, regulation of gene expression</td>
<td>Determination of serum cholesterol and triglycerides, midterm</td>
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<tr>
<td>12</td>
<td>Molecular biology techniques</td>
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<td>13</td>
<td>Cell cycle, cell death</td>
<td>Kinetic characterisation of glutamate dehydrogenase</td>
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<tr>
<td>14</td>
<td>Tumors</td>
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</table>
COLLOID CHEMISTRY II.

Tutor: Prof. Dr. Éva Kiss

First Semester

Practice (2 hours per week)

- Surface and interfacial tensions
- Measurement of the surface, the tension of aqueous surfactant solutions. Calculation of the relative adsorbed amount at fluid interfaces.
- Adsorption at interfaces
- Adsorption from solution; determination of adsorption isotherm for methylene blue on cellulose.
- Stability of colloidal dispersions
- Preparation of electrostatically stabilized inorganic sol. Determination of critical coagulation concentration of electrostatically stabilized sols.
- Flocculation and stabilization of sols by uncharged polymers and polyelectrolytes.
- Suspensions and emulsions
- Determination of particle size distribution of a dispersed system by Andreasen pipette.
- Preparation of a concentrated dispersion by ultraturrax technique. Determination of apparent viscosity of concentrated suspensions, investigation of thixotropy.
- Preparation of emulsion by dispersion method, determination of the type of emulsion and determination of size distribution of emulsion droplets by microscopic image analysis. Measurement of the viscosity of concentrated emulsions by rotational viscometric method.
- Evaluation of the type from comparison of viscosity values.
- Association colloids
- Determination of critical micelle formation concentration by conductometric titration. Solubilization of organic acids, determination of solubilization saturation.
- Macromolecular colloids
- Determination of the relative molecular mass of polymers by viscosity measurements. Dependence of the viscosity of polyelectrolyte solutions on pH comparative analysis of the calculated and measured pH values.
- Phase states and structures of polymers
- Determination of the thermomechanical curve of a polymer by Hőppler consistometer. Determination of the relative deformation of a polymer at various loading times.
# PHYSIOLOGY I.

## First Semester

<table>
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<th>Week</th>
<th>Lecture (5 hours per week)</th>
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<tbody>
<tr>
<td>5</td>
<td>Cardiac functions: Biomechanical basis of cardiac functions. Cardiac pump. Signal transduction in the cardiomyocytes.</td>
</tr>
<tr>
<td>6</td>
<td>Cardiac cycle. Electrical activity of the heart. Transmembrane potentials. Conduction in cardiac fibers, cardiac excitability, cardiac rhythmicity, electrocardiography.</td>
</tr>
<tr>
<td>8</td>
<td>Cardiovascular control mechanisms: Systemic control mechanisms. Local control mechanisms. Control of cardiac output.</td>
</tr>
<tr>
<td>12</td>
<td>Regulation of respiration: Neural and chemical control of respiration. Adaptation of cardiorespiratory system and skeletal muscle to physical exercise.</td>
</tr>
<tr>
<td>13</td>
<td>Formation and excretion of urine. Physiological functions, their significance in the maintenance of the internal milieu and in healthy functioning of the organism. Renal circulation. Glomerular filtration.</td>
</tr>
</tbody>
</table>

*Practice and consultation (2 hours biweekly)*

Seminars
Blood pressure measurement
ECG
## PHYSIOLOGY II.

### Second Semester

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture (5 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Whole body metabolism. Gastrointestinal motility and secretions. Innervation of the GI tract. GI hormones. Regulation of GI motility. Regulation of GI secretion: Salivary secretion; Gastric secretion; Exocrine pancreas.</td>
</tr>
</tbody>
</table>

**Practice and consultation** (2 hours biweekly)

Seminars
Blood glucose measurement, OGGT
PHARMACEUTICAL MICROBIOLOGY

Institute of Medical Microbiology

Subject code: GYMIKGMIE1A
Program director: Prof. Dr. Dóra Szabó
Tutor: Dr. Orsolya Dobay
Prerequisite subject: Biochemistry II., Physiology I., Basic immunology
Credits: 5

Second Semester

Lectures (3 hours per week)
Week 1. Brief history, subject and aim of Microbiology. Occurrence and importance of microbes in nature. Morphology, reproduction and physiology of bacteria. Microbial genetics.
Week 5. Cocci causing purulent diseases (Staphylococcus, Streptococcus, Neisseria)
Week 6. Normal flora of the intestinal tract and the importance of it. Bacteria causing enteral diseases.
Week 7. Causative agents of respiratory tract infections.
Week 9. Causative agents of human mycosis and their therapy.
Week 10. General virology. Antiviral chemotherapy. DNA viruses.
Week 11. Enteral viruses and diseases caused by them. Hepatitis viruses.
Week 13. Retroviruses. AIDS. Tumor viruses. The role of viruses in carcinogenesis.

Practices (2 hours per week)
Week 1. Introduction to basic microbiology, laboratory rules. Microscopic examination of microbes.
Week 2. Cultivation of bacteria.
Week 4. Determination of antibiotic susceptibility of bacteria.
Week 6. Gram-positive and Gram-negative cocci (Cultures, smears, biochemical reactions, serological tests, antibiotic susceptibility, vaccines).
Week 10. Endospore-forming Gram-positive bacteria (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).
Week 11. Spirochetes. Rickettsiae, Chlamydiae, Mycoplasmas (Cultures, smears, enzyme reactions, serological tests, antibiotic susceptibility, vaccines).
Week 12. Medically important fungi (Cultures, smears).
Week 13. Medical parasitology (macroscopic and microscopic preparations).
Week 14. General virology (cultivation and morphology of viruses, cell-virus interactions, serological tests).

Midterms: twice during the semester, each should be passed with 60%.
Exam: Oral exam with a preceding written “minimum questions”.
Note: The maximum number of the absences from the practical classes is 3. More than 3 absences invalidate the semester.
BASIC IMMUNOLOGY

Department of Genetics, Cell and Immunobiology

Course director: Prof. Dr. Edit Buzás
Tutor: Dr. Marianna Csilla Holub
Subject code: GYGENIMMIEA
Prerequisite subject: Biology II., Anatomy, Medical Terminology
Credits: 2

Lectures (2 hr / week)
1. The role, processes, organs and cells of the immune system
2. Principles of natural immunity
3. The complement system
4. Inflammation, acute phase reaction, neuro- and psychoimmunology
5. Antigen, antigen presentation and MHCs
6. Antigen receptors and their formation
7. T lymphocytes and cell-mediated immune response
8. B lymphocytes and humoral immune response
9. Hypersensitivity
10. Midterm exam (written)
11. Immune response in infections, immunodeficiencies
12. Natural and pathological autoimmunity
13. Immunology of transplantation, pregnancy and antitumor immunity
14. Immunopharmacology and review
   (The sequence of lessons may change.)

75% minimum attendance of the lectures is necessary for the end-term signature.

Exam: written test in the exam period. For passing you have to reach more than 50% of the exam scores. If the student earns more than 50% exam scores and has reached level 5 or 4 on the midterm, exam scores will be supplemented with some bonus points.

Literature:

Other information: gsi.semmelweis.hu (The user name and password is on the course datasheet of the Neptun.)
**CLINICAL PHYSIOLOGY LABORATORY MEASUREMENTS**

**GYKIKKFVE1A**

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

The purpose of the subject is to familiarize pharmacy students with the background, uses and implementation of clinical diagnostic measurement techniques which are closely related to the knowledge acquired on the physiology course. The course provides theoretical and practical knowledge which helps to integrate basic physiology in the broader scope of clinical and pharmaceutical sciences. Moreover, the subject helps to develop fundamental skills which are relevant for proficient medical professionals (measurement skills, presentation of precise documentation, cooperativity etc.).

**Program:**

**Theoretical course:**

1st week  Introduction to the bases of measurement techniques.

2nd week  Scientific and diagnostic measurement techniques for studying the electrophysiology of motor nerves, neuromuscular transmission and skeletal muscle.

5th week  Electrophysiology of the heart, cardiac arrhythmias. Regulation of arterial blood pressure under physiological and pathophysiological conditions. The characteristics of the pulse wave propagation.

7th week  Mechanical properties of the respiratory system under physiological conditions and in respiratory diseases. Adaptation of the cardiorespiratory system to physical exercise.

9th week  Regulation of carbohydrate metabolism and its disorders.

11th week  Reflexes of the somatic nervous system. Function of the vestibular system. Regulation of body position under physiological conditions and in neural disorders.

13th week  Consultation

**Practical course:**

2nd week  Introduction to the uses of instruments and data acquisition software applied during the course.

4th week  Electromyography, electroneurography. Study of the electrical properties of the skeletal muscle, measurement of the impulse conduction velocity of a motor nerve by Biopac student lab system.

6th week  Measurement of pulse wave velocity. Recording and analysis of a 12-lead ECG. Demonstration of pathological ECG recordings. 8th week - Spirometry. Studying the circulatory and respiratory adaptation responses during physical exercise.

10th week  Oral glucose tolerance test, determination of HbA1c level, analysis of normal and pathologic glucose tolerance curves.

12th week  Neurological examination techniques: examination of motor reflexes and vestibular function, EOG.

13th week  Optional lab retake.

14th week  Repetition and practice for the practical exam

**Acknowledgement of the course:** Attendance of at least 6 lab practices and 5 theoretical classes; presentation of the completed lab manual to the tutor. Semifinal exam. Two (2) credit points will be provided after a successful completion of the course.
Hungarian Medical Terminology V. (5th semester)

Magyar orvosi szaknyelv 5.

Responsible organisational unit:
Faculty of Health Sciences, Division of Foreign Languages and Communication

Programme director:
Zöldi Kovács Katalin PhD, Head of the Division
4 lessons per week, 2 credits,

Assessment: midterm (written) and endterm (written and oral) tests and a final examination

Role of subject in fulfilling the aim of training:
The role of this subject is to help students acquire the basic vocabulary, grammar and language skills they need for the effective professional communication in the language they use during their field practice. With the help of this course they become able to communicate with the patients in the Hungarian hospitals.

Brief description of subject:
The last module covers the terminology of the main body systems and provides further training in taking history. The symptoms, diseases and common treatments of the diverse body systems (respiratory, cardiovascular, urinary, digestive and endocrine) are discussed during the semester.

Course content of practical lessons:
Lesson 1-4: Communication practice (family and social history)
Lesson 5-6: Communication practice (internal medicine – medical history)
Lesson 7-8: Communication practice (treatments, medication)
Lesson 9-10: Common illnesses – symptoms
Lesson 11-16: The respiratory system
Lesson 17-22: The cardiovascular system
Lesson 23-24: Consolidation
Lesson 25-26: Test 1 + situation
Lesson 27-32: The urinary system
Lesson 33-38: The digestive system
Lesson 39-44: The Endocrine system
Lesson 45-50: Consolidation
Lesson 51-52: Test – situation, communication practice
Lesson 53-56: Mock final exam (oral part), assessment

Course material, recommended text book(s), professional literature and supplementary reading(s)
COMPULSORY SUMMER PRACTICE II.

Program

**Four weeks:** 35 hours/week; min. 6 max. 8 hours/day.

The aim of summer practical training: to deepen theoretical and practical knowledge of Pharmaceutical Technology learnt in the 3rd year; adaptation of basic knowledge (chemistry, physics, colloidics, physiology etc.) to the practical work in pharmacies.

**Duties and respects:**

1. Appreciation of prescriptions, reading of prescriptions (Formula Magistralis, Formula Normales, Formula Originalis). The forms of dispensing, dose calculating etc. Preparation of medicaments (Formula Magistralis) under supervision of the instructing pharmacist.
2. Prescriptions and regulations of narcotics
3. Various dosage forms (solutions, suspensions, emulsions, ointments, solid dosage forms etc.), their preparation.
4. Practising of the pharmaceutical technological manipulations, procedures etc.
5. Aseptic production of medicaments. Main technological steps.
6. Guidelines for the preparation of incompatible drugs. Preparation of these medicaments.

**Important note:** Document certifying the completion of the practice must be handed in at registration! Registration to the next year is not allowed without it!
STUDY PROGRAMME

Fourth Year

The prerequisite to start 4th year is to take a Basic Hungarian Language Exam (oral).

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
</tr>
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<tr>
<td>Pharmacognosy II. Practice</td>
<td></td>
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<td>GYFMGGNDE1A, GYGYKGYKE2A, Pharmacognosy I., Pharmaceutical Chemistry II.</td>
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<tr>
<td>Industrial Pharmaceutical Technology I.*</td>
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### 8th semester

<table>
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<tr>
<th>Subjects</th>
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<th>Practices</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Examination</th>
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<td>Introduction to Health Informatics II. History of Sciences, Propedeutics Pharmaceutical Technology III.</td>
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<tr>
<td>Basic Medical Pathophysiology II.</td>
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<td>Physiology II. Pharmaceutical Microbiology</td>
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<td>Public Health Practice</td>
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<td>GYKIKGIE2A GYMIGMIE1A</td>
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</tbody>
</table>

**Total Credit**: 26

# The grade influences the qualification of the diploma
*Obligatory elective subject

### LIST OF TEXTBOOKS (The list may change!)

5. Z. Vincze: Pharmacy Administration. Lecture notes.
6. European Pharmacopoeia, 8th (Ph. Eur. 8)
7. Pharmaceutical Technology I. Theory (Budapest, 1993)
8. Pharmaceutical Technology III. Practice (Budapest, 1993)

**Recommended textbooks:**

### PHARMACEUTICAL CHEMISTRY III.

Director:  **Dr. Péter Horváth**

**First Semester**

<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures (2 hours per week)</th>
<th>Practicals (4 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Disinfectants</td>
<td>Equipping, identification</td>
</tr>
<tr>
<td>2</td>
<td>Chemotherapeutics: sulfonamides</td>
<td>Desinfectants, chemoterapeutics</td>
</tr>
<tr>
<td>3</td>
<td>Chemotherapeutics: antimalarial drugs, fluoroquinolones</td>
<td>Antibiotics</td>
</tr>
<tr>
<td>4</td>
<td>Analysis of drug mixtures I.</td>
<td>Identification of drug mixtures</td>
</tr>
<tr>
<td>5</td>
<td>Analysis of drug mixtures II.</td>
<td>Identification of drug mixtures</td>
</tr>
<tr>
<td>6</td>
<td>Analysis of drug mixtures III.</td>
<td>Identification of drug mixtures</td>
</tr>
<tr>
<td>7</td>
<td>Chemotherapeutics: antituberculotics, antifungal agents</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>8</td>
<td>Antibiotics: β-lactams, chloramphenicol</td>
<td>Quantitative determination of drug mixtures</td>
</tr>
<tr>
<td>9</td>
<td>Antibiotics: tetracyclines, aminoglycosides</td>
<td>Quantitative determination of drug mixtures</td>
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<tr>
<td>10</td>
<td>Antiviral agents</td>
<td>Quantitative determination of drug mixtures</td>
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<tr>
<td>11</td>
<td>Anticancer drugs</td>
<td>Quantitative determination of drug mixtures</td>
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<tr>
<td>12</td>
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<tr>
<td>13</td>
<td>Drug research II.</td>
<td></td>
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<tr>
<td>14</td>
<td>Biological and biosimilar drugs</td>
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</table>
**PHARMACEUTICAL TECHNOLOGY III-IV.**

Department of Pharmaceutics
Director:  **Dr. István Antal**
Tutor:    **Dr. Emese Bertalan-Balogh**

First Semester

**Lectures**

Theoretical background for the Pilot Plant laboratory practices. Introduction into industrial pharmaceutical technology.
Aspects of the pharmaceutical development. Preformulation. Theoretical background for the Parenteral laboratory practices.
Chemical engineering, scaling-up, optimization principles. Stability testing.
Pharmaceutical unit operations. Drying. Pharmaceutical unit operations. Filtering, sedimentation, centrifugation, extraction by squeezing.
Pharmaceutical unit operations. Fluidization. Parenteral preparations. Factory design
Validation. Large volume parenteral preparations.
Solution and dispersion type injections. Pharmaceutical unit operations. Mixing, dispersing.
Packaging technology and packaging materials I. Packaging technology and packaging materials II.

**Practice**

*Laboratory for parenteral preparations*
Aseptic processing.
Autoclaving.
Determination of internal pressure of bottles at different filling volumes.
Preparation of dextrose infusion.
Preparation of mannitol infusion.
Filtration by frame filter.
Control of infusions and injections containing dextrose (pH, refractive index, degradation product).
Preparation and control of infusions containing electrolytes and sugars.
Preparation of infusions used in acidosis.
Determination of endotoxin concentration in parenteral solutions by the quantitative LAL test.
Adjustment of isotonicity.

*Pilot plant practices*
Drying process.
Filtrating process.
Mixing of solids and solid-liquid heterogeneous systems.
Study of some parameters of fluidization.
Investigations of factors affecting the size reduction in ball mill.
Preparation and stability examination of emulsions.
Quality control of solid dosage forms.
Quality control of raw materials.
Preparation of suppositories.
Physical technology laboratory practices:
Studies on ion exchange resins.
Determination of the dissociation constant (pK) for drugs.
Effect of pH on the solubility of drugs.
Hydrotropic auxiliary materials.
Solubilization of volatile oils by Tweens.
Effect of permittivity on the solubility of salicylic acid.
Determination of sugar concentration by viscometry.
Studies on makromolecular colloids by viscometry.
Studies on the phase inversion by viscometry.
Determination of CMC by stalagmometry.
Measurement of surface tension by Donnan pipette.
Measuring the sun protection effect of oily products by spectrophotometry.
Examination of suspensions by Wiegner tube and Andreasen device.

Chemical technology practices:
Introduction, Fire-, Safety rules.
Determination of decrease of the acetic acid content of Spiritus antirheumaticus (FoNo VII.) during storage.
Stability study of hydrocortisone hemisuccinate solutions.
Study of the stability of penicillin-containing solutions in the presence of other medicinal substances.
Thermokinetic study of the decomposition of phenobarbital.
Study of the catalytic oxidation of ascorbic acid solutions.
Kinetic study of the saponification process of castor oil.
Determination of lipase activity of pancreatine filmcoated tablet.
Determination of the dissolution rate constant of benzoic acid with UV spectrophotometry.
Kinetic study of the neutralization of antacids.
Testing the activity of antacid formulations with Rosett-Rice method.
In vitro investigation of the acid binding capacity of thermolabile aluminumhydroxide gels.
Study of degradation processes of paracetamol by HPLC-UV method.
Second Semester

Lectures

Theoretical considerations of pilot plant practices. Theoretical considerations of parenteral preparations.
Classification and preformulation of solid dosage forms. Solid state characterization. Granulation I.
Granulation II. Inhaled preparations, aerosols.
Pellets and palletization. Particle systems and their characterization.
Tablets I. Tablets II.
Capsules I. Capsules II.
Coating I. Coating materials and procedures, film coating. Coating II. Traditional sugar coating.
Coating III. Solvent-free coating. Modern dosage form design: modified drug release.
Modern dosage form design: testing and evaluation of drug release profile. Modern dosage form design: improvement of dissolution and solubility.
Modern dosage form design: colloidal carrier systems, liposomes. Pharmaceutical technological aspects of Pharmacopoeias.
Modern dosage form design: transdermal therapeutic systems. Modern dosage form design: Molecular pharm. tech. microfabrication.
Patient centric dosage forms
Pharmaceutical technology and quality assurance. Modern dosage form design: Delivery of biopharmaceuticals.

Practice

Laboratory for parenteral preparations
Preparation of injections liable to hydrolysis.
Determination of the chloride ion concentration by ion selective electrode.
Filling and closing of ampoules.
Preparation and control of aerosols.
Preparation of heat sensitive injections.
Sterilization by membrane filtration. Integrity testing of membranes.
Non-aqueous injections.
Freeze-drying.
Preparation of injections liable to oxidation.
Control of drug content of ascorbic acid injection.
Preparation of suspension injections.
Color determination of ascorbic acid injections.
Isotonicity setting based on freezing point depression.
Isotonicity setting based on sodium chloride equivalents.

Pilot plant practices
Product development.
Ointment preparation.
Preparation of liquid dosage forms (solutions, elixirs, syrups, mixtures). Qualifying test of solutions.
Coating I. (coating materials, calculation of the required amount for the coating process).
Coating II. (Preparation of coating dispersion, film dissolution tests and gastro-resistance examination).
Pellet preparation in high shear mixer and extrusion-spheronization, quality control of pellets.
Coating of pellets by fluid technique.
Granulation, Tablet compression and IPC test methods.
Calculation of suppository displacement factor. Preparation of suppositories by molding technique.
Digital pharmaceutical technology (3D printing).
Physical technology laboratory practices:
- Determination of slip point and dropping point for suppository vehicles and ointment bases.
- Determination of the congealing point of vehicles.
- Examination of the compression strength and disintegration time of suppositories.
- Homogeneity of active ingredient distribution in suppositories.
- Examination of drug release from suppositories.
- Studies on vehicles of ointments and suppositories with penetrometry and DSC.
- Examination of crystals, studies on disintegration.
- Adsorption on the surface of active coal.
- Statistical evaluation of uniformity of mass of single-dose capsules.
- Drug release of tablets in the presence of adsorbents.
- Examination of granules and powders.
- Determination of real density of granules.
- Study of drug release in artificial gastric fluid and in artificial intestinal fluid.

Chemical technology practices:
- Packaging materials I.: Hydrolytical and physical resistance of medicine bottles.
- Packaging materials II.: Light emission of medicine bottles.
- Iodine adsorption of plastic containers.
- Blister-closing test.
- Investigation of acetylsalicylic acid content decreasing due to moisture in solid drug preparation.
- Quality control of prenoxdiazine tablet (ionpair method).
- Preparation and examination of theophylline-containing microcapsules.
- Formulation and examination of KCl containing sustained-release capsule preparation.
- Encapsulation of tocopherylacetate in to liposomes.
- Quality control of prenoxdiazine tablets (ionpair method).
- Study of the interaction of methyl-4-hydroxybenzoate (methylparaben) and macromolecules.
- Examination of complexation between acetaminophen (paracetamol) and methylxanthines.
- Investigation of a sustained release matrix tablet of tolperisone HCl with HPLC-UV method.
- HPLC-MS study of ciprofloxacin film-coated tablet in high-fat milk.
PHARMACOGNOSY II.

Director:  
Dr. Szabolcs Béni

Lecturer:  
Prof. Ágnes Kéry, Dr. László Kursinszki, Dr. Szabolcs Béni

Tutor:  
Dr. Anna Sólyomváry

First Semester

**Lectures** (2 hours per week)

- Terpenoids: biogenetic generalities.
  Classification. Regular and irregular monoterpenes, sesquiterpenes. Essential oils.
  Lamiaceae containing essential oils.
  Anise-flavored essential oils.
  Asteraceae containing essential oils.
  Iridoids. Chief iridoid containing drugs.
  Sesquiterpene lactones. Chief drugs containing sesquiterpence lactones.
  Diterpenes. Diterpene-containing drugs of potential interest. Triterpenes und steroids.
  Biosynthesis, classification.
  Saponins. Biological and pharmacological interest.
  Chief saponin containing drugs.
  Adaptogenes. Ginseng, Siberian Ginseng.
  Cardiac glycosides. Structures, chief vegetable drugs.
  Starting materials for steroid hormone semisynthesis.
  Other significant steroids and triterpenes.
  Carotenoids. Chief carotenoid-containing drugs.
  Alkaloids in general. Protoalkaloids and their chief drugs.
  Alkaloids derived from ornithine and lysine.
  Tropane-, pyrrolizidine-, quinolizidine-, indolizidine-, piperidine alkaloids and their drugs.
  Alkaloids derived from nicotinic acid.
  Alkaloids derived from phenylalanine and tyrosine: phenethylamines-, isoquinolines-, benzyltetraisoquinoline-, phenethylisoquinoline alkaloids and their drugs.
  Alkaloids derived from phenylalanine and tyrosine: Morphinan alkaloids.
  Alkaloids derived from tryptophan: ergotine alkaloids, monoterpenoid indole alkaloids and chief drugs.
  Purine bases.
  Alkaloids with miscellaneous structure.
  Vitamins and vitamin containing drugs.
  Plants in complementary and traditional systems of medicine.
  Plants in prevention, Funcional foods

**Practicals** (4 hours per week)

- Essential oil containing drugs (Lamiaceae, Asteraceae, Apiaceae)
  Bitter substances of plants.
  Classification, reactions, bitter value.
  Saponins and chief saponin drugs.
  Methods used in the identification and quality control of saponins.
  Cardioactive glycosides and chief drugs.
  Methods used in the analyses of cardioactive glycosides.
  Tropane, piridine and piperidine alkaloid containing drugs.
  Quantitative assays in alkaloid chemistry (titration)
  Quinoline, isoquinoline and morphine group alkaloids, their chief drugs.
  Methods in alkaloid chemistry: TLC, TLC-densitometry, spectrophotometry.
  Indol, purine alkaloids. Alkaloids with miscellaneous structure. Chief drugs.
  Methods in alkaloid chemistry: Column chromatography.
  Practical examination.
  Practical examination.
PHARMACOLOGY AND TOXICOLOGY I-II.

Department of Pharmacodynamics
Course Director: Prof. Dr. György Bagdy
Tutor: Dr. Tamás Tábi

First Semester

General principles of drug action: receptor theory
General principles of drug action
The fate of drugs in the body
Drug metabolism
Pharmacokinetics
Factors influencing the drug effect
Basics of clinical pharmacology
Chemical neurotransmission
Pharmacology of ANS
Drugs acting on striated muscle
Chemical neurotransmission in the CNS
General and local anaesthetic agents
Narcotic analgesics: opioids

Second Semester

Drugs affecting the heart
Drugs affecting the circulation
Diuretics
Pharmacology of insulin and antidiabetics
Lipid lowering drugs
Drugs affecting blood coagulation and thrombocytes
Pharmacology of the reproductive system
Pharmacology of calcium and bone metabolism
Pharmacology of the gastrointestinal tract
Basic principles of antimicrobial chemotherapy
Antibacterial drugs affecting nucleic acid metabolism
Antibacterial drugs inhibiting cell wall synthesis
Antibacterial drugs inhibiting protein synthesis
Antimycobacterial drugs
Antifungal, antiprotozoal and anthelminthic drugs
Antiviral drugs
Anticancer drugs
Drugs affecting the haemopoietic system
Vitamins, retinoids and trace elements
Pharmacology of the thyroid and pituitary
Toxicology

Drug abuse and drug dependence
Anxiolytic and hypnotic drugs
Drugs used in affective disorders
Antipsychotic drugs
Antiepileptics and excitatory amino acid neurotransmitters
Neurodegenerative disorders
Immunopharmacology
Histamine and antihistamines. Glucocorticoids
Anti-rheumatoid drugs
Non-steroidal anti-inflammatory drugs
Drugs of the respiratory system
Drug interactions. Adverse effects
PHARMACY ADMINISTRATION I.

Faculty of Pharmacy
University Pharmacy Department of Pharmacy Administration
Director: Prof. Dr. Romána Zelkó
Tutor: Dr. Ágnes Mészáros

4th year term 2

Lecture

Objectives and research methods of pharmacy administration
European Pharmacopoeia, Ph.Hg. VIII, FoNo VII.
Managing health care
Financial pressures and human resource management
Resource allocation in health care
Managing quality in health care
Quality systems and total quality management
Good Clinical Practice (GCP)
European marketing authorisation procedures
The registration dossier
Legal regulations in health care
Health promotion
Good Pharmacy Practice (GPP)
International pharmaceutical organisations
Pharmaceutical ethics
BASIC MEDICAL PATHOPHYSIOLOGY I-II.

Institute of Pharmacodynamics
Course Director and Tutor: Dr Gabriella Juhász

First Semester

Fundamental pathological processes
Psychiatry: diagnostic systems
Delirium, dementia, amnestic disturbances
Injuries produced by high and low temperatures and electricity
Schizophrenia.
Depressive disorders
Anxiety disorders. Drug induced disorders
Sleep disorders.
Eating disorders. Impulse control disorders
Epilepsy.
Neurodegenerative disorders
Inflammatory diseases of the central nervous system

Second Semester

Gastrointestinal disorders I
Gastrointestinal disorders II
Gastrointestinal disorders III
Respiratory diseases I.
Respiratory diseases II.
Genitourinary disorders
Infectious disorders I.
Infectious disorders II.
Ophthalmologic disorders I.
Ophthalmologic disorders II., Ear disorders
Endocrine and metabolic disorders I.
Endocrine and metabolic disorders II.
Musculoskeletal disorders
Immunologic disorders, Oncologic disorders
Dermatologic disorders, Consultation

Headache.
Backache
Disorders of erythropoiesis and haemostasis
Varicose veins.
Thrombo-embolic disorders
Congestive heart failure.
Atherosclerosis
Ischaemic heart disease.
Cardiac arrhythmia
Inflammatory diseases of the heart
Hypertension.
Circulatory shock
# PUBLIC HEALTH

Tutor: *Dr. András Terebessy*

## Second Semester

<table>
<thead>
<tr>
<th>Lectures (2 hours per week)</th>
<th>Practices (2 hours per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global situation of communicable diseases in the world and in Hungary. Life expectancy, morbidity, mortality in Hungary.</td>
<td>Classification of communicable diseases. Disinfection and sterilisation. Laboratory investigations</td>
</tr>
<tr>
<td>Infections of Gastrointestinal and Respiratory Tract.</td>
<td>Epidemiology I. (Most important rates and indices).</td>
</tr>
<tr>
<td>Haematogen infections and infections of the skin.</td>
<td>Epidemiology II. (Methods of epidemiology, calculations: standardisation, risk).</td>
</tr>
<tr>
<td>STD. AIDS/HIV. Viral hepatitis.</td>
<td>The role of the pharmacist in primary prevention of smoking, alcohol and drugs.</td>
</tr>
<tr>
<td>New, emerging diseases. Health care in case of disasters.</td>
<td>The role of the pharmacist in healthy nutrition and required physical activity.</td>
</tr>
<tr>
<td>Acute food-borne diseases.</td>
<td>Nutrition II. (Prevention of food – borne diseases)</td>
</tr>
<tr>
<td>Water hygiene.</td>
<td>Practical aspects of water hygiene.</td>
</tr>
<tr>
<td>Air-and soil hygiene.</td>
<td>Practical aspects of air hygiene.</td>
</tr>
<tr>
<td>The health care system, quality assurance.</td>
<td>Toxicology. Radiation hygiene.</td>
</tr>
<tr>
<td>Maternal, infant child and youth health care.</td>
<td>Practical aspects of maternal, infant, child and young people hygiene.</td>
</tr>
<tr>
<td>Health promotion and health education.</td>
<td>Practical aspects of health education.</td>
</tr>
</tbody>
</table>

Practices are compulsory for each student.

**The obligatory material for the final exam:**
The material of the lectures and practices compulsory textbooks, see List of Textbooks
### INDUSTRIAL PHARMACEUTICAL TECHNOLOGY I:

**Dosage form and product development**  
*Department of Pharmaceutics*  
*Director: Dr. István Antal*

**First Semester**

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as research and development of new dosage forms and medicinal preparations.

**Topics:**

### INDUSTRIAL PHARMACEUTICAL TECHNOLOGY II:

**Operations and procedures**  
*Department of Pharmaceutics*  
*Director: Dr. István Antal*

**Second Semester**

The subject is recommended for the students interested in several fields of industrial pharmaceutical technology such as operations and procedures in the manufacture of medicinal preparations.

**Topics:**
**CLINICAL PHYSIOLOGY LABORATORY MEASUREMENTS**

**GYKIKKFVE1A**

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

The purpose of the subject is to familiarize pharmacy students with the background, uses and implementation of clinical diagnostic measurement techniques which are closely related to the knowledge acquired on the physiology course. The course provides theoretical and practical knowledge which helps to integrate basic physiology in the broader scope of clinical and pharmaceutical sciences. Moreover, the subject helps to develop fundamental skills which are relevant for proficient medical professionals (measurement skills, presentation of precise documentation, cooperativity etc.).

**Program:**

**Theoretical course:**

1st week  
Introduction to the bases of measurement techniques.

2nd week  
Scientific and diagnostic measurement techniques for studying the electrophysiology of motor nerves, neuromuscular transmission and skeletal muscle.

5th week  
Electrophysiology of the heart, cardiac arrhythmias. Regulation of arterial blood pressure under physiological and pathophysiological conditions. The characteristics of the pulse wave propagation.

7th week  
Mechanical properties of the respiratory system under physiological conditions and in respiratory diseases. Adaptation of the cardiorespiratory system to physical exercise.

9th week  
Regulation of carbohydrate metabolism and its disorders.

11th week  
Reflexes of the somatic nervous system. Function of the vestibular system. Regulation of body position under physiological conditions and in neural disorders.

13th week  
Consultation

**Practical course:**

2nd week  
Introduction to the uses of instruments and data acquisition software applied during the course

4th week  
Electromyography, electroneurography. Study of the electrical properties of the skeletal muscle, measurement of the impulse conduction velocity of a motor nerve by Biopac student lab system.

6th week  
Measurement of pulse wave velocity. Recording and analysis of a 12-lead ECG. Demonstration of pathological ECG recordings. 8th week - Spirometry. Studying the circulatory and respiratory adaptation responses during physical exercise

10th week  
Oral glucose tolerance test, determination of HbA1c level, analysis of normal and pathologic glucose tolerance curves.

12th week  
Neurological examination techniques: examination of motor reflexes and vestibular function, EOG.

13th week  
Optional lab retake.

14th week  
Repetition and practice for the practical exam

**Acknowledgement of the course:** Attendance of at least 6 lab practices and 5 theoretical classes; presentation of the completed lab manual to the tutor. Semifinal exam. Two (2) credit points will be provided after a successful completion of the course.
## STUDY PROGRAMME

### Fifth Year

#### 9th semester (12 weeks)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Examination</th>
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<tbody>
<tr>
<td>Compulsory Practical Training I. (2 months) *</td>
<td>–</td>
<td>40</td>
<td>8</td>
<td>practical course grade</td>
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<tr>
<td>Biopharmacy-Pharmacokinetics Practice GYG1BFG1A</td>
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<td>Biopharmacy-Pharmacokinetics GYG1BFKE1A</td>
<td>2</td>
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<tr>
<td>Pharmaceutical Sociology, Ethics GYMAGYEE1A</td>
<td>2,5</td>
<td>–</td>
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<tr>
<td>Drug Therapy Practice GYG1HTRG1A</td>
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<tr>
<td>Drug Therapy GYG1HTRG1A</td>
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<td>–</td>
<td>4</td>
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<tr>
<td>Pharmacy Administration II. Practice GYEG1SZE2A</td>
<td>–</td>
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<td>2</td>
<td>practical course grade</td>
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<tr>
<td>Pharmacy Administration II. GYEG1SZE2A</td>
<td>2</td>
<td>–</td>
<td>2</td>
<td>final</td>
</tr>
<tr>
<td>Clinical Pharmaceutical Care GYEG1GY1A</td>
<td>2</td>
<td>–</td>
<td>4</td>
<td>semi-final</td>
</tr>
<tr>
<td>Clinical Pharmaceutical Care Practice GYEG1GY1A</td>
<td>–</td>
<td>3</td>
<td>–</td>
<td>signature</td>
</tr>
<tr>
<td>Written Scientific Thesis (diploma work) II. GYS1DSZDG2A</td>
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<tr>
<td>Facultative subject 1.</td>
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<td>–</td>
<td>2</td>
<td>semi-final</td>
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<tr>
<td>Facultative subject 2.</td>
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<td>–</td>
<td>2</td>
<td>semi-final</td>
</tr>
<tr>
<td>Facultative subject 3.</td>
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<td><strong>Total Credit</strong></td>
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</table>

#### 10th semester (16 weeks)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Lectures</th>
<th>Practices</th>
<th>Credit Points</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Practical Training I. (4 months) *</td>
<td>–</td>
<td>40</td>
<td>16</td>
<td>Practical course grade</td>
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<tr>
<td>Diploma Defence GYS1DSZDG2A</td>
<td></td>
<td></td>
<td>10</td>
<td>final</td>
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<tr>
<td><strong>Total Credit</strong></td>
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</tbody>
</table>

### LIST OF TEXTBOOKS (The list may change!)

2. Z. Vincze: Pharmacy Administration. Lecture Administration.

**Recommended textbooks:**

CLINICAL PHARMACEUTICAL CARE

Faculty of Pharmacy
University Pharmacy Department o Pharmacy Administration
Director:  Prof. Dr. Romána Zelkó
Tutor:    Dr. Ágnes Mészáros

5th year term 1

Lectures
1. About clinical pharmacy
2. Pharmaceutical care
3. Individual therapy with magistral preparation
5. Clinical guidelines in the treatment of hypertension
6. Special conditions influencing drug therapy
7. Clinical bio-analytical analyses
8. Therapeutic drug monitoring, Pharmaco-genetics
9. Pediatrics
10. Total Parenteral Nutrition
11. Pharmaceutical care in asthma
12. Patient education in OTC products I.

Practical lessons
1. Pharmaceutical care in diabetes
2. Pharmaceutical care in hypertension
3. Surgery
4. Dermatology
5. Preparations for surgery, intensive therapy
6. Headache, depression, distress, insomnia
7. Patient education in OTC products I.
8. Patient education in prescription drugs
9. Patient education in OTC products II.
10. Drug information systems
11. Laboratory diagnostic
12. Adverse Drug reactions
BIOPHARMACY – PHARMACOKINETICS

Department of Pharmaceutics

Director: Dr. István Antal
Tutor: Dr. Emese Bertalan-Balogh

First Semester

Lectures
Evolution and significance of biopharmacy.
Basic concepts. Terms and definitions. Pharmacokinetic models and parameters I.
Fate of drug in the body. The LADME-model.
Drug release. The Biopharmaceutical Classification System.
Transport processes and absorption mechanisms. Factors influencing the absorption.
Pharmacokinetic models and parameters II. Single and multiple administration.
Metabolism and its biopharmaceutical aspects. Importance of Bioanalysis.
Excretion processes.
Methods of pharmacokinetic analysis. Compartment, non-compartment analysis and other approaches.
Bioavailability and bioequivalence. Importance of food interaction.
Pharmacokinetic investigations during drug research and development.
Biopharmaceutical and pharmacokinetic studies, in vitro-in vivo correlations.

Practices
Introduction.
The distribution of salicylic acid in a three-phase system. The influence of surface active agent on the transport.
Dissolution rate determination using rotating basket method in the case of Diclofenac-ratiopharm tablet (50 mg) and Voltaren retard tablet (100 mg).
Study on in vitro drug release from ointments with local effect. Penetration study from semisolid preparation in Franz cell like apparatus.
Release of diclofenac from patch.
The extraction and assay of diclofenac sodium from synovial fluid.
Urinary excretion of ASA after rectal administration.
Determination of theophylline plasma levels in beagle dogs after iv. administration.
Determination of theophylline plasma levels in beagle dogs after oral administration.
Pharmacokinetic calculations.
Computer Aided Learning.
Consultation.
PHARMACEUTICAL SOCIOLOGY, ETHICS

Credit: 2

Lecturer: Prof. Dr. József Kovács

Syllabus (14 hours)

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

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

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

3. week (Lecture)
Justice in Health Care. Ethical questions of macro- and microallocation
Higher and lower level macroallocational problems.
The principles and practice of rationing in contemporary health care systems. (Soft and hard rationing.)
Medical ethics and medical economics. Ethical questions of cost-benefit and cost effectiveness analysis.
The problem of right to health care. (The libertarian, the liberal and the socialist views about the right to health care.)
The role of the market and that of the state in the health care system.
The concept of microallocation.
Ethical analysis of various selection criteria. (Medical benefit, psychological ability, supportive environment, social value criterion, resources required criterion, age, ability to pay, random selection, personal responsibility for the illness, etc.)
4. week (Lecture)
Informed consent and truth telling
Simple consent and paternalism in medicine.
The emergence of the doctrine of informed consent.
Standards for information disclosure for patients.
When is informed consent not necessary?
Standards of competence and incompetence.
The right to refuse medical treatment.
Some psychological and communicational aspects of informed consent.
The history of information disclosure to terminally ill patients.
Pros and cons for lying to terminally ill patients.
The weaknesses of the arguments in favour of lying.
The dying process according to E. Kübler-Ross.
How to communicate the bad news to terminally ill patients.
The physician's relationship with the relatives of the deceased patient.

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

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

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

Course Faculty:
Professor József Kovács, MD, PhD, (Head of the Institute), Phone: 210-2930/6350;
E-mail: kovjozs@net.sote.hu
Ágnes Dósa, MD, JD, PhD e-mail: dosaagi@yahoo.com
Imre Szébik, MD, PhD e-mail: szebimre@net.sote.hu
Jeno Lorincz, MD, JD e-mail: lorjen@net.sote.hu
List of questions

1. Deontological theories of ethics.
2. Utilitarian theories of ethics.
3. The principles of medical ethics.
4. Justice and medical ethics: the allocation of scarce medical resources.
5. Paternalism in medical practice.
6. Informed consent.
7. Information disclosure for terminally ill patients.
8. Advance Directives.
9. Medical confidentiality.
11. Objection to Transplantation of Organs and Counterarguments.
12. Ethical problems of live organ donation.
15. Stages of Dying.

Important notes:
To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (Two absences from the lectures is the maximum number permitted.) The student can make up for the absences in practicals held at other times elsewhere.

Justification of an absence: Doctor’s certificate.

Semester requirement: To participate on at least 75% of the total number of lessons.

Grade: The result of the semi-final.

Sign up for the exam: Through the NEPTUN system.
Modifying of the exam date: Through the NEPTUN system.

Justification of absence from the exam: A telephone message to the secretary of the Institute.

Textbook:
Conrad Fischer–Caterina Oneto (2009): USMLE Medical Ethics: The 100 cases you are most likely to see on the exam (Second edition) New York: Kaplan Publishing ISBN: 9781419553141
SOCIOLOGY

(14 hours)

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

Course syllabus
1 Social Science and Pharmacy (lecture)
2 Sociological Understanding of Health and Illness (lecture)
3 Lay Health Beliefs and “Help-seeking” Behavior (lecture)
4 Social Factors and Health (lecture)
5 Social Inequalities and Health (lecture)
6 Is Pharmacy a Profession? (lecture)
7 Pharmacist and Health Promotion (lecture)

Course Faculty:
Zsuzsa Szántó, PhD, (Head of the Department of Sociology), 210-2930/56338; e-mail: szanusz@net.sote.hu
Katalin Kovács, PhD e-mail: kovacsk.katalin@gmail.com

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

Important notes: To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. (Two absences from the lectures is the maximum number permitted.) The student can make up for the absences in practicals held at other times elsewhere. Participation submitting home paper.
Justifying absence: with doctor’s certificate
Semester grade: The result of the semi-final and home paper.
Justifying absence from the exam: A telephone message to the secretary of the Institute.

Textbook:
2 Handouts for the lectures will be accessible on the homepage of the Institute of Behavioral Sciences: www.magtud.sote.hu.
PHARMACY ADMINISTRATION II.

Faculty of Pharmacy
University Pharmacy Department of Pharmacy Administration

Director: Prof. Dr. Romána Zelkó
Tutor: Dr. Ágnes Mészáros

5th year term 1

Lectures
1. Dispensing in Pharmacy
2. Reimbursement systems
3. RCT and clinical trials
4. Evidence Based Pharmacy
5. Pharmacoeconomics 1.
6. Pharmacoeconomics 2.
7. Quality of life analysis
8. Pharmaceutical research and development, Pharmaceutical industry
9. Good Manufacturing Practice (GMP), Good Laboratory Practice (GLP)
10. Good Documentation Systems, QC
11. Trends in the international drug markets
12. Marketing of pharmaceuticals

Practical lessons
1. Hospital Pharmacy Management
2. Micromedix, drug information
3. Publication strategies
4. Medline 1
5. Medline 2, IPA
6. Drug information, Micromedix
7. Presentation concerning health promotion
8. Internet in Pharmacy, computer skills
9. Quality criteria of economic evaluations
10. Critical decision making
11. Supply of OTC medicines
12. Consultation, assessment
DRUG THERAPY

Course Director: Prof. Dr. Éva Szökő
Tutor: Dr. Tamás Tábi

Department of Pharmacodynamics

Lecture: 2
Practice: 2
Credit: 4
Exam: semi-final (oral)

First semester

Program:

Lectures:
1. week: Strategies of drug therapy. Evidence based medicine
2. week: Drug therapy of chronic cardiac failure and hypertension
3. week: Therapy of acute and chronic joint disorders
4. week: Pharmacotherapy of neuropathic pain and some neurological diseases
5. week: Pain management in cancer
6. week: Therapy of dermatologic inflammations
7. week: Therapy of gastroenterological diseases
8. week: Therapy of eye disorders
9. week: Therapy of urological disorders
10. week: Contraception. Treatment of common gynecological disorders
11. week: Vaccination
12. week: Drug usage in the elderly and during pregnancy

Practices:
1. week: Treatment of venous disorders
2. week: Therapy of diabetes mellitus
3. week: Treatment of ischemic heart disease and myocardial infarction
4. week: Therapy of allergic rhinitis
5. week: Treatment of skin disorders
6. week: Drug therapy of anxiety and insomnia
7. week: Therapy of GI disorders
8. week: Therapy of asthma and COPD
9. week: Therapy of osteoporosis
10. week: Therapy of Parkinson’s disease and schizophrenia
11. week: Therapy of community acquired infections
12. week: Therapy of breast and colorectal cancer
FACULTATIVE SUBJECTS

PHYTOCHEMISTRY Institute of Pharmacognosy

The aim of this subject is to introduce the pharmacy students interested in crude drug researches and knowledges deeper into phytochemistry. It is a laboratory practice completed with some theoretical lectures. Learning this theses, the students obtain an expertness in the qualification and standardization of crude drugs and herbal remedies, as well as in discovery of biologically active substances from them, using different isolation methods and chromatographic (TLC, GC, HPLC) techniques, photometry or other equipment. They acquire the identification and characterization of the most important substances and attain the mode of the scientific research work in this field.

1. Investigation methods used in phytochemistry
   UV and IR spectroscopy in phytochemical analysis

2. Chromatography (TLC, PLC, HPLC, GC) in phytochemical analysis.

3. Type of active substances and their quantitative determination in plant material
   Different methods and their comparing valuation for the determination of flavonoid content.

4. Determination of tannin and procyanidin content, determination of anthraglycoside content, determination of total essential oil content.

5. Determination of alkaloid content, determination of bitter substance content.

6. Qualitative investigation and detection of active components
   TLC investigations of different glycosides and their aglycons.

7. GC investigation of essential oil components

8. Possibility of standardization of complex plant products
   Preparing (extraction, purification, etc.) of investigated samples dependent on different medicament forms.

9. Chemical analysis of tea mixtures, tea decocts, aqueous solutions

10. Chemical analysis of tinctures, aqueous alcoholic solution

11. Chemical analysis of oleaginous solutions, ointments

12. Consultation
PHYTOTHERAPY

Institute of Pharmacognosy
3 hours/week

2. Plants and the nervous system.
3. Plants and the cardiovascular system.
4. Plants and metabolic diseases.
5. Plants and the renal system.
6. Anti-inflammatory plants.
7. Plants and the respiratory system.
8. Plants and the reproductive system.
9. Plants and the digestive system.
10. Plants and the liver and biliary system.
11. Plants and the cutaneous system.
HEALTH INFORMATICS

Name of the educational organizational unit: SE EKK Institute of Digital Health Sciences
Name of the subject: Health Informatics
Type of the subject: 3 theory / week
Code: GYINFEUIE1A
Credit value: 2
Name of the lecturer of the subject: Dr. Miklós Szócska
Teachers: Prof. Dr. Elek Dinya

Term: autumn

The exercise of the subject in the in the realization of the aim of the education:
Biostatistics is an innovative field that involves the design, analysis, and interpretation of data for studies in public health and medicine. Biostatistics experts arrive at conclusions about disease and health risks by evaluating and applying mathematical and statistical formulas to the factors that impact health. By looking at empirical data, such as the outcome of a clinical trial, you can predict whether a medical treatment will help a sick patient. Choose this subject if you have a mathematics background and a strong interest in biology and public health. This program emphasizes statistical theory and methods and will prepare you to design, execute, and collaborate on all types of studies as well as contribute to the methodological development of biostatistics.

Topics of the subject:
3. Parametric tests I.: one sample, paired and two sample t-tests. Effect size calculations.
8. Classification functions: sensitivity, specificity, OR, RR calculations. ROC analysis.
10. Logistic regression.
12. Survival analysis II.: Cox-model.
14. Test

The mode of the certificate in case of absence from the lessons and from the exams:
According to rules of the Studies and Exam Code.

The requirements of signature at the end of the term (including also the number and the type of the students’ exercises which are solved individual by them):
To participate on at least 75% of the total number of lessons is a prerequisite for getting the signature. Maximum number of absences in a semester is 3.

The mode of acquisition of the mark:
Exam: Course will conclude with a written semi-final examination in the examination period. Statistical problems should be solved in written.

Type of the exam:
Colloquium.
Exam requirements:
Content of the lectures.

Mode of the application for the exam:
Via Neptun system.

Order of the modification of exam application:
According to Studies and Exams Code.

Mode of the certification in case of absence from the exam:
By a medical certification within three days.

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:
The use of educational materials on the institute website is obligatory: www.semelweis.hu/dei

Recommended literature:
BIOINORGANIC CHEMISTRY

Institute of Chemistry, Department of Analytical Chemistry (ELTE)

During the last two decades our knowledge on the behavior of metals and some nonmetals (e.g. boron, silicon, selenium) has widened considerably. As a result of this the cooperation between inorganic chemists, biochemists and biologists became most involved and a new multidisciplinary branch of natural sciences developed that is termed bioinorganic chemistry or inorganic biochemistry.

It is rather difficult to mark the boundaries of this discipline since it includes biological metabolic processes and syntheses where metal ions and/or metal complexes are involved as well as ion transport, biomineralization, metal toxicity, chelate therapy, and the application of metal complexes in the treatment of different conditions.

In order to understand all aspects of the material discussed in the course a brief summary is given on metal coordination compounds: on their sterochemistry, equilibria and kinetics.

A rather fascinating problem is how certain metal ions have been selected during a long evolutionary process for biological purposes, and how the various metal containing systems developed due to the change of the geoenvironment.

The biosystems take up metals and non-metals from the geosphere. The entry of an element into the living system and its incorporation into a specific site of a biomolecule is a multistep process controlled both by thermodynamic and kinetic factors. This will be demonstrated on many examples including metal ions, anions, and neutral molecules.

In the following topics the roles of bioessential metals are dealt with. Many physiological phenomena are connected to the biochemistry of sodium, potassium, magnesium, and calcium, e.g. the conduction of nerve impulses, muscle contraction, and blood clotting.

Zinc metalloenzymes are most abundant in the living organism and catalyze a large number of hydrolitic and group transfer reactions. Iron, copper and molybdenum take part in many bioredox processes, and the former two metals also in the transport of molecular oxygen. Also, cobalt, manganese, chromium, nickel and vanadium have their roles in important biochemical processes.

Transition metals are needed to activate small molecules as CO₂, N₂ and O₂. The biochemistry of the latters is an intriguing topic of bioinorganic chemistry. The deposition of certain solid inorganic compounds (CaCO₃, Ca-phosphates, etc.) in the organism is under biological control and worth dealing with briefly.

Among the biomedical problems some metaldependent diseases (e.g. Wilson’s disease, Menkes’ disease) are touched upon. Much time will be devoted to metal complexes of antitumor activity and to those that are used in the treatment of rheumathoid arthritis.

Metal ion toxicity, an increasing hazard due to the contaminated environment, and chelate therapy are the topics that also deserve attention.

A look into the future closes the course.
BIOTECHNOLOGY

Department of Plant Anatomy (ELTE)

Topics
3. Introduction to genetic engineering The emergence of recombinant DNA technology. Regulation and control of recombinant DNA experimentation. Basic recombinant DNA techniques. Restriction endonucleases and other DNA and RNA modification enzymes.
ENVIRONMENT PROTECTION – ECOLOGY

Institute of Public Health

“... One of the fundamental human rights is to live in a healthy environment appropriate to the dignity of man ... But the man is responsible for this environment not only to the contemporary society but to the rising generations too...”
(Proclamation of the UNO conference on Environmental Protection, Stockholm, 16. June, 1972.)

Aim of the training:
Teaching of general and profession-orientated subjects of environment protection based on the studies of human ecology and environmental hygiene/epidemiology, which are obligatory for all students in the course of Hygiene and Epidemiology in the first semester of the fourth study-year.

PROGRAMME

A) General relations

I Environmental conditions of living. Biosphere. Adaptation to the environment.
Self regulating systems in (global and local) ecosystems. “Nourishment chains” (systems) – ability for maintaining.
The “environment” as a unified system.

II Regenerating and non-regenerating resources for the humans (thesis of the “Roman Club”).
Influences of human activities on biogeochemical circulation.
Anthropogenic pollution of the environment – indirect and direct dangers.
Possibilities of protection: environment – spare technological procedures; biodegradability; technical development; waste materials: reduction of its quantity, reutilization, neutralization of toxic and radioactive materials.

III Primary prevention of actual environmental damages, hygienic standardization.

B) Professional knowledge

I Environmental pollution due to sanitary activities – prophylaxis, protection.

II Environmental pollution due to pharmaceutical activities-prophylaxis, protection:

a) production and preparation of drugs
biotechnology,
medical plants\drugs,
basic and subsidiary materials of drugs,
packaging materials,
chemical medicaments,
biological, immunological and microbiological products,
plant protecting materials, insecticides, pesticides;

b) distribution and utilization of drugs;

c) scientific and laboratory activities.
PHARMACEUTICAL COMPOUNDING
(oblatory elective course)

Department of Pharmaceutics
Head: Dr. István Antal

Credit: 2

Second semester

Lectures
The significance of the pharmaceutical compounding.
Past and future of pharmaceutical compounding.
Combined preparations for individual therapy.
Pharmacopoeial aspects of compounded dosage forms.
Practical guidelines for traditional compounding (Formulae Normales).
Pharmaceutical substances, synonyms.
Dose calculations.
Functional excipients in the formulation. The quality of starting materials.
Practical problems of incompatibilities in combined preparations.
The evolution of the patient centric formulation.
Technological aspects of the quality for individual preparations.
Operations and equipments.
Procedures and techniques.
Summary and overview, consultation.
PHARMACOINFORMATICS

3 hours/ week

1. Aims :
   - to present state of art computing and telecommunication techniques including the INTERNET and to illustrate how these techniques are applied in drug industry, pharmacies and clinical patient management.
   - to discuss various data base and knowledge base management systems, health care information systems, decision support tools for pharmacotherapeutic problem solving, educational programs and telemedicine techniques as they are applied in drug research and development, and in evidence based pharmacotherapy
   - to teach pharmacy students how to rely on informatics tools when making cost effective decisions and trying to improve patient compliance.

2. Organization of the course :
The course consists of lectures and practices. Lectures provide theoretical foundations as well as examples of the use of various technologies and methods in research and pharmacy practice. Practices allow students to work with different medical databases, information systems, and decision support tools that address various drug related problems

<table>
<thead>
<tr>
<th>Lectures</th>
<th>References</th>
<th>Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MEDICAL INFORMATICS AS A DISCIPLINE</td>
<td>HEALTH INFORMATICS IN THE 21st CENTURY by John Mantas, Document 506</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>GLOBAL INFORMATION SOCIETY AND HEALTHCARE by Jean ROBERTS Document 508</td>
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<tr>
<td>2. DATA TYPES, CLINICAL DATABASES, DATABASE MODELS, AND MEDICAL IMAGES</td>
<td>TERMING, CODING AND GROUPING SYSTEMS IN HEALTH by Rudiger KLAR, Document 416 DATABASES, SPREADSHEETS AND WORD PROCESSING IN HEALTH by Francesco PINCIROLI, Luisa PORTONI Document 401</td>
<td>2</td>
</tr>
<tr>
<td>3. THE THERAPEUTIC PROCESS AND THE MEDICAL RECORD</td>
<td>HEALTHCARE RECORD by Jos AARTS Document 407</td>
<td>2</td>
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<tr>
<td>4. HEALTH CARE INFORMATION SYSTEMS</td>
<td>OPERATIONAL USES OF HOSPITAL INFORMATION SYSTEMS by MarieChristine JAULENT, Document 405 ARCHITECTURES IN HEALTH by Sergio TORRES, Jose TORRES Document 422</td>
<td>2</td>
</tr>
<tr>
<td>5. COMPUTER-BASED SUPPORT FOR PHARMACISTS (AN OVERVIEW)</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>6. REPRESENTING DRUG-RELATED KNOWLEDGE (classification of drugs, describing drug properties, drug informationsystems, examples</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>7. HOSPITAL PHARMACY AND DRUG-USE MONITORING SYSTEMS</td>
<td>EH Shortliffe and LE Perrault Medical Informatics, Reading MA Addison Wesley, 1990</td>
<td>2</td>
</tr>
<tr>
<td>8. INFORMATION RESOURCES AND THE INTERNET, KNOWLEDGE COUPLERS EVIDENCE-BASED DRUG THERAPY (pharmacoeconomics and outcome research planning therapeutic protocols)</td>
<td>REFERENCE SOURCES IN HEALTH by Jean ROBERTS, UK Document 412 ELECTRONIC COMMUNICATIONS IN HEALTH by Enrique GOMEZ AGUILERA, Francisco DEL POZO GUERRERO, Teresa ARREDONDO WALDMeyer, Andres MARTINEZ FERNANDEZ, Document 403</td>
<td>2</td>
</tr>
<tr>
<td>9. INFORMATICS OF DRUG PRESCRIPTION</td>
<td>EXPERT SYSTEMS AND ARTIFICIAL INTELLIGENCE IN HEALTH by Jana ZVAROVA, Jan TALMON Document 424 COMPUTER-AIDED DIAGNOSTIC SUPPORT by Ann OOSTENDORP, Document 408</td>
<td>2</td>
</tr>
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<td><strong>Total:</strong></td>
<td></td>
<td><strong>20</strong></td>
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PRACTICES:

| 1. Informatics of high throughput screening (METABOL EXPERT) | 2 |
| 2. Drug information systems (Micromedex and Internet resources) Resources of evidence based medicine (Cochrane library) | 2 |
| 3. Analysis of dose response data in pharmacology (PROBIT analysis) Evaluation of clinical trial data (analysis of variance) | 2 |
| 4. An antibiotic advisor UTI | 2 |
| 5. A drug-dosage planning assistant USC PACK | 2 |
| **Total:** | **10** |
CLINICAL PHYSIOLOGY LABORATORY MEASUREMENTS

GYKIKKFVE1A

Elective course for pharmacy students in the 3rd, 4th and 5th years.
The purpose of the subject is to familiarize pharmacy students with the background, uses and implementation of clinical diagnostic measurement techniques which are closely related to the knowledge acquired on the physiology course. The course provides theoretical and practical knowledge which helps to integrate basic physiology in the broader scope of clinical and pharmaceutical sciences. Moreover, the subject helps to develop fundamental skills which are relevant for proficient medical professionals (measurement skills, presentation of precise documentation, cooperativity etc.).

Program:

Theoretical course:

1st week  Introduction to the bases of measurement techniques.
2nd week  Scientific and diagnostic measurement techniques for studying the electrophysiology of motor nerves, neuromuscular transmission and skeletal muscle.
5th week  Electrophysiology of the heart, cardiac arrhythmias. Regulation of arterial blood pressure under physiological and pathophysiological conditions. The characteristics of the pulse wave propagation.
7th week  Mechanical properties of the respiratory system under physiological conditions and in respiratory diseases. Adaptation of the cardiorespiratory system to physical exercise.
9th week  Regulation of carbohydrate metabolism and its disorders.
11th week  Reflexes of the somatic nervous system. Function of the vestibular system. Regulation of body position under physiological conditions and in neural disorders.
13th week  Consultation

Practical course:

2nd week  Introduction to the uses of instruments and data acquisition software applied during the course
4th week  Electromyography, electroneurography. Study of the electrical properties of the skeletal muscle, measurement of the impulse conduction velocity of a motor nerve by Biopac student lab system.
6th week  Measurement of pulse wave velocity. Recording and analysis of a 12-lead ECG. Demonstration of pathological ECG recordings. 8th week - Spirometry. Studying the circulatory and respiratory adaptation responses during physical exercise
10th week  Oral glucose tolerance test, determination of HbA1c level, analysis of normal and pathologic glucose tolerance curves.
12th week  Neurological examination techniques: examination of motor reflexes and vestibular function, EOG.
13th week  Optional lab retake.
14th week  Repetition and practice for the practical exam

Acknowledgement of the course: Attendance of at least 6 lab practices and 5 theoretical classes; presentation of the completed lab manual to the tutor. Semifinal exam. Two (2) credit points will be provided after a successful completion of the course.

PHYSICAL BASICS OF BIOPHYSICS – obligatory elective subject for Pharmacy (Dentistry students may sign up, too)

Code: GYFIZBFAE1A
EVALUATION OF PROGRESS

Grading system
a) Five-scale
   excellent (5)
   good (4)
   satisfactory (3)
   pass (2)
   fail (1)
b) Three-scale
   merit (5)
   pass (3)
   unsatisfactory (1)

Types of evaluation
1. Practical course grade (gyakorlati jegy) (according to either the 5-scale or the 3-scale grading system)
2. Semi-final examination (kollokvium) Evaluation of a one-semester subject matter (1–5 grading system)
3. Final examination (szigorlat) Evaluation of the whole subject matter (1–5 grading system)
4. Obligatory practice at hospital (3-scale grading system)

Average Results
When the student has taken all the compulsory examinations and fulfilled every other obligation during the examination period, the semester will be validated in the student’s lecture book by the Dean’s signature.

The student’s average results are:

- Outstanding (kitűnő) if the average is 5.00
- Excellent (jeles) if the average is 4.51–4.99
- Good (jó) if the average is 3.51–4.50
- Satisfactory (közepes) if the average is 2.51–3.50
- Pass (elégséges) if the average is 2.00–2.50
EXEMPTION

Exemption from courses and examinations may be granted on the basis of the student’s previously documented studies or additional credit-by-examinations stipulated by the departments. The student must submit all relevant documents at the departments concerned. Exemption may be granted by the Educational Board of each Faculty on the basis of the department’s written prior approval. “Checking” exams can be prescribed by the departments. PE exemption: Only under condition the diagnosis is checked by a licensed Hungarian health care practitioner, too.

Application deadline: Prior to registration to the first and the second semester!
For transfer students admitted at the Faculty of Dentistry: July 15

No reduction of tuition fee is granted in case of exemptions.
DIPLOMA WORK (Degree Thesis) AT THE FACULTY OF MEDICINE AND PHARMACEUTICAL SCIENCES

The dissertation and degree thesis

1. In Bachelor’s programmes, Master’s programmes and undivided programmes, students must prepare a dissertation or a degree thesis in order to obtain a degree. The purpose of the dissertation is to contribute to students’ improving their ability of discernment and mastering the methods of using libraries and researching specialist literature, and their ability to formulate their opinions succinctly and accurately, by means of independently performing a scientific study of any problem in the given area of science.

2. The preparation of a dissertation (degree thesis) is guided by a thesis supervisor and occasionally also by a consultant. The thesis supervisor can be a professor or researcher of the faculty, or, if authorised by the dean, an external expert. The consultant is a university lecturer, a researcher or an external expert who supports the student’s work. An external thesis supervisor may only be used if an internal consultant is used. Both the fundamental and newest Hungarian studies relating to the subject must be used in processing the subject.

3. The rules for announcing and approving topics for dissertations (degree theses):
   The educational organisational unit prepares a list of topics, which must also contain the names of consultants. The list of topics must be published both on the department’s notice board and electronically by the last day of the examination period of the first term of every year, in the case of Bachelor programmes, Master programmes and undivided programmes at least four terms before the year of graduation.

4. Rules for applying for the topics:
   Students may choose any of the announced topics. Students may also choose topics other than those announced subject to the approval of the head of the competent educational organisational unit. The student must choose and submit the topic of their dissertation to the head of the given educational organisational unit at least one year before graduation at the latest. If the topic is approved, the head of the unit will arrange its registration and provide a consultant. The chosen topic must discuss a current issue of the discipline concerned.

5. Formal requirements of the dissertation:
   The minimum length of the degree thesis is 50,000 characters and it cannot be longer than 100,000 characters (without spaces). Font: Times New Roman, 12. Tables and the cited literature will be included in the length of the thesis but diagrams, other relevant literature and footnotes will not. The degree thesis must be submitted in 2 copies, stapled in a folder or bound as a book. The cover must show the title of the thesis, the student’s name, year and study group, the date of submission and the consultant’s name and workplace. If authorised by the head of department, the student may submit their degree thesis in a foreign language.

6. The submission deadline:
   The student must meet the consultant at least three times:
   – for the first time no later than 1 October of the year of graduation: the consultant outlines the requirements relating to the preparation of the degree thesis and the possibilities inherent in the topic;
   – for the second time no later than 15 November of the year of graduation: the student gives an account of the work until that time;
   – for the third time no later than 1 January of the year of graduation: the consultant evaluates the results achieved by the student and advises the student on finalising the findings.

   The finished dissertation must be submitted to the department in duplicate, by January 15 of the year of graduation at the latest. At the Faculty of Pharmaceutical Sciences this deadline is 1 March in the year of graduation.

7. The dissertation (degree thesis) must be assessed by a reviewer. The reviewer must be an external expert holding a university degree (college degree) or a university lecturer or researcher invited by the head of the educational organisational unit. The reviewer will also prepare a separate evaluation. The assessments must be sent to the candidate at least 5 days before the dissertation (degree thesis) defence. The reviewer and the thesis supervisor make a proposal on grading the dissertation (degree thesis).

8. The subject of dissertations (degree theses) must fall within mandatory subjects and they are evaluated on a scale of five grades (1-5). The extent of independent research demonstrated in the paper must be taken into account when assessing the dissertation (degree thesis). Dissertations are defended before a panel made up of three members from the educational organisational unit, the chairperson of which is the head of the educational organisational unit or a deputy, and its other members are the consultant and a lecturer of the department. The department may also invite an external lecturer as the third member of the panel, for example from among the private lecturers of the university.

   In the event that the thesis is graded as “fail”, the head of the educational organisational unit informs the student of this and the conditions of a repeat thesis.

   A dissertation (degree thesis) marked as “unsatisfactory” can only be corrected once.
9. After the defence, the head of the educational organisational unit will hand over a copy of the dissertation to the student and the other copy, as well as a copy of the minutes certifying the defence, will remain with the educational organisational unit. Dissertations must be stored in the library of the educational organisational unit for five years.

A copy of the thesis defence minutes must be sent to the competent dean's office by 1 April at the latest.

10. Based on the proposal of the head of the educational organisational unit responsible for the subject of the dissertation, the dean of the competent Faculty may exempt the following students from the obligation of writing a dissertation:

   – Students who prepared an individual competition essay or a joint competition essay (with two authors) for a competition announced by the rector, and achieved first place.

   – Students publishing a paper as the primary author in a peer-reviewed scientific journal.

Students must submit their applications for exemption by the end of the academic year preceding the year of graduation. The exemption from writing the dissertation does not involve an exemption from the obligation to defend it.

11. The educational organisational unit will return a copy of the successfully defended dissertation (degree thesis) to the student after the defence, and the other copy must be stored in the organisational unit in accordance with the effective archiving rules.

A copy of the form specified in Annex 1, completed in duplicate, must be sent to the competent Dean's Office 60 days before the final examination period, while the other copy of the form will remain at the organisational unit.
PLAGIARISM DECLARATION

at the Faculty of Medicine

(Declaration on compliance with regulations on preparing thesis work)

I, the undersigned, name: ................................................................. hereby declare by signing this declaration that this thesis work, entitled:

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is my own work, and I adhered to the provisions of Act LXXVI of 1999 on Copyright in the preparation of the thesis work and respected the rules laid down by the University.

I acknowledge by signing this declaration that Semmelweis University refuses accepting the thesis provided it can be proved that this thesis work was not carried out by me or violation of copyright law arises with regard to the thesis.

I am also aware, that the authorization holders may take action against me because of violation of copyright law, which may result in legal consequences, including consequences of civil law, infringements act and criminal law.

Budapest, ................................................................., 20..............

.................................................................

student’s signature
Rules and requirements of writing a diploma thesis at the Faculty of Dentistry

The student has to write a diploma thesis in order to obtain the certificate. The aim of the diploma thesis is to facilitate, by individually processing any topic of a particular scientific field on a scientific level, the ability to tackle problems during professional activities, to acquire the methods of using the library and literature, and to be able to form an opinion in a straightforward and exact way.

I. THE METHOD OF ANNOUNCING AND CHOOSING THE DIPLOMA THESIS TOPICS

Diploma thesis topics are practically divided into three groups:

A) Free to choose topics (topics published by the departments, free to be chosen by any student)
B) Topics related to work within the Union Of Research Students (topics announced for students working in it)
C) Topics suggested by the student (topics found out by the student and student found a tutor to be his/her supervisor)

II. ANNOUNCING THE DIPLOMA THESIS TOPICS

1. The announcement and acceptance of the topics are the tasks of the clinics / institutes that forward the detailed list of students and corresponding topics by the deadline to the Dean’s Office (hereinafter: DO) and to the Foreign Students’ Secretariat (hereinafter: FSS). The Study and Examination Committee’s approval is only necessary when changing a topic after the period of topic selection, in accordance with the rules set out in section VI.

Mainly the supervisor is responsible for the topic to be elaborated, who has to check the websites of DO and FSS where a list of topics of earlier, successful diploma theses is available. It is the supervisor’s task to check whether the particular topic has been elaborated in the last three years in any languages of the foreign language programmes. Such a topic cannot be announced as free to choose which is reserved for a student conducting work within the Union Of Research Students at a clinic / institute, furthermore it is not possible to approve a topic which has already been announced in the same year for dentistry students at any clinic / institute, or has been elaborated in the last three years. The tutors of the particular clinic / institute are also responsible for the announced topics / titles, their task is to check and confirm whether the particular topic has been elaborated in any of the languages of the foreign language programmes at the institute. Such topics must be taken off the list before sending them to the DO and the FSS, these must not be announced.

Should the student choose an external supervisor, the topic has to be accepted by any of the clinics / institutes of the faculty, and an internal supervisor must be appointed, too.

2. In one semester, regardless of the language of the diploma thesis, a supervisor is not allowed to supervise the elaboration of more than 3 topics announced, or elaborated as a topic related to work within the Union of Research Students, however, if necessary, it may accept supervisory role in topics initiated by students.

The Excel sheets containing the free to choose topics, the topics related to work within the Union of Research Students (in the attached format) and the names of the corresponding supervisors are prepared by the educational organisational units, separately in the individual languages of the foreign language programmes, and sent every school year until the last school day of the spring semester to DO and FSS. In terms of topics related to work within the Union of Research Students, the names of the students working on the topics are to be indicated, too.

3. The educational organisational units announce a total number of free to choose topics and topics related to work within the Union of Research Students on a faculty level that equals at least to the number of students to be in year IV.

4. The recipients of the lists summarise the information and if it may turn out that not enough topics were announced, then, in order to have at least one topic per student, the DO and the FSS indicate to the clinics / institutes that how many topics are missing, and how many additional topics should be announced proportionately to the number of tutors. Should the DO or the FSS find topics with the same title, they consult with the supervisors regarding the amendments. The list of topics is finalised until the end of the exam period and made available to the students on the appropriate webpages (DO and FSS).

III. TOPIC SELECTION

First, the students have to decide which topic they want to choose from the above types.

1. Students choosing from the free to choose topics have to provide the chosen topics until 1 October to the students’ representative, elected by the students in the beginning of the school year. The students’ representative, in case of Hungarian language programmes, must be an active member of the Students’ Union. If this is not possible, the Students’ Union, in accordance with its Committee’s decision, appoints a student for this task from the particular year. In case of international students, the students’ representative is an elected member of the foreign students’ association, or if this is not possible, then it is someone appointed by
them from the particular year. Their task is to summarise and submit the choices of students to the competent parties (DO or FSS).

When choosing the topics, the students are allowed to consult with each other, avoiding the situation when a topic is chosen by more than one student. Should a topic still be chosen by more than one student, the student with the best cumulated academic result is entitled to write the diploma thesis in the particular topic. The competent colleague at the DO and the FSS uploads the name of the student next to the topics on the appropriate webpages until 7 October. Should someone not be able to choose a topic in the first round, he/she may choose from the remaining topics in a second round until 15 October. The distribution of these topics is in accordance with the same principle applied in round one, or alternatively they can write the diploma thesis in a topic they suggest or a topic approved by a clinic / institute, in accordance with the above procedure, with the same deadline of 15 October.

Should someone not be able to choose a topic even in this second round, he/she has the opportunity to choose from the remaining topics until 31 October or to have a suggested topic approved by then. The topic selection period closes with this deadline.

2. Students writing the diploma thesis in a topic related to work within the Union of Research Students must submit the confirmation of acceptance issued by the clinic / institute to DO or FSS until 15 October.

3. Students not choosing from the free to choose topics and not conducting work within the Union of Research Students, must find a tutor for a suggested topic, an external supervisor, and an internal supervisor from any of the clinics / institutes undertaking the supervisory role for the suggested topic. They also have to submit the confirmation of acceptance issued by the clinic / institute to DO or FSS until 15 October. In such cases the clinics / institutes proceed with due diligence so that the accepted topic will not be either on the list of free to choose topics, or on the topics list related to work within the Union of Research Students (the lists uploaded to the webpages are checked).

IV. DIPLOMA THESIS TOPIC ACCEPTANCE

As of 31 October, the topic selection period closes and as of 7 November the diploma thesis topics as well as the names of the students are available on the webpages. Correspondingly, the clinics / institutes issue the confirmations of acceptance that are to be submitted in their correct form until 20 November to DO or FSS. The details provided on the confirmations of acceptance must correspond to the details of the lists uploaded to the webpages.

V. REQUESTING EXEMPTION FROM WRITING THE DIPLOMA THESIS

1. In accordance with the recommendation of the leader of the competent educational organisational unit the Dean may approve research essays with awards I., II. and III. to be a diploma thesis with excellent grade, should the student request this in its application submitted to the Dean’s Office (pursuant to section III/10 of the Rector’s competition announced for Semmelweis University students).

2. Pursuant to the relevant resolution of the faculty, in cases where there are maximum two authors, students who prepared a research essay that was graded with honours, or received an award at a competition of a professional scientific association, in accordance with the recommendation of the leader of the competent educational organisational unit, may request the Dean to be allowed to submit their research essay in compliance with the above conditions as their diploma thesis. Should the Dean conclude a positive decision on their request, they have to submit their research essay digitally and in printed version until the stipulated deadline at the competent educational organisational unit where the diploma thesis defence takes place. In such cases it is not mandatory to comply with the formal requirements of a diploma thesis.

3. The application for exemption must be submitted by the student to the Dean’s Office at the latest by the last school day of the 8th semester. Applications submitted with a delay will be rejected without further consideration.

VI. CHANGING THE SELECTED AND ACCEPTED TOPIC / SUPERVISOR

After the topic selection there is only one opportunity to exercise any sort of amendment. The corresponding application may be submitted to the Study and Examination Committee until the last school day of the 9th semester. The Study and Examination Committee may approve the amendment of the topic only in justified cases. The amendment of the topic will not be approved after the deadline, with the exception when it becomes necessary due to a reason not attributable to student. Should there be any changes in the supervisor, the written contribution of the supervisor handing over the supervision must be included on the filled application.
VII. THE DIPLOMA THESIS
1. The diploma thesis is a professional task prepared with scientific standards, processing a topic closely related to the practice and theoretical background of dentistry, with creativity, theoretically substantiated, while applying a practical approach. While processing the topic, the relevant, essential and latest domestic and international discussions and researches must be considered. The diploma thesis is to be elaborated on the basis of the student’s studies, in consideration and application of the domestic and international literature, under the guidance of the supervisor.

2. It is mandatory for the student to consult with the supervisor at least three times during the preparation of the diploma thesis (first time until 1 October in the final year, second time until 1 November, when the student reports on its work conducted so far, and the third time until 1 December, when the supervisor evaluates the student’s results and provides guidance on how to finalise the work, write and submit the diploma thesis). These occasions must be recorded in writing.

3. It is the supervisor’s duty to be available for consultation. At the consultation sessions the supervisor helps the student in collecting the literature and the sources necessary for the diploma thesis, it assesses whether the work is in accordance with the schedule, and gives recommendations regarding the issues that may arise during the work. It is also the supervisor’s task to help the student in achieving the final form of the diploma thesis, in consideration of the formal requirements and its content.

4. The leader of the competent educational organisational unit may reject the continuation of writing the diploma thesis, and the execution of the diploma thesis defence, should the supervisor indicate that the student does not comply with its obligations on an ongoing basis. Should the supervisor, in accordance with the student’s opinion, not provide valuable assistance in writing the diploma thesis, the student may contact the leader of the competent educational organisational unit.

5. The finalised diploma thesis must be submitted in the last school year until 15 February to the department in two, identical, printed copies, and electronically, burned on a CD (both in Word and PDF formats).

6. Should the student fail to submit the diploma thesis by the deadline demonstrably through no fault of its own, the deadline may be extended by a maximum of one month and on one occasion, with the written contribution of the supervisor and the leader of the competent educational organisational unit (in case when their opinions differ, the decision of the leader of the organisational unit prevails), and with the approval of the Study and Examination Committee. In such an instance the latest deadline of submitting the diploma thesis is 14 March.

VIII. DIPLOMA THESIS EVALUATION
1. A pre-condition of the final exam is obtaining the pre-degree certificate stating that all course-units have been completed [NITV.108.§.(43.)], and a diploma thesis approved by an examiner called on by the leader of the institute announcing the topic, defended at the Evaluation Committee (obtaining at least a ‘pass’ grade).

2. The supervisor evaluates the submitted diploma thesis. The written evaluation considers the compliance with the formal requirements and the required content, and includes the evaluation of the student’s work. It evaluates the diploma thesis with a grade between 1-5.

3. The leader of the competent organisational unit responsible for organising the occasion of the diploma thesis defence has a tutor (hereinafter: ‘opponent’) with experience in the topic examining the diploma thesis, preparing a written evaluation of it, and grading it with a value between 1-5.

4. The qualification (grade) of the diploma thesis recommended by the examiner and the supervisor is not part of the written evaluation prepared for the student, these are delivered to the author at least 5 days before the diploma thesis defence. The examiner asks questions in its review, to be answered by the student during the diploma thesis defence.

5. The diploma thesis defence includes a maximum of 8 minutes long presentation, summarising the most important elements and conclusions of the diploma thesis, using a PowerPoint presentation, and responding to the questions asked by the examiner and the Committee. The diploma thesis defence takes place in front of the Committee of the educational organisational unit, consisting of at least three persons. The chairman is the leader, or its deputy, of the educational organisational unit, whereas the other members are the supervisor and the examiner of the diploma thesis. In case of an external supervisor, both the external and internal supervisors must be present.

6. The diploma thesis, classified as an obligatory elective subject, is graded between 1-5. Grades: fail (1), pass (2), satisfactory (3), good (4), excellent (5). The evaluation is done by the Committee after listening to the student’s presentation and receiving the answers for the written and orally asked questions. The extent of the individual research that the diploma thesis contains is considered in the evaluation as well as the preliminary recommendations of the supervisor and the opponent. A record of the defence must be prepared in accordance with the regulations.
7. A maximum of one month deadline may be offered for the resubmission, and for the correction and amendment of diploma theses that do not comply with the formal requirements (i.e. less than 50,000 characters - without spaces). The amended diploma thesis must be submitted at the latest by 14 March (in semester 10). The diploma thesis defence takes place at the latest by 1 May in semester 10.

8. There is a possibility to resubmit the diploma thesis that received a ‘fail’ grade, for whatever reason, until 20 August. These students are not entitled to attend the normal final exam, only its retake at the end of August. A failed diploma thesis defence may be retaken only once. (TVSz. 24.§. 8.)

IX. DIPLOMA THESIS EVALUATION CRITERIA

It is not allowed to defend any diploma thesis that contains plagiarism! Any quotation without quotation marks and the indication of the source, any figure, statistical data or illustration without reference to the source, paraphrasing a complete text or part of it (i.e. rephrased by the author by its own words) without referencing to the source are considered to be plagiarism.

1. Structure of the diploma thesis
   - Is it transparent?
   - Does its content correspond to the title?
   - Are there any forward-looking recommendations, conclusions?
   - Does its articulation help in the recognition of its structure?
   - Is its structure professionally correct and logical?
   - Are the individual sections and subsections appropriately separated from each other?

2. Professional relevance of the diploma thesis
   - Does it achieve the objective, are the conclusions supported?
   - Do the relevant topics of the educational content appear in the diploma thesis?
   - Is the individual examination in the foreground?
   - Does the author correctly apply the methods and tools appearing in the examination and analysis of the central topic of the diploma thesis?
   - Does it display all the necessary analytical methods?
   - Are the results and conclusions logical and valid, are they assessed in consideration of the findings of the relevant literature?

3. Using references
   - Does the student use references in the correct way?
   - Does the student summarise the references correctly and with critical thinking during the introduction, analysis of the research question, and the interpretation of the findings?
   - Do the quotations comply with the requirements?
   - Do the citations included in the text appear in the list of references (and vice versa)? Is the list of references relevant (does the relevant literature appear in it, is it up to date, is it relevant to the topic)?
   - Does it comply with the formal requirements?
   - Does it include reference to international literature?

4. Using figures and tables, other formal requirements
   - Are all figures and tables referred to in the text?
   - Is it easy to find these in consideration of the references?
   - Are the figures and tables numbered, do they have titles and references to the source?
   - Is there a transparent table of contents?
   - Are the pages numbered?
   - Is there relevant information in the header and footer and does this help in navigating in the document?
   - Is the spelling and phrasing correct?

5. Correct and consistent use of technical terms
   - Is the terminology used by the author uniform and correct?
   - Does the student use foreign terms uniformly (coherent use of medical terminology in Latin language, names of institutions)?
   - Does the student use a list of abbreviations, definitions?

6. Does the diploma thesis provide a uniform picture?
X. REQUIREMENTS

1. Requirements regarding the content of the diploma thesis

The diploma thesis is a consultative study based on individual professional work, confirming tangible knowledge and the summarising ability. The rules and spelling of the Hungarian language (or of the particular language in case of foreign language programmes) must be observed. The structure of the individual chapters and their relationship with each other must be logical, consequent, the phrasing is continuous, descriptive, free text.

2. Chapters of the diploma thesis

- Title
  This can only be the title stipulated on the confirmation of acceptance submitted to DO or FSS, chosen at the topic selection or a suggested and accepted topic.
- Table of Content
  It includes the titles of the numbered sections and subsections, and the corresponding page numbers.
- Preface
  The introduction of the theoretical and/or practical relevance of the topic, justification of the topic selection.
- Diploma thesis’s Objective
  Defining the professional objectives the author wants to achieve by introducing the topic and working out and/or solve the chosen problem.
- Literature Review
  Summarised introduction of the available and most important domestic and international publications of the chosen topic. This can be the introduction and description of the significance and issues of the topic, the applied methods, the related findings, conclusions, achievements, recommendations, and the processing of other, similar topics.
- Applied methodology
  Qualitative and quantitative methods, statistical analysis, software applied during the processing of the topic, according to their relevance. This is where the project tools are introduced, should these be integrated into the diploma thesis.
- Presentation of Results
  Factual list of the achieved professional findings and their interpretation. Figures, tables may help in the structuring and interpretation of the findings.
- Findings, forward-looking establishments, recommendations
  Confirming, challenging or rejecting conclusions, establishments, forward-looking recommendations, opinions found in the literature, relying on the findings.
- Conclusions
  A brief conclusion of the substance of the diploma thesis. The conclusion must not contain new information and establishments that have not been discussed in the diploma thesis.
- List of references (see also: formal requirements)
  Any sources of literature used and not being the intellectual property (publication, figure, table) of the author must be indicated in the list of references. By not doing so is qualified to be plagiarism, triggering the commencement of an investigation and it may also trigger the immediate suspension of the student.
- Acknowledgements
  Mentioning contributing partners who helped in writing the diploma thesis, either by providing information, analysis or professional advice.
- Figures, tables (these may also appear at other sections of the diploma thesis)
  All figures and tables must be separated with titles and numbers. The titles, the table headers, the units of the figures must be provided and indicated in a way that the figures and tables must be interpreted irrespective of the surrounding text. All figures and tables must be referred to in the text, otherwise they cannot appear in the diploma thesis. The same information should not appear in a figure and a table in the same time. Should a figure or table come from a literature source, it must be indicated below it by providing the exact reference.
- Definitions, abbreviations (if applicable)
- A declaration that the diploma thesis is the own work of the student
- Appendices
  Content not closely related to the substance, or having a longer form, such as a figure, a table, a questionnaire or other documents should appear in the appendices. The appendices must have a number and a title, and reference to them in the text.

3. Formal requirements

The general formal requirements of the diploma thesis are as follows:
wordcount: It must not be shorter than 50,000 characters or longer than 100,000 characters (without spaces). The wordcount includes the tables and the list of references, however the figures, footnotes and bibliography do not.

margins: 2.5 cm at the bottom, at the top, on the left and the right sides

margin at the binding edge: left side, 1.5 cm

page numbers at the bottom of the pages, in the middle, all pages, starting from the front page

adjustment of sections: justified

font size: 12
font: Times New Roman
font colour: black
line spacing: 1.5

table of content: provided with page numbers at the beginning of the diploma thesis. Figures and tables are numbered, provided with title, can be interpreted regardless of the surrounding text, all of them are referred to in the text with their number

printout: one sided

number of copies to be submitted: 2 printed and 2 electronic copies (Word and PDF format) burned on CD.

copies to be submitted: please submit the two printed copies in black leather hard binding (with gold lettering), the hardcover lettering must say “DIPLOMA THESIS”, under that the name of the student and the year of submission; the title of the diploma thesis, the student’s name, the supervisor’s name, title and workplace must appear on the front endpaper. Emboss the student’s name and the year on the spine.

4. Formal requirements of the list of references
   - Any literature used must be referred to by indicating the author and the year in the citation. It is also possible to indicate the number used in the list of references by applying square brackets.
   - Use alphabetical order in accordance with the names of the authors in the list of references. In terms of monographs and books provide the name(s) of the author(s), the year of publication, the title of the publication, the name of the publisher and the location of the publication. In terms of journals, after the name(s) of the author(s), the year and the title, also provide the name of the journal in *italic font*, the volume number and the page number (from - to). It is also possible to name an Internet source, in which case after the author and the title of the publication the exact web address and the date of query must be indicated.
   - It is important that all literature used must be referred to in the diploma thesis, and all conclusions, facts, data that are not the author’s own intellectual property must include the data source. Should the author refer to a source multiple times in the diploma thesis, obviously the source must be indicated at all places.
   - It is an important requirement that it is only allowed to quote any text word for word if there is an accurate indication of the source and the location of the text (page number in case of a book or journal). **By not doing so is qualified to be plagiarism and it may trigger the immediate suspension of the student in the most serious cases.**
Examples for using literature with numbers:

...  

...: „Az egyes plakk-baktériumok bakteriális felszíni molekuláiik révén a sulcus hámsejtekkel is képesek kommunikálni.” [23]  

...  

Referenciák

...


...  

The hardcover and the front endpaper of the diploma thesis:

Hardcover:


DIPLOMA THESIS

...(STUDENT’S NAME)...
XI. RETENTION
The leader of the educational organisational unit returns one copy of the diploma thesis to the student after the successful diploma thesis defence, whereas the other copy, together with a copy of the records containing the assessment and the confirmation of the successful diploma thesis defence stay with the educational organisational unit. The diploma thesis (the hardcopy and the electronic version) is retained for 5 years at the library of the educational organisational unit. The record of the diploma thesis defence is sent to the Dean’s Office at the latest until 15 April. In cases of students attending foreign language programmes the records are sent to the FSS.
Budapest, March 2018
This policy is applied for the first time in school year 2018/2019, in case of students attending year IV. at the Faculty of Dentistry.

LEAVING CERTIFICATE
After completion of the obligatory practices (internships at the Faculty of Medicine), all the final and semi-final examinations and the successful defense of the diploma work, the students receive a “Leaving Certificate” (Absolutorium) in their lecture book validated by the Dean’s signature.

The Leaving Certificate is essential for the permission to take the General Board Examination.
The final examination consists of the following:

1. The final examination prescribed in the qualification requirements consists of the following examinations (the parts of the final examination):
   a) written examination
   b) oral examination and
   c) practical examination.

   The dissertation (degree thesis) defence is part of the final examination but it is assessed and defended separately from the final examination.

   At the Faculty of Pharmaceutical Sciences, defending the degree thesis is the condition for taking the (written, practical and oral) final examination.

2. The dean will determine at least two final examination periods per academic year. Final examinations may only be taken in such final examination periods.

3. The final examination board must have at least two members in addition to the chairperson. The chairperson and the members must be recognised external experts or university (college) professors or associate professors in the special field. At least one member of the board must be an external expert. The chairperson of the final examination board is appointed by the dean – in agreement with the Faculty Council – just like its members, for a period of one to three years.

4. Students must register for the final examination in the dean’s office, on the 60th day before the first day of the final examination period at the latest.

5. The dean of the Faculty is responsible for organising the final examinations. The number of examination boards must be determined on the basis of the number of students who registered for the final examination, assigning no more than 6 students to every examination board for every examination day.

   At the Faculty of Pharmaceutical Sciences and the Faculty of Dentistry a maximum of 12 students can be assigned to a final examination board on an examination day.

6. Students will be assigned to their examination boards by way of an electronic lottery. The composition of the boards and students’ distribution among them can only be disclosed on the day of the examination, through the usual method applied by the Faculty.

7. The final examination board establishes the marks of the examination subjects in camera. When the examination is finished, the chairperson of the board announces the results.

8. The result of the final examination is the simple arithmetic mean of the results of its different parts.

9. The result of the final examination is established by the final examination board and the chairperson of the board enters it into the student’s markbook.

10. The final examination will be successful if the parts of the final examination are at least “pass” marks.

11. If a subject or a section of the final examination is marked as “unsatisfactory”, the candidate will only be required to repeat the final examination in the subject or section the candidate has failed.

   Faculty of Pharmaceutical Sciences and Faculty of Dentistry: if the student fails any of the successive parts of the final examination (written, practical and oral parts), the final examination will be regarded as unsuccessful and it cannot be continued. However, it will only have to be repeated from the unsuccessful part.

12. The final examination can be repeated twice. Retake or repeated retake final examinations can only be taken in the following final examination period(s).

13. No credits can be assigned to the final examination.

14. If the final examination is taken after seven years from the issue of the pre-degree certificate, the condition of taking the final examination will be the successful completion of the last academic year.
THE DIPLOMA (dr. med.; dr. med. dent.; dr. pharm.)

The degree (diploma)

The degree, the certificate

1. A condition of obtaining the degree or certificate issued by the university is that the credit value of subjects completed at another higher education institution and recognised by the university in a credit transfer procedure may not be more than 50% of the credits required by the qualification criteria for obtaining the degree.

2. The conditions of issuing the degree: a type “C” intermediate language certificate in English, German, French, Spanish, Italian or Russian, issued or recognised by the state, and passing at least one basic-level university final examination. (One of these must be English.)

   The passing of that examination must be proved by presenting the original language certificate or a certified copy of it.

3. The rector of the University may delegate the right to sign degrees to the dean of the Faculty concerned.

4. If, because of the provisions of paragraph 1, the degree is issued after the final examination period, the degree will be signed by the head of the educational organisational unit instead of the chairman of the final examination board if the chairman of the final examination board is no longer employed by the University when the degree is issued.

5. The degree issued by the University must also contain the classification of the degree.

6. The certificates mentioned in Annex 2 and Annex 2/a are issued by the Dean’s Office concerned and this Office keeps records of all certificates issued.

7. The relevant Dean’s Office is responsible for issuing the diploma supplement.

8. The classification of the degree (diploma) is based on the cumulative, weighted grade point average, rounded to two decimal places.

Classification on a scale of five grades:

- 4.51 – 5.00 excellent
- 3.51 – 4.50 very good
- 2.51 – 3.50 satisfactory
- 2.00 – 2.50 pass

Qualification on a scale of three grades:

- 4.51 – 5.00 summa cum laude
- 3.51 – 4.50 cum laude
- 2.00 – 3.50 rite

   The subjects that do not end with comprehensive examinations but must be counted in the grade of the degree are specified by the curriculum of the Faculty concerned.

9. Method of calculation of the classification of degrees:

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

   where:
   - \( XD \) = the figure serving as the basis for grading the degree
   - \( Xn \) = the sum of the grades of the required comprehensive examinations
   - \( n \) = the number of required comprehensive examinations
   - \( D \) = the grade of the degree thesis (on a scale of 5) (part of the complex FE)
   - \( I \) = the grade of the written examination (part of the complex FE)
   - \( Sz \) = the grade of the oral examination (part of the complex FE)
   - \( Gy \) = the grade of the practical examination (part of the complex FE)

10. At the student’s request – against the payment of a fee – the university will issue an honorary degree, signed by the rector of the university, the dean of the faculty concerned and the chairman of the final examination board.

The relevant Dean’s Office is responsible for calculating the grade of the degree.
COST OF THE PROGRAM FOR TWO SEMESTERS

Tuition fee for the 2019/2020 academic year

<table>
<thead>
<tr>
<th>Program</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>USD 9,100 / semester</td>
</tr>
<tr>
<td>Dentistry</td>
<td>USD 9,100 / semester</td>
</tr>
<tr>
<td>Pharmaceutical Sciences</td>
<td>USD 6,000 / semester</td>
</tr>
</tbody>
</table>

The first year tuition fee (+ the enrollment fee – USD 220 payable in the 1st semester) should be paid in two installments (unless the Hungarian Visa regulations have different conditions):

Within two weeks after receipt of the Letter of Acceptance
- Medicine USD 9,320 (USD 9,100 tuition fee + USD 220 enrollment fee; enrollment fee is payable once during the studies)
- Dentistry USD 9,320 (USD 9,100 tuition fee + USD 220 enrollment fee; enrollment fee is payable once during the studies)
- Pharmaceutical Sciences USD 6,220 (USD 6,000 tuition fee + USD 220 enrollment fee; enrollment fee is payable once during the studies)

Before February 1
- Medicine USD 9,100
- Dentistry USD 9,100
- Pharmacy USD 6,000

In consecutive years the annual tuition fee should be paid:
- See details under title: “Fees – Important”

Dentistry students pay additional material fee:
- years 3, 4 & 5: USD 3,600
- (first semester: USD 1,800
- second semester: USD 1,800)

Please note: the material fee is subject to change; also 2nd year students taking clinical subject(s) from the 3rd year have to pay material fee.

3rd, 4th and 5th year students may apply for exemption from paying the material fee under certain conditions. Please inquire about the rule regarding eligibility for exemption at the English Secretariat.

Students failing a year or after passive status pay the sum of the year they join after the failure/passive status.

Transfer students pay the highest tuition fee in force in the actual academic year.

Application fee for transfer students: USD 350 (non-refundable)

Enrollment fee for transfer students: USD 220 (payable together with the tuition fee)

The student admitted delaying the commencement of his/her studies is obliged to pay the tuition fee of that academic year when he/she starts his/her studies.
Payment Details

Payments can be made by bank transfer in **USD** to the bank account of Semmelweis University:
- Account name ("account with institution"): Semmelweis University
- Account (IBAN) Number: HU67 1000 4012 1000 8016 0051 4534
- Bank name: Magyar Államkincstár (Hungarian State Treasury)
- Bank address: 4. Hold Street, H-1054 Budapest, Hungary
- Swift/BIC code: **HUSTHUHB** (correspondent Swift/BIC code: MANEHUHB)

**Note:** The money transfer sheet should include the name of the student as it is written in the passport and the remark invoice ID number.
- Personal checks and money orders are not accepted.
- Please note that the above mentioned net amounts have to arrive to the account – the bank commission charges have to be paid by the student.

The bank account at the Hungarian National Treasury is **not a classic bank account**. There is absolutely no personal administration of payments in that institution, and they do not have a cashier, so going there to pay fees personally is pointless.
- Please understand that it is only the recipient institution of Semmelweis University's tuition fees, and not a bank.

**Important:** *If the tuition fee is not credited to our bank account by the above deadlines, students have to pay a default charge to the university and may be suspended/dismissed.*

REFUND POLICY

1. **Prior to registration at the university**
   - Refundable: 100% of payment except the 1st year students’ **USD 2000 deposit**, which is **non-refundable**

2. **After registration at the university**

   **Withdrawal of studies:**
   - Students, compelled to withdraw for academic/disciplinary reasons or have been accepted/ transferred by another institute of higher education are not entitled to a refund of the tuition fee.
   - Students are entitled to a refund on a pro rata basis if studies are interrupted due to a sound reason (eg. the death of parents/guardians or due to a requirement to fulfill a military service obligation). The refund is applicable from the first day of the month following report of the above mentioned conditions with accompanying official certificates.

   **Suspension of studies:**
   - a. **Student’s legal relationship is suspended after registration within a month following the beginning of the semester**
     - Tuition fee is non-refundable. It can be transferred to the next active semester.
   - b. **Student’s legal relationship is suspended after registration after more than a month following the beginning of the semester**
     - Tuition fee is non-refundable. It cannot be transferred to the next active semester and the semester must be considered as active.

**Note:** Refund process may take between 30-60 calendar days.

**No other claims are acceptable.**
OTHER MEDICAL UNIVERSITIES IN HUNGARY

University of Szeged, Hungary
H-6720 Szeged, Dugonics square 13.
Phone: (+36-62) 544-000
Fax: (+36-62) 546-371
Foreign Students’ Secretariat
Head: Andrea Lehocki-Balog
office.fs@med.u-szeged.hu
Tel.: + 36 62 545-458

University of Pécs, Medical School
H-7624 Pécs, Szigeti út 12., HUNGARY
General Medicine in English
Dentistry in English
Pharmacy
Lívia Csidei (Ms.)
Head of the English Student Service Center
Tel.: +36 72/ 536-018
Fax: +36 72/ 536-110
E-mail: studentservice.center@aok.pte.hu

University of Debrecen Medical and Health Science Center
International Education Center
Address: Nagyerdei krt. 98.
4032 Debrecen
Hungary
E-mail: info@edu.unideb.hu
Tel.: + 36 52 258-051, + 36 52 258-052
VISA AND RESIDENCE PERMIT INSTRUCTIONS

Application for Entry Visa & Residence Permit

Foreign nationals (under visa obligation) wishing to pursue studies in Hungary are required to apply for entry visa & residence permit (exceeding 90 days) in their home countries and enter the country on the entry visa issued by the Hungarian Embassy or Consulate.

The entry visa is valid for a single entry and up to 30 days of stay in Hungary. Within 3 DAYS upon arrival, you will have to register your address and within 30 DAYS you have to submit your application for the residence permit to the Immigration Office in Budapest.

The following documents are required for the application for the entry permit:

- A wholly and legibly completed Application for Residence Permit (+ INSET 14 – Purpose of Study or Student Mobility)
- A valid passport (valid for at least eighteen months at the time of submitting the application)
- Two passport size color photos (not older than six months)
- Letter of Acceptance from the University
- Proof of payment of the tuition fee* (you get it from the University after your tuition fee has arrived)
- Proof of financial means ensuring livelihood in Hungary (bank statement about the balance of your credit card, cash, or a declaration by the parents that they will provide the funds for all your expenses in Hungary)
- An application fee of 60 EUR
- The Hungarian Embassy may ask for your flight reservation and air ticket
- The address of your residence in Hungary
- Certification of valid medical insurance coverage in Hungary

REGISTRATION PROCEDURE FOR EU AND EEA CITIZENS

Citizens of the member states of the European Union and the European Economic Area are not required to obtain a student visa in order to enter Hungary for the purpose of studies. They will, however, be required to register their stay with the Immigration Office not later than 93 days, following their entry into Hungary.

The following documents are required for registration:

- Completed Data Sheet for the Issuance of Registration Certificate and for the Registration of Residence
- School certificate in Hungarian from the secretariat of your college / university
- Your ID card or your valid travel document
- Lease contract (lakásbérleti szerződés) for the apartment (It has to specify the landlord’s and your personal data – date and place of birth, mother’s maiden name, permanent address, landlord’s ID number, your passport number. The contract has to be signed by two witnesses.)*

If you stay with an acquaintance or a relative as a guest, a statement of admission (befogadói nyilatkozat) has to be attached by the owner of the apartment that you stay with them as a guest. If the apartment is your property, a property sheet (tulajdoni lap) has to be attached to verify it. If you rent the apartment through an agency and you signed a contract with the agency, the agency should provide the authorization received from the owner of the apartment.

- The administrative service fee charged for the issue of a registration certificate is HUF 1,000, payable by credit card at the Immigration office
- Proof of funds to cover your expenses (bank statement for 3 months) – You may also be required to hand in maintenance statement signed by your parents.

* Citizens of countries in Africa, Asia, Eastern Europe (under visa obligation) and the Middle East are required to transfer the tuition fee for the first academic year in full before applying for the entry permit.
If you are the holder of the bank account (opened in your home country or in Hungary), it is sufficient to enclose a bank statement on the current balance. If the holder of the account is a parent or a relative, you should document that you have exchanged or drawn funds from ATMs in the amount of at least approx. USD 800 and enclose a photocopy of the bank card.

- copy of a valid medical insurance coverage in Hungary (EHIC card, contract with a private medical insurance company or a valid health insurance policy), but take the original too with you.

If you meet all conditions for residence in Hungary for a period longer than three months, the immigration authority will issue a Registration Certificate to you that contains the address of your first residence in Hungary. You will receive your ID card on spot and Address Card by mail. Please see below for how to reach the Immigration Office.

Application for residence permit for students from non-EU countries with a permanent residence visa

Within 30 days of your arrival in Hungary, you have to go to the Immigration Office to Clients’ Service II. ("II. sz. Kirendeltség") to receive your residence permit and to register your accommodation in Hungary.

The following documents are required:

- your passport with your visa inside
- 1 passport-size photo
- your lease contract
- completed address registration form (signed by the owner of the property).

Please see below for how to reach the Immigration Office.

Application for residence permit for students from Non-EU countries with a permanent residence visa

After arriving in Budapest

Within 30 days on arrival in Hungary, you have to go to the Immigration Office to Clients’ Service II. ("II. sz. Kirendeltség") to receive your residence permit and to register your accommodation in Hungary.

The following documents are required:

- your passport with your visa inside
- 1 passport-size photo
- your lease contract
- completed address registration form (signed by the owner of the property)
Application for residence permit for citizens of Non-EU countries arriving without visa

You are required to submit your application for residence permit to the Immigration Office within 90 days after your arrival.
Documents required for the residence permit:
• passport valid for at least 3 more months longer than the period you are applying for (about 15 months)
• application form (Application for Residence Permit + INSET 14 – Purpose of Study or Student Mobility)
• address registration form („lakcímbejelentő”) signed by the owner(s) or an authorized person
• lease contract for the apartment (It has to specify the landlord’s and your personal data: date and place of birth, mother’s maiden name, permanent address, landlord’s ID number, your passport number. The contract has to be signed by two witnesses.)
• 1 passport-size photo
• the administrative service fee charged for the issue of a registration certificate is HUF 18,000 payable by credit card at the Immigration office
• proof of funds to cover your expenses
• certification of valid medical insurance coverage in Hungary
• school certificate in Hungarian from the secretariat of your college /university.

Please see below for how to reach the Immigration Office.

Application for extension of residence permit for citizens of Non-EU countries

You are required to submit your application for extension of residence permit to the Immigration Office at least 30 days prior to the expiry of your present one.
Documents required for extension of residence permit:
• passport valid for at least 3 more months longer than the period you are applying for (about 15 months)
• application form (Application for Residence Permit + INSET 14 – Purpose of Study or Student Mobility)
• address registration form („lakcímbejelentő”) signed by the owner(s) or an authorized person
• lease contract for the apartment (It has to specify the landlord’s and your personal data: date and place of birth, mother’s maiden name, permanent address, landlord’s ID number, your passport number. The contract has to be signed by two witnesses.)
• 1 passport-size photo
• the administrative service fee charged for the issue of a registration certificate is HUF 10,000 payable by credit card at the Immigration office
• proof of funds to cover your expenses
• certification of valid medical insurance coverage in Hungary
• school certificate in Hungarian from the secretariat of your college /university.

Please see below for how to reach the Immigration Office.

How to reach the Immigration Office in Budapest

The Immigration Office is located at the Twin Office Center Office Building, Szegedi út 35-37, 1135 Budapest (13th district), Hungary. Within the building, the Immigration Office is located at the Ground Floor, Clients’ Service II. (”II. sz. Kirendeltség”)
Office hours:
Monday 8:30 am to 1:00 pm
Tuesday 1:00 pm to 5:00 pm
Wednesday 8:30 am to 12:00 noon
Thursday 8:30 am to 1:00 pm
Friday 8:30 am to 12:00 noon
E-mail: bp2@bah.b-m.hu (It is possible to book an appointment in advance.)

To get there, please take buses number 20E, 30, 30A or 32 from the Keleti Railway Station („Keleti pályaudvar”) and get off at the bus stop named ‘Szegedi út’.
REDUCTION OF TUITION FEE

1. Students may apply for a reduction after completing the first semester of the first academic year if their semester weighted average results were above 4.51. From the third semester the reduction is granted under an extra condition: from the end of the second semester, all their semester weighted average results have to be continuously above 4.51, including the weighted average of the second semester. The reduction is 10% of the tuition fee with average results above 4.51 and 15% with average result of 5.00.

Students may apply for a reduction after completing each semester on condition they meet the above requirements, and in case they have completed all the obligatory semester subjects, and gained minimum 20 credits in each semester.

No reduction is given in case of exemption from one or more subjects (except from PE).

No reduction is given during retaken semesters on account of subjects already completed.

Students eligible for the tuition fee reduction pay with 10-15% reduced tuition fee in the next semester.

Application deadlines:  September 15th – first semester  
February 15th – second semester

2. Students taking just one normal, exempted “FM” or one exam course “CV” in a semester pay 50% of their semester tuition fee. (Note: The permission can be granted upon the student’s written request that has to be handed in at the English Secretariat before starting the semester!)

3. Tuition fee for the 6th year:
   a. In case the student completes more than the compulsory 3 weeks of clinical rotations at Semmelweis University, he/she has to pay 100% of the tuition fee valid in that academic year.
   b. In case the student completes the 2 weeks compulsory Pediatrics rotation and 1 week Transfusion course at Semmelweis University and completes the remaining of the rotations abroad, he/she has to pay 80% of the tuition fee valid in the academic year.

The relevant acceptance letters should be handed in latest until December 15, 2019. Otherwise the student is not entitled for the reduction!

Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!
HOW TO GET A CERTIFICATE WHICH PROVES THAT THE DIPLOMA ISSUED BY SEMMELWEIS UNIVERSIT IS IN CONFORMITY WITH THE EU REQUIREMENTS, AND A CERTIFICATE OF GOOD STANDING

Compiled by The National Healthcare Service Center (Állami Egészségügyi Ellátó Központ; ÁEEK)
This brochure aims to briefly summarize the procedures of the ÁEEK that are needed to access the healthcare profession granted by your diploma, either in Hungary or abroad.

After graduation your University has 30 calendar days to report the diploma details of the newly graduated students to the ÁEEK’s Department of Registration in order to get them listed in the National Basic Register of the Healthcare Professionals.
(The register is publicly available: https://kereso.enkk.hu/ )

Once you have your diploma listed in the Basic Register, you should decide if you intend to
– leave Hungary and work abroad (see point A) OR
– stay and work in Hungary (see point B)

We hope you find the information provided in this publication to be informative and helpful.

National Healthcare Service Center
Directorate General of Human Resources Development

A) I INTEND TO WORK ABROAD

If you intend to work abroad, your Hungarian diploma has to be recognised by the Host Country’s competent authority and thereafter you will be required to get further registrations or licences depending on the host country’s regulation.

It is highly recommended to contact the host country’s authority first to get detailed information on the recognition procedure, including the list of the necessary documents and the confirmation if licence to practice (operational registration) in Hungary is needed or not.

Amongst the requested documents there can be multiple certificates that are issued by the National Healthcare Service Center (ÁEEK). The most frequently requested certificates are the certificate of conformity and good standing.

The procedure takes maximum 30 calendar days. Normally the certificates can be issued between 8-15 calendar days. Your patience is highly appreciated.

(You can visit the ÁEEK’s website for further information on all types of certificates: www.enkk.hu (switch to the English menu / Department of Recognition and Monitoring)

CERTIFICATE OF CONFORMITY

It attests that your diploma (in medicine, dentistry, pharmacy, nursing or midwifery) satisfies the training requirements laid down in European Parliament and Council Directive 2005/36/EC on the recognition of professional qualifications.
CERTIFICATE OF GOOD STANDING

It attests that the professional
- has a clean criminal record, and is not under the effect of a non-appealable sentence imposed for a criminal offence suspending the health care activity concerned on the day of issue of this certificate;
- is not under the effect of a non-appealable sentence imposed for the violation of the professional ethical rules;
- is entitled or not to pursue healthcare activities in Hungary.

The entitlement (right to practice) basically depends on the membership in the professional chamber (Hungarian Medical Chamber (MOK), Hungarian Pharmaceutical Chamber (MGYK), Hungarian Chamber of Health Care Professionals (MESZK) and on the Operational Registration.**

PROCEDURE IN RELATION TO THE CERTIFICATES

In order to get the necessary certificates (required by the host country’s authority), the following documents have to be submitted to the ÁEEK’s Department of Recognition and Monitoring via e-mail to recognition@aeek.hu (or by post or in person)
- request form (available on www.enkk.hu at Department of Recognition and Monitoring / Certificates for recognition in a foreign country
- scanned copy or photo of your passport or ID card,
- scanned copy of photo of any official document that proves your current address in Hungary or abroad (if available)
- scanned copy or photo of your diploma,
- transfer receipt about the fee of the procedure.(15 000 HUF/requested type of certificate)

CONTACT DETAILS OF THE DEPARTMENT OF RECOGNITION AND MONITORING

E-mail:
recognition@aeek.hu

Telephone:
(+36)-1-919-3336 (Mon-Thu: 8.30-16.00; Fri: 8:30-13:30)

Address of personal consultation:
1085 Budapest, Horánszky utca 24. (ground floor)

Opening hours:
Tuesday: 8.30-12.00. and 13.00-15.30

Postal address:
National Healthcare Service Center
Directorate General of Human Resources Development
Department of Recognition and Monitoring
1444 Budapest Pf.: 270.

**From 1st January 2017, if the healthcare professional with foreign citizenship declares that he or she does not intend to pursue healthcare activities in Hungary (currently), he or she can apply for the operational registration without the membership of the chamber. (For further info please see Subsection 3 of point B) or contact the Department of Registration in e-mail: omn@aeek.hu)
B) I INTEND TO WORK IN HUNGARY

In order to start working as a health professional in Hungary, the following steps have to be taken:

1. **Basic Register (automatic), medical stamp for doctors and dentists (by request)**
   After the graduation the University has 30 calendar days to report the diploma details of the newly graduated students to the ÁEEK’s Department of Registration in order get them listed in the National Basic Register of the Healthcare Professionals.
   Once you are registered in the Basic Register, you will have a unique registration number, which can be checked at the public database: [https://kereso.enkk.hu/](https://kereso.enkk.hu/)
   In case of doctors and dentists the ÁEEK’s Department of Registration ex officio notifies the National Health Insurance Fund of Hungary (Nemzeti Egészségügyi Alapkezelő; **NEAK**) about the professionals personal details, address and basic registration number in order to prepare the professionals’ medical stamps.
   Despite the notification, the medical stamp will not be prepared unless you apply for it by submitting a request form to the NEAK.
   (web: [http://neak.gov.hu/](http://neak.gov.hu/); e-mail: neak@neak.gov.hu; stamp request form can be downloaded: [http://www.oep.hu/nyomtatvanytar/](http://www.oep.hu/nyomtatvanytar/) - Kérelem az első névre szóló orvosi bélyegző kiállítása iránt)

2. **Membership to the competent professional chamber (by request)**
   Membership of the competent professional chamber is compulsory for those, who are intending to work in Hungary. For the details of the procedure (form, fees, etc.), please contact your chamber:
   - **doctors, dentists**: Hungarian Medical Chamber ([www.mok.hu](http://www.mok.hu); Magyar Orvosi Kamara)
   - **pharmacists**: Hungarian Chamber of Pharmacists ([www.mgyk.hu](http://www.mgyk.hu); Magyar Gyógyszerészi Kamara)
   - **healthcare professionals (physiotherapists, nurses, midwives, etc.)**: Chamber of Hungarian Healthcare Professionals ([www.meszk.hu](http://www.meszk.hu); Magyar Egészségügyi Szakdolgozói Kamara)

3. **Operational Registration (‘működési nyilvántartás’) (by request)**
   In order to provide healthcare services unsupervised, - besides the chamber membership - the professional has to hold a valid operational registration. The application should be submitted to the ÁEEK’s **Department of Registration and Training**.
   Further information can be found on the ÁEEK’s website ([www.enkk.hu](http://www.enkk.hu) / English menu / Department of Registration and Training) or you can contact our colleagues.

   **PROCEDURE in relation to the operational registration**
   For your first operational registration, please be informed that you need to submit the following documents:
   - filled out and signed application form
   - transfer receipt of the administrative fee

Bank account details:
Állami Egészségügyi Ellátó Központ
10032000-01490576

From foreign account:
National Healthcare Service Center
Swift code: HUSTHUHB
IBAN number: HU06 1003 2000 0149 0576 0000 0000
Bank: Hungarian National Bank

Please note that the fee of the transfer and the exchange is also your cost!
Upon first registration 3,000– HUF administrative fee has to be paid by bank transfer to the bank account held by ÁEEK (bank account number: 10032000-01490576-00000000).
(The acknowledgment of the payment shall be attached to the application.)
- **Either the proof of membership of the chamber** (if you are intending to work in Hungary) **Or the declaration form for foreign citizens** (if you are intending to work abroad and the Hungarian registration is required by the Host Country)

Membership of the competent professional chamber is compulsory for those, who are intending to work in Hungary!
If you are a healthcare professional with foreign citizenship who do not intend to work in the area of healthcare currently in Hungary and the license for the healthcare activity – certificate of the Hungarian operational registration – is only necessary for the recognition of your professional qualification abroad, it is not obligatory to have the membership of the chamber.

As indicated above, healthcare professionals can obtain operational registration without the membership of the chamber, provided that the Hungarian or English version of the Declaration for foreign citizens has been attached to the application form. **CONTACT DETAILS OF THE DEPARTMENT OF REGISTRATION AND TRAINING**

Address:
1085 Budapest, Horánszky utca 24. (ground floor)

Opening hours:
Monday to Thursday 8.30-15.30

E-mail:
omn@aeek.hu

Telephone:
(+36)-1-411-1146 (Mon-Thu: 8.30-15.30)

4. **Working as a self-employed (by request)**
If you intend to provide healthcare services as a self-employed, you are required to have an operational licence (’működési engedély’) too, for which you can apply at the Policy Administration Service of Public Health of the territorially competent Government Office. (Contact details of the regional offices: http://www.kormanyhivatal.hu/hu/elerhetosegek)

5. **Entering a specialist training programme**
In case you have plans to enter a specialist training programme in Hungary, for detailed information (such as language requirements, training costs, opportunities for financial support) please contact the Continuing Education Center of your University.
REQUEST concerning the issue of a certificate to be used in the recognition of the diploma, qualification in another country

<table>
<thead>
<tr>
<th>Certificate Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate of Acquired Rights</td>
<td>Issued for doctors, specialists in medicine, dentists, specialists in dentistry, pharmacists, nurses, midwives (with reference to Article 23., 27., 30., 33., 37., 43. of Directive 2005/36/EC)</td>
</tr>
<tr>
<td>Certificate which attests the length of the healthcare activity pursued in Hungary</td>
<td></td>
</tr>
<tr>
<td>Certificate of Good Standing</td>
<td>Pursuant to Section. 110/A of Act CLIV of 1997</td>
</tr>
<tr>
<td>Certificate which attests the level of the qualification</td>
<td>(with reference to Article 11. of Directive 2005/36/EC)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

**Personal data (Please write with capitals):**

Surname: .................................................................

Given name: .................................................................

Name at birth: ..............................................................

Mother’s maiden name: ....................................................

Place and date of birth: ..................................................

Registered address: ......................................................

Postal address: ............................................................

Telephone: ........................................................................

E-mail: .............................................................................

Basic register number: ....................................................

I enclose the following documents (Please put an X before the selected ones):  

- copy of the passport/ID card  
- copy of the proof of evidence concerning the applicant’s registered address  
- copy of the diploma/qualification  
- fee (by postal cheque or bank transfer)  
- original certificate from the employer or its certified copy (in case of the certificate of acquired rights, or in case of the certificate which attests the length of the healthcare activity pursued in Hungary)

Other remarks, requests:

I hereby declare that the information contained in my application are true, and I agree with the use of the aforementioned data by the Center with regards to my application. Furthermore, I authorise the Center to obtain the necessary information from the competent authority in connection with the Certificate of Good Standing.

Date: .................................................................

Signature: ...............................................................
APPLICATION

for medical doctors, dentists, pharmacists and clinical health workers

(Kérelmek orvosok, fogorvosok, gyógyszerészek és klinikai szakképesítéssel rendelkezők részére)

Before filling out the application please read the instructions first!
(Kérjük az adatlap kitöltése előtt olvassa el a kitöltési útmutatót.)

I. Personal details (*: It is obligatory to fill out)

[Kérelmező adatai (A *-gal jelölt adatok kitöltése kötelező)]

Basic and Operational registration number:
(Alap és működési nyilvántartási szám)
*Name (your name in the ID card or passport):
[Családi és utónév (személyi igazolványban szereplő név)]
*Surname (Vezetéknév):
*Given name (Utónév):
*Name at birth (Születési név):
*Surname (Vezetéknév):
*Given name (Utónév):
*Mother's maiden name (Anyja születési neve):
*Place and date of birth (Születési hely, idő):
*Sex (Neme):
*Nationality (Állampolgársága):
*During the health activity I would like to use:
(Az egészségügyi tevékenység során használt név)
\{ My name (Családi és utónév) \} \{ My name at birth (Születési név)
*I would like to use the title 'Dr': \{ Yes (Igen) \} \{ No (Nem)
(Doktori címemet használni kívánom)
*Registered address (Lakóhely):
*Mailing address (if it is different from the registered address):
(Levelezési cím (amennyiben a lakóhelytől eltér))
Retired (Nyugdíjas): \{ Yes (Igen) \} \{ No (Nem)
*E-mail address (E-mail cím):
Phone number (Telefonszám):

The subject of the application
(A kérelem tárgya)

The applicant's qualification (A kérelmező szakképzettsége):
\{ } Medical doctor (Orvos) \{ } Pharmacist (Gyógyszerész)
\{ } Dentist (Fogorvos) \{ } Specialist in clinical psychology (Klinikai végzettség)
\{ } Other specialist training (Egyéb)

The subject of the request (Please put an X before the requested case):
(A kérelmek tárgya (a megfelelőt kérjük x-élni))
\{ } First registration (Első felvétel)
\{ } Renew the operational registration (Megújítás)
\{ } Registration of the new qualification (Új szakképesítés felvétel)
\{ } Extend the operational registration (prolongation because of child-raising allowances, incapacity due to illness, etc.) (Meghosszabbítás)
I present my application in the following qualification(s):
(Kérelmemet az alábbi szakképesítés(ek) tekintetében terjesztem elő)

II. Details of the qualification(s)
(Szakképesítés adatok)

Diploma

1) Title of the Diploma (Diploma megnevezése):
Number of the diploma (number/year) (Diploma száma):
Issuing body:
(Kiállító szerv)
Place and date of issue:
(Kiállítás helye, ideje)
Language of the training:
(Képzés nyelve)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Number of recognition, nostrification:
(Honosító/Elismerő határozat száma)
Place and date of recognition, nostrification:
(Honosítás/Elismerés kiállításának helye, ideje)

2) Title of the Diploma (Diploma megnevezése):
Number of the diploma (number/year) (Diploma száma):
Issuing body:
(Kiállító szerv)
Place and date of issue:
(Kiállítás helye, ideje)
Language of the training:
(Képzés nyelve)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Number of recognition, nostrification:
(Honosító/Elismerő határozat száma)
Place and date of recognition, nostrification:
(Honosítás/Elismerés kiállításának helye, ideje)

Specialist qualifications (Szakvizsgák adatai)

1) Name of the qualification (Szakvizsga megnevezése):
Number of the qualification (number/year) (Szakvizsga száma):
Issuing body:
(Kiállító intézmény)
Place and date of issue:
(Kiállítás helye, ideje)
Language of the training:
(Képzés nyelve)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Number of recognition, nostrification:
(Honosító/Elismerő határozat száma)
Place and date of recognition, nostrification:
(Honosítás/Elismerés kiállításának helye, ideje)

2) Name of the qualification (Szakvizsga megnevezése):
Number of the qualification (number/year) (Szakvizsga száma):
Issuing body:
(Kiállító intézmény)
Place and date of issue:
(Kiállítás helye, ideje)
Place and date of issue:
(Kiállítás helye, ideje)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Place and date of recognition, nostrification:
(Honosítás/Elismerés kiállításának helye, ideje)

3) Name of the qualification (Szakvizsga megnevezése):
Number of the qualification (number/year) (Szakvizsga száma):
Issuing body:
(Kiállító intézmény)
Place and date of issue:
(Kiállítás helye, ideje)
Place and date of issue:
(Kiállítás helye, ideje)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Place and date of recognition, nostrification:
(Honosítás/Elismerés kiállításának helye, ideje)

4) Name of the qualification (Szakvizsga megnevezése):
Number of the qualification (number/year) (Szakvizsga száma):
Issuing body:
(Kiállító intézmény)
Place and date of issue:
(Kiállítás helye, ideje)
Place and date of issue:
(Kiállítás helye, ideje)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Nostrificated, recognised by:
(Honosító/elismerő intézmény)
Place and date of recognition, nostrification:
(Honosítás/Elismerés kiállításának helye, ideje)
III. Membership of the Chamber

(Kamarai tagság)

I have membership (Rendelkezem kamarai tagsággal):  { } Yes (Igen)  { } No (Nem)
If yes, the name of the Chamber  
(Kamara megnevezése):  
If yes, the beginning of the membership  
(Kamarai tagság kezdete):  
If yes, the end of the membership:  
(Kamarai tagság vége)

If no: I am a health worker with foreign citizenship and I do not intend to work in the area of health in Hungary, the permission for the health activity – certificate of the Hungarian operational registration – is only necessary due to the recognition of professional qualification abroad. I attach the declaration for foreign citizens about working out of Hungary to the application form.

(Külföldi állampolgársággal rendelkező egészségügyi dolgozó vagyok és az egészségügyi szakképesítés megszerzését követően egészségügyi tevékenységet Magyarországon nem kívánok folytatni, az egészségügyi tevékenység végzésére való jogosultság igazolása kizárólag a szakképesítése külföldön történő elismerése miatt szükséges. Ennek megfelelően kérelmemhez csatoltam a “Nyilatkozat külföldi állampolgrok részére” elnevezésű nyomtatványt)

IV. Details of the language exam(s):

(Nyelvvizsgák adatai)

1. Language:  
(Nyelv)  
Level (Szint):  
{ } basic (alap)  
{ } intermediate (közép)  
{ } advanced (felső)  
Type (Típus):  
{ } A  { } B  { } C  
{ } General (Általános)  
{ } Professional (Szakmai)  
Issuing body: (Kiállító szerv)  
Issuing place and date: (Kiállítás helye, ideje)  
Number: (Száma)

2. Language:  
(Nyelv)  
Level (Szint):  
{ } basic (alap)  
{ } intermediate (közép)  
{ } advanced (felső)  
Type (Típus):  
{ } A  { } B  { } C
3. Language:
(Nyelv)
Level (Szint):
|   | basic (alap)
|---|---
|   | intermediate (közép)
|   | advanced (felső)
Type (Típus):
|   | A
|   | B
|   | C
General (Általános)
Professional (Szakmai)

V. Declarations
(Nyilatkozat)

1. I apply for that the National Healthcare Service Center
(Kérem, hogy az Állami Egészségügyi Ellátó Központ (a továbbiakban: ÁEEK) a kérelmemben foglaltak alapján)
|   | make my first registration into the Operational Registration;
|   | (regisztráljon a működési nyilvántartásba)
|   | renew my operational registration;
|   | (újítsa meg a működési nyilvántartáson)
|   | make the registration of my new qualification
|   | (a kérelemben megjelölt szakképesítés tekintetében bocsáson ki működési nyilvántartási igazolványt)
|   | extend my 5-year-period registration;
|   | (hosszabbítsa meg a működési nyilvántartáson)
|   | registerate me again in the Operational Registration after cancellation;
|   | (törölést követően ismételten regisztráljon)
|   | change the informations and my datas in the operational registration database;
|   | (adatváltozásomat rögzítse a működési nyilvántartásba)
|   | replace my stolen, missing or spoiled card of operational registration;
|   | (pótolja az elveszett, ellopott vagy megrongálódott működési nyilvántartási igazolványomat)
|   | put into the operational registration database that I am pursuing the health activity with supervision;
|   | (rögzítse a nyilvántartásba a felügyelet melletti tevékenységgyakorlást)
|   | cancel me from the operational registration.
|   | (töröljön a működési nyilvántartásból)
2. I hereby declare that I have clean criminal record and that I am not under the effect of a non-appealable sentence imposed for a criminal offence suspending the health care activity.

(Felelősségem tudatában kijelentem, hogy nem állok olyan bűncselekménnyel kapcsolatban büntetett előélethez tűződő hátrányos jogkövetkezmények hatálya alatt, amely miatt egy évet meghaladó végrehajtandó szabadságvesztésre ítéltek, illetve nem állok az egészségügyi tevékenység folytatását kizáró foglalkoztatástól eltiltás hatálya alatt.)

3. I contribute to the National Healthcare Service Center verifies permanently the informations which mentioned previously in point 2. The National Healthcare Service Center has national and exclusive competence to demand informations from the authority of criminal registration.

(Hozzájárulok ahhoz, hogy az ÁEEK hatósági ellenőrzés keretében a 2. pontban foglalt tények fennállására vonatkozó adatokat a működési nyilvántartásban szereplésem időtartama alatt folyamatosan ellenőrizze. Tudomásul veszem, hogy az ÁEEK a hatósági ellenőrzés céljából adatot igényelhet a bűnügyi nyilvántartási rendszerből.)

4. I hereby declare that

- I am not under the effect of any decree declaring that I am unfit to pursue the healthcare activity permanently (due to my health condition),
- I am not under the effect of any authority's decision forbidding me to pursue the health care activity.

(Felelősségem tudatában kijelentem, hogy
- nem állok (egészségügyi állapotom miatt) az egészségügyi tevékenység folytatására véglegesen alkalmatlanná nyilvánító határozat hatálya alatt,
- nem állok az egészségügyi tevékenység gyakorlásától eltiltó hatósági határozat hatálya alatt.)

5. I contribute to the National Healthcare Service Center verifies the datas which have been declared by me in the application form.

(Hozzájárulok, hogy a kérelmemben általam, vagy a munkáltatóm által szolgáltatott adatokat az ÁEEK ellenőrizhesse.)

6. I hereby declare that out of Hungary

- I have never worked and I am not working in the area of health;
- I worked in the area of health;
- I am working now in the area of health

and according to the law of the foreign country I have clean criminal record and I am not under the effect of a nonappealable sentence imposed for a criminal office suspending the health care activity.

(Felelősségem tudatában kijelentem, hogy Magyarországon kívül egészségügyi tevékenységet
- nem végezem és jelenleg sem végezem;
- végezem;
- jelenleg is végezem
és az egészségügyi tevékenység végzésének helye szerinti állam(ok) jogszabályai alapján nem állok az egészségügyi tevékenység gyakorlását kizáró vagy korlátozó intézkedés, büntetés, büntetőjogi intézkedés hatálya alatt.)

7. I hereby declare that the informations contained in my application are true and correct at the moment of signing.

(Felelősségem tudatában kijelentem, hogy a kérelemben feltüntetett adatok a valóságnak megfelelnek.)

Done in: ...........................................(place)...........................................(day/month/year)
(Kelt) (hely) (nap/hónap/év)

...........................................................
original signature of the applicant
(Eredeti aláírás)
Without the original signature the application is not valid and unacceptable.
(Eredeti aláírás hiányában a kérelem érvénytelen és elfogadhatatlan)

The application can be sent:
- by post as a required letter to the address 1444 Budapest, P.O. Box 270;
- by personal at our customer service during the opening hours
- Monday-Thursday: from 8:30 to 15:30
- Friday: from 8:30 to 13:00

Availability:
- Phone: +36-1/411 1146; Fax: +36-1/411-3768
- E-mail: omn@aeek.hu
- Account number: 10032000-01490576-00000000
- Swift code: HUSTHUHB
- IBAN number: HU06 1003 2000 0149 0576 0000 0000

DECLARATION

for foreign citizens intending to work outside of Hungary

Personal details
  Basic registration number: .................................................................
  Surname: .............................................................................................
  Given name: ...........................................................................................
  Name at birth: ....................................................................................... 
  Mother’s maiden name: ...........................................................................
  Place and date of birth: ..........................................................................
  Nationality: ............................................................................................

I, ......................................................... (name) hereby declare that I am a healthcare professional with foreign citizenship and I do not intend to work in the area of healthcare in Hungary currently, the license to pursue healthcare activities – getting registered in the Operational Registry – is only necessary for the recognition of my professional qualification abroad. Due to the abovementioned it is not obligatory to have the membership of the chamber. I, furthermore, acknowledge that in case I return to Hungary to pursue healthcare activities, I will be required to become a member of the chamber.

Date: ..............................................

..............................................................
Signature
**EXTRA CURRICULAR FEES**

Defined by the current Regulations on Compensation and Benefits of Semmelweis University. It is to be tracked on the website.

---

**IMPORTANT**

*Registration requirements*

Please note that the date of registration for the first semester is between 2 - 6 September, 2019 and for the second semester is between 27 - 31 January, 2020. In order to fulfill the registration requirements, you must pay your tuition fee and you must bring the summer practice certificate.

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**EXTRA CURRICULAR FEES AFTER GRADUATION**

Defined by the current Regulations on Compensation and Benefits of Semmelweis University. It is to be tracked on the website.
**STUDENT CARD**

How to order a new student card

1. To obtain a new student card, you must first have an official photo taken and provide your official signature at „Központi Okmányiroda” (Central Document Office) Address: 13th District, 110 – 112 Visegrádi utca.
   You must take your residence permit and passport with you to the Központi Okmányiroda.

2. There you will be given a NEK (Nemzeti Egységes Kártyarendszer) datasheet. This form has a 16-character identification number in the upper right corner.

3. Log on to your Neptun site, go to 'Administration' and click on 'Student Card request' in the drop-down list.
   A smiley :) will warn you not to add the hyphens when typing in your 16 character NEK identifier into yellow text box!

3/a. Click on the grey tab 'Add new' and type your 16 character NEK identifier into the blank called 'NEK azonosító'

3/b. then choose 'Demand type'. Check that your permanent (home) address is correct and shows up in the 'Street, number' text box.
   Please note that you will also need your temporary (Hungarian) address written in the Neptun. This will serve for your temporary, A4-format student card you will receive at the English Secretariat.

The plastic card takes about 6-8 weeks to be produced after being ordered from the English Secretariat. You will need to use the temporary, A4-format certificate until you receive your official card. Please note that the temporary certificate is valid only for 2 month, after which time it must be renewed.

**INSURANCE**

By paying the tuition fee, and signing the insurance contract during - or after - registration, students are entitled to use the services offered under the insurance policy established on September 1, 2017 between Generali Biztosító Zrt and Semmelweis University.

You will receive an information sheet about the details of this insurance policy during the registration itself (or alternatively, you can also acquire the information sheet at the front desk of the English Secretariat, or online through [https://semmelweiskft.hu](https://semmelweiskft.hu)).

Throughout the duration of your studies, this insurance will cover the medical bills of outpatient and inpatient treatments provided by the designated health care service providers, as well as emergency medical care during the active semester(s). Details about terms and conditions found in „Customer information and General Provisions Governing Insurance Policies” as well as in the „Product Information on Generali’s Fee-for-Service Health Insurance”.

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FREQUENTLY ASKED QUESTIONS - FAQ-s

- Where can I find the Foreign Students’ Secretariat?
  EOK (Basic Medical Science Center) 37-47 Tűzoltó utca, 1st Floor, room 1.604
- What are the Foreign Students’ Secretariat’s office hours?
  Monday 13.00 – 15.00
  Tuesday 13.00 – 15.30
  Wednesday closed
  Thursday 9.30 – 12.00
  Friday 10.00 – 12.00

- How do I get my class schedule for the next term?
  You can check your schedule in your Neptun under Studies/Class schedule after subject registration.

- How do I get a Student card?
  – Read detailed information for the students of all faculties – Student Card Request (pdf)

- How many credits do I need to graduate?

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Medicine</td>
<td>360 credits</td>
</tr>
<tr>
<td>Dentistry</td>
<td>300 credits</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>300 credits</td>
</tr>
</tbody>
</table>

- How many credits do I have to earn per semester?
  Please see your semester curriculum in the Calendar. The amount of the required credits are set out by each semester’s curriculum under the curriculum schedule.
  Attention!
  Training and Examination Regulations
  Section 26. The certificate of degree (Diploma)
  The diploma, the certificate.
  1. The credit value of subjects accomplished in other institutions of higher education and recognized by the University in a credit transfer procedure shall not exceed two-thirds of the credits required for the award of the diploma as defined by the qualification requirements.

- How can I apply for the approval of the place of the summer practice?
  1. Summer practice at an Institution/Clinic of Semmelweis University
     No approval or certificate on completion is needed in this case. The completion is recorded in the Neptun system by the host Institution/ Clinic. To organize your practice and ensure that you will be accepted, you should contact the relevant Institution/Clinic and speak with your tutor. Please note: some Semmelweis departments require that you do a special registration via Neptun for their summer practice. About details and departmental regulations, please consult your tutor.
  2. Summer practice at an Institution/Clinic outside of Semmelweis University
     Approval of such summer practice is needed beforehand, and a certificate on completion must be submitted at registration to the next term. Please contact your registrar for details with specifics.

- When and how do I have to submit the certification on my completed summer practice?
  Certificates on a completed summer practice outside Semmelweis University should be submitted to the English Secretariat at the registration to the next term.
  Please note: students are not allowed to proceed to the next year unless the form of completion is submitted to the English Secretariat at registration.
  Please use the downloadable forms at each Faculty.
Compulsory summer practices by Faculties:

<table>
<thead>
<tr>
<th>year/Faculty</th>
<th>General Medicine</th>
<th>Dentistry</th>
<th>Pharmaceutical Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Summer Nursing Practice* (1 month) (*after 1st or 2nd year)</td>
<td>Summer Nursing Practice (2 weeks) Summer Dental Laboratory Practice (2 weeks)</td>
<td>–</td>
</tr>
<tr>
<td>2nd</td>
<td>–</td>
<td>–</td>
<td>Summer Practice I. (4 weeks)</td>
</tr>
<tr>
<td>3rd</td>
<td>Summer Internal Medicine Practice (1 month)</td>
<td>Summer Dento-Alveolar Practice (1 week)</td>
<td>Summer Practice II. (4 weeks)</td>
</tr>
<tr>
<td>4th</td>
<td>Summer Surgery Practice (1 month)</td>
<td>Summer General Dentistry Practice (4 weeks)</td>
<td>–</td>
</tr>
</tbody>
</table>

- **How much is the tuition fee per semester?**
  The tuition fee is determined by the year of enrollment to the Program. Students who complete their studies continually (without failing a year) pay the same tuition fee every year (see the table below). Students who repeat a year due to failure or a passive semester, and students transferred from another university have to pay the tuition fee according to the year of enrollment at the course they are joining. Eg. a student enrolled in 2015/2016 academic year and failed a semester has to pay the tuition fee of those enrolled in 2016/2017.

<table>
<thead>
<tr>
<th>year of enrollment/ Faculty</th>
<th>General Medicine</th>
<th>Dentistry</th>
<th>Pharmaceutical Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006.</td>
<td>6 100 USD</td>
<td>5 400 USD</td>
<td>5 400 USD</td>
</tr>
<tr>
<td>2007.</td>
<td>6 100 USD</td>
<td>5 400 USD</td>
<td>5 400 USD</td>
</tr>
<tr>
<td>2008.</td>
<td>6 100 USD</td>
<td>6 600 USD</td>
<td>5 400 USD</td>
</tr>
<tr>
<td>2009.</td>
<td>7 200 USD</td>
<td>8 000 USD</td>
<td>5 800 USD</td>
</tr>
<tr>
<td>2010.</td>
<td>8 000 USD</td>
<td>8 000 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2011.</td>
<td>8 200 USD</td>
<td>8 200 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2012.</td>
<td>8 500 USD</td>
<td>8 500 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2013.</td>
<td>8 750 USD</td>
<td>8 750 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2014.</td>
<td>8 750 USD</td>
<td>8 750 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2015.</td>
<td>8 950 USD</td>
<td>8 950 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2016.</td>
<td>9 100 USD</td>
<td>9 100 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2017.</td>
<td>9 100 USD</td>
<td>9 100 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2018.</td>
<td>9 100 USD</td>
<td>9 100 USD</td>
<td>6 000 USD</td>
</tr>
<tr>
<td>2019.</td>
<td>9 100 USD</td>
<td>9 100 USD</td>
<td>6 000 USD</td>
</tr>
</tbody>
</table>

Students taking just one normal, exempted “FM” or one exam course “CV” in a semester pay ~50% of their semester tuition fee. 

*Please note:* The permission can be granted upon the student’s written request that has to be handed in at the English Secretariat before starting the semester!

- **When is my tuition fee due?**
  Generally:
  Fall semesters: 31st of August
  Spring semesters: 31st of January
  The current deadlines of payment are announced by the registrars before the beginning of every semester.

**Rules** regarding tuition fee payment and penalty.

- Students have **one month** (counted from the first day of the semester) for paying the tuition fee of the given semester without penalty. *(Please note that students cannot get a student certificate, a valid insurance or validation of their student card until their tuition fee is completely settled.)*
- **After the semester's first month** has passed, the tuition fee can be paid with a default penalty of 500 USD.
The latest deadline for paying the tuition fee and penalty is the last day of the study period. (Please note that students cannot register for any exam until their tuition fee plus penalty are completely settled.)

If the above final deadline is missed, i.e. the tuition fee plus penalty are not settled by the end of the study period, the tuition fee for the current semester can no longer be paid, student’s status will remain active, but every signature acquired and every grade earned by the student during the semester will be deleted.

Please take the above rules and deadlines seriously as they will be strictly enforced.

What is my tuition per semester?
All continuing students will remain on the same fee rate as when they first enrolled in the program. Students who take a semester off, failed a year, or transferred from another university has to pay the tuition fee of that specific year they join the program (again).

How can I ensure full payment of the tuition fee on time by bank transfer?
To ensure full payment, please consider that a transfer fee is usually applied when sending money by bank transfer. When transferring the exact amount for the tuition fee, a transfer fee might be deducted from that amount, rendering your tuition fee deficient. Therefore, please contact your home bank prior to transferring the tuition fee and find out whether the bank deducts a transfer fee from the transferred amount. If yes, please pay the transfer fee in addition to the tuition fee.

Payment by wire transfer:
all payments can be made by wire transfer to Semmelweis University’s below bank account. Payments have to be made in USD.

Account details of Semmelweis University are as follows:
Account holder: Semmelweis University
Account Number (IBAN): HU67 1000 4012 1000 8016 0051 4534
Bank name: Magyar Államkincstár (Hungarian State Treasury)
Bank address: Hold utca 4, 1054 Budapest, Hungary
SWIFT code (BIC): HUSTHUHB
Correspondent SWIFT code (BIC): MANEHUHB

It is your responsibility to ensure timely and full payment of your tuition fee. It is important for you to keep in mind that checking whether the tuition fee has been paid properly is your responsibility. You are recommended to contact your registrar each term before the payment deadline to find out whether the tuition fee has arrived without any problem.

Am I eligible for a reduction of the tuition fee?
Tuition fee can be reduced in the following case:

Excellent study record
Students may apply for a reduction if they completed all the obligatory subjects and gained at least 20 credits in the semester, and their weighted average is 4,51 or above contiously started from the first or the second semester of the first year. If the weighted average is 4,51 or above in the first semester a reduction can be granted in the second semester. If the weighted average is 4,51 or above only from the second semester then the reduction can be granted from the third semester. The reduction is 10% for students having a weighted average between 4,51 and 4,99, and it is 15% for students having a weighted average 5,00. Students who have a weighted average below 4,51 during their studies after the first year are no longer eligible for a reduction of the tuition fee. No reduction is given in case of exemption from one or more subjects.

Medicine 6th year students
1. In case the student completes more than the compulsory 3 weeks of clinical rotations at Semmelweis University, he/she has to pay 100% of the tuition fee valid in that academic year.
2. In case the student completes the 2 weeks compulsory Pediatrics rotation and 1 week Transfusion course at Semmelweis University and completes the remaining of the rotations abroad, he/she has to pay 80% of the tuition fee valid in the academic year. The relevant acceptance letters should be handed in latest until December 15. Otherwise the student is not entitled for the reduction!

Please write a letter of request addressed to the Academic Program Director when applying for the 20% reduction!

How do I calculate my average?
Study average means the weighted average, which is a way to measure a student’s academic success in school. The weighted average is calculated from the grades and the credit points belonging to each subject. For each completed course for the previous semester, the number of credit points must be multiplied with the grade received. All subjects are added up and then this amount is divided by the total number of credits collected in the semester.
Example for one semester:

<table>
<thead>
<tr>
<th>Course</th>
<th>Grade</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Basics of Biostatistics and Informatics</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Hungarian Medical Terminology I.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Basics of Medical Physics</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Medical Chemistry</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Basics of Medical Chemistry</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Medical Terminology</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education I.</td>
<td>none</td>
<td></td>
</tr>
</tbody>
</table>

Σ: 27 + 12 + 20 + 15 + 24 + 15 + 10 = 123
Number of credits earned in the semester: 30
Weighted average from the first semester: 123/30 = 4.1

- **What is the difference between weighted average and cumulative weighted average?**

  The weighted average and cumulative weighted average are based on grades given for each course taken and the number of credit hours specified for those courses over the specified period of time (one term for weighted average; more or all terms for cumulative weighted average). The difference between the two is that weighted average is calculated for one semester of the year and cumulative weighted average is based on two or more semesters of the individual.

- **What if I can't attend an exam or class at the time scheduled?**

  Students are required by university regulations to present written justification stating the reasons of their absence. Upon returning to school after an absence, students should report to the department’s office and present a doctor’s note, if their absence was caused by medical reasons. Excuses not provided within 3 days after the missed exam or class will result in the absence being marked as an unexcused absence.

  It should be noted that the student will be recorded absent even if s/he is absent for a valid reason such as sickness. In the case of absence with a valid reason, an official document that proves the reason of absence should be provided. The department has the right to reject any document of questionable credibility. If you are sick and cannot take the exam or class, you should telephone your tutor immediately and leave a message for the department office even if this is not the first day of your absence.

- **Do I have to pay a fine if in case of my absence from an exam remains uncertified?**

  Yes. Please see „Extra curricular fees“ in the Calendar

- **How do I pay my missed exam fees online?**

  Go to Finances/ Payment
  Transcribe item
  Payment titles: Service
  Service type: Missed exam fee (4000 HUF)
  If you choose to pay by check please visit the Foreign Students’ Secretariat to collect your check. The check must be paid at the post office.

- **Do I have to pay for exams?**

  Students have to pay for their second and third retake exam (3rd and 4th exam) for a given subject. Please see „Extra curricular fees“ in the Calendar

- **How do I order a check for my 3rd or 4th exam in a given subject?**

  First, please read the section titled “Extra curricular fees” in the Calendar, where you’ll find the different extracurricular fees. Log on to your Neptun account, go to „Finances“, choose „Payment“, then „Transcribe item“. Choose „Retake exam“, choose „Semester“ then the relevant subject from the list and finally click on „Create item“.

  You can choose to pay your retake exam fees online via the Neptun system or by check. To pay online you will have to select ‘Payment by credit card’ from the two payment options offered to you.

  If you choose to pay by check please visit the Foreign Students’ Secretariat to collect your check. The check must be paid at the post office, the check stub is to be presented on site prior to the exam.
**EXEMPTION**

- **Should I go directly to the department when applying for an exemption?**
  Yes, except in case of Physical Education, summer practices and First Aid. Physical education medical certificates and certificates/degree proving the completion of summer practices/first aid course must be submitted to the Foreign Students’ Secretariat by registration to both semesters each year. For a physical education exemption you must also submit a letter of request describing your problem in a few words and apply for a permission to be exempted from the subject. The request letter must be addressed to the Foreign Students’ Secretariat. For other subjects you must first get a blank exemption form from the Foreign Students’ Secretariat. Then, you must show the form and certificate of your previous studies to the competent department, which will be reviewed before granting an exemption from the subject. You need to get your exemption form signed and stamped at the department.
  Important: the teacher must indicate the grade for the subject on the form. After having the form completed and stamped, you have to return it to the Foreign Students’ Secretariat for processing. If everything is OK with the form, your registrar will enter the given grade into the Neptun system and indicate it in your grade book. If you successfully complete the above, you have no further obligations regarding that particular subject.
  Approved exemptions must be submitted to the Foreign Students’ Secretariat by the start of the semester!

- **Can I be exempted from Physical Education if I have a gym membership?**
  No. You will not be exempt because of your gym membership so please do not apply for an exemption on these grounds.

- **What is the process of submitting a doctor’s note for Physical Education exemption?**
  If you are requesting an exemption from physical education due to medical complications that inhibit you from partaking in physical activity for an indefinite time; you then must submit evidence to the Foreign Students’ Secretariat in Hungarian or in English language from a licensed health care practitioner that documents a diagnosis of a temporary physical or mental disability.

- **What do the so-called CV and FM exams mean?**
  CV and FM are abbreviations. CV stands for the Hungarian term „Csak Vizsga”, meaning „Exam only”. The term indicates that the student has already received the signature for taking the course, that is, fulfilled the semester requirements and only the exam is missing, which can be taken in the following semester.
  FM stands for the Hungarian term „Felmentett”, meaning „Exempt”. This term also indicates that the subject requirements have been fulfilled and student only needs to take the exam. The student is not obliged to take the course again, however since the subject is offered again, he/she can decide to do so. (Should the student decide to attend the course again, even though he/she has already fulfilled the requirements, the same rules shall apply to him/her as to those attending the class for the first time (Absence, attendance at classes, etc.))

- **Do I have to fail a course at least once in order to be allowed to take the CV course in the next term?**
  No. You can roll over all 3 exam opportunities to the following semester and take them as a CV course.

- **How many retake opportunities do I have in a semester and in an academic year?**
  There are 3 exam opportunities in each subject per semester (1 exam, and 2 retakes) when the subject is offered as a normal or FM course. In the following semester – when the subject is offered as a CV course – only the remaining chances left from the previous semester can be used. There is a special 4th try once a year (the 3rd retake), which may be used exclusively in 1 chosen subject. After using this 4th exam opportunity in one subject, the student shall not have a 4th try in any other subjects; they also will not be granted “special permission” for a 5th opportunity. Please count your remaining exam opportunities carefully!
  For example, if you use 2 exam opportunities for Biophysics II in the 2nd semester, you will have only one remaining opportunity for the retake in the following semester (plus the one extra (4th) chance, if you haven’t used it already in that specific academic year in another subject).

- **What is a prerequisite?**
  Prerequisites are courses that must be taken before another course. For example, Medical Chemistry is a prerequisite for Medical Biochemistry, Molecular and Cell Biology I. Students must successfully complete Medical Chemistry before registering for Medical Biochemistry, Molecular and Cell Biology I. Please note that prerequisites are clearly listed in the curriculum.
• **What is a corequisite?**
Corequisites are courses that must be taken at the same time as normal courses. Registration for corequisites must be done prior to registration for normal courses in the given term. Corequisites are marked with a star symbol in the Calendar of each semester’s curriculum affected (e.g. 3rd and 4th year)

• **What do I need to do if I am planning to take a leave of absence?**
If you take a semester off you will need to email your registrar and register for a ‘passive’ semester via the Neptun system during the registration period for the next semester.
For details, please see the Neptun manual/Registration in the beginning of the Calendar

• **What do I need to do if I am returning from a leave of absence?**
Contact your registrar for procedures regarding returning from an official leave of absence and check your Neptun account on a regular basis. Make sure your tuition fee is paid by the relevant deadline.

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**TRANSCRIPT**

• **What is a transcript? How do I request my transcript?**
The transcript is an official statement of all results achieved through study at Semmelweis University as of the date of printing. You cannot have a transcript until all grades are posted in the Neptun student information system by the departments and your grade book is submitted to the Foreign Students’ Secretariat with all results. It is the department’s responsibility to upload the exam results to the Neptun system.

Transcript requests must be made in writing. To make your request, you may stop by the Foreign Students’ Secretariat or send it via e-mail. You can indicate in your request if you would like us to forward the transcript to your email address. Processing of transcript requests takes approximately 5 business days. However, during certain times of the year there will be a slight delay, 2-3 days, due to the heavy volume of requests. The fee for the transcript must be paid for prior to the issuance of the transcript(s). Please be sure to allow sufficient processing time for your request.

Please note: the university may discontinue or suspend this service at any time without notice if the fee for the transcript is not paid.
STUDENT COUNSELLING

The Institute of Behavioural Sciences at Semmelweis University is providing student counselling in English and German as well. Coming to university can be a very exciting and rewarding time. It can also be a time of change and stress, especially if you study in Budapest, left your home country and have to face a new culture, language and environment. There may be a whole range of difficulties and dilemmas affecting your life and studies.

These may be the result of either past or present experiences. The University Counselling Service is one of the services which are there to help. One way of starting to with things is to see a counsellor. This involves meeting with a trained person to talk about the issues that are important for you.

There are a number of ways in which counselling can help, such as:
- Dealing with a crisis or immediate concern
- Support with longer term difficulties
- Getting access to specialist help
- Referring on to other resources

Counselling is an active process that is designed to give you the time, space and encouragement to explore and understand the issues you bring. The counsellor will be able to help you think about your problems from a different perspective. Their role is to provide you with a secure framework in which to reflect upon your circumstances. The aim is, that in time this will increase your awareness of yourself, your situation, and the choices that are open to you. Coming for counselling can take courage as it involves facing yourself and asking someone else for help.

Counselling provides a safe place, separate from your daily life, where you can explore issues or feelings which are causing you difficulty. The counsellor will aim to relate to you in a supportive and purposeful manner and assist you in the task of finding your own way forward. Your use of counselling remains confidential to the service within the limits agreed with your counsellor.

Emotional and psychological problems encountered by student counselling services include:
- anxieties about aspects of study including exams and presentations
- general stress and anxiety
- depression
- relationship difficulties
- eating problems
- bereavements and parental separations
- loneliness and homesickness
- lack of self confidence or low self esteem
- managing transitions
- making difficult decisions
- traumatic experiences including rape, assault and abuse
- difficulties with alcohol or drugs
- issues around sex, sexual orientation and sexuality
- self-injury
- suicidal thoughts
- anger management
- worries about appearance
- any other topic or problem you wish to talk about

Contact:
If you have any question, need to talk to someone on the phone in advance, or want to book an appointment to see a counsellor, just send us an email and we will get back to you within 48h:
Dr. János Kollár
E-mail: studentcounselling@net.sote.hu
Home page: http://behsci.hu/health/student-counselling
Institute of Behavioural Sciences
Nagyvárad tér 4, 20th floor,
1089 Budapest
Appointments are available between Monday and Friday (16-20 o’clock) upon request (via mail)
ERASMUS Program

http://semmelweis.hu/english/education/erasmus/

Office Hours and Contacts

Office Hours
   Monday:  9 a.m. – 12 p.m.
   Tuesday: 1 p.m. – 3 p.m.
   Wednesday: 9 a.m. – 12 p.m.
   Thursday: 1 p.m. – 3 p.m.
   Friday: CLOSED

For the efficient and continuous work of the office, we kindly ask that you respect our office hours! In case of an urgent matter, please contact the ERASMUS office either by phone or email, in order to obtain a personal appointment.

Address
H-1085 Budapest, Ülloi út 26. Room 202

Contact Information
Ms. Katalin F. Tóth
ERASMUS Institutional Coordinator
Tel: (+36 1) 459-1500, ext. 55827
Fax: (+36 1) 459-1588
E-mail: erasmus@semmelweis-univ.hu

Ms. Márta Honvéd
Coordinator Assistant
Tel: (+36 1) 459-1500, ext. 55828
Fax: (+36 1) 459-1588
E-mail: erasmus@semmelweis-univ.hu
Mission Statement

Semmelweis Alumni’s mission is to help build long-lasting and mutually beneficial relationships between the University and its current students, alumni, faculty and researchers.

Membership

To become a member of Semmelweis Alumni, you need to complete a registration form. Registration is free of charge and memberships remain valid indefinitely.

You may become a member if you meet any of the following criteria:

● You are currently a student at Semmelweis University and have successfully completed at least four semesters;
● You are a former student of Semmelweis University or one of its legal predecessors and successfully completed at least four semesters;
● You are currently a faculty member or researcher at Semmelweis University
● You were formerly a faculty member or researcher at Semmelweis University
It is an association made up of students from different faculties at Semmelweis University in different years with very different nationalities and backgrounds. Their aim is to give voice to the international student community at Semmelweis University and support them in different methods. Their reach includes but is not limited to the following:

1. Organizing international student events two of which is the Freshmen's Day event for the incoming students every year and also the Semmelweis Carnival
2. Creating a bridge between the students and staff (teaching and non-teaching) through conducting interviews
3. Listening to students concerns through Student Affairs and handling case by case
4. Creating a magazine dedicated to international student committee Review which is full of information for the students and also from students
5. and many more...

The association is actively working to create a pleasant life for the students at Semmelweis University and give voice to their needs. Our mission statement is as follows:

- **Learning** – We compliment and enhance the academic experience.
- **Service** – We are dedicated to serving students and our broader community. We provide good customer service and resources for events/event planning and offer leadership development opportunities.
- **Advocates** – We strive to serve as student advocates.
- **Balance** – We strive for wellness and balance in our activities and events.
- **Ethical Decision Making** – We believe in honesty and integrity during all interactions.
- **Stewardship** – We strive to use all resources effectively and efficiently.
- **Community** – We strive to build a supportive and inclusive office environment/campus community where everyone feels welcome.

The **Student Affairs Committee (SAC)** is a student-run organization within ISSA. Our express goal is to improve lines of communication between students and members of faculty, as well as advocate on behalf of students’ opinions and interests. The backbone of the Student Affairs Committee is the representatives from each year and faculty (Dentistry, Medicine, Pharmaceutical Sciences). Representatives are responsible to both their classmates and their fellow committee members. They are the first to be approached should any issues arise among students within their year. They then bring these problems to the committee so that the SAC team may resolve them. At times, the representative may be responsible for resolving the problems themselves; at times they will be charged with handing over the responsibility to a higher up. Class reps may also be called on to speak with members of the administration, something they are able to do with confidence and professionalism.
STUDENTS’ SCIENTIFIC ASSOCIATION (TDK)


A unique feature of Hungarian universities is that undergraduate students have the opportunity to be involved in top-level scientific research starting in their undergraduate years. To facilitate this, students maintain their own organisation, the Students’ Scientific Association (in Hungarian: Tudományos Diákkör – TDK). TDK activities, which include organising scientific conferences, are overseen by the TDK Council. During the last ten years, the number of students involved in scientific research has grown twofold, while the number of lecturers attending TDK conferences has increased threefold. Currently, over 1000 Semmelweis University students pursue science in addition to their regular studies, more than 400 of whom present their research results at the annual TDK conferences.

The University’s students often receive great honours at national and international conferences and many of them publish scientific research articles in international journals as either first or co-authors. Each year, the ten best graduating students receive the “Outstanding TDK Student of Semmelweis University” distinction.

It is pleasing to see that the University is attracting ever more students who had started doing research during their high school years. To encourage the continuation of this practice, the TDK Council promotes the involvement of students in scientific research from their very first year at university.

The TDK Council also promotes close contacts with fellow TDK organisations abroad. Students are sent to international TDK conferences and cooperate with the Hungarian Medical Students’ International Relations Committee (HuMSIRC), through whom longer study tours can be organised.

TALENT SUPPORT PROGRAM OF SEMMELWEIS UNIVERSITY

To support the talented and gifted students the Senate of Semmelweis University initiated a Talent Support Program named after the former professor of our University, Ödön Kerpel-Fronius.

Participants of the program will be recruited after a personal assessment interview of the students on the Excellency List organized by the Talent Support Council of the University.

The Excellency List contains not more than the best 5% of the students of the university.

Application for the inclusion in the Excellency List is possible by filling in the Application Form, which can be downloaded from the kerpel.sote.hu/kivalosagi_listara_kerules_szabalyrendszere or kerpel.sote.hu/kivalosagi_lista web-sites.

Applications should be sent electronically to the tehetsegpont.se@gmail.com email address as an attached file until March of each year.

Students on the Excellency List will be called for an interview by the Talent Support Council of the Semmelweis University and approximately half of them will be included to the Kerpel-Fronius Ödón Talent Support Program.
General information on Ph.D. studies, resident training and postgraduate studies for foreign applicants

In principle, there is no possibility to continue medical (or dental) studies at Semmelweis University with an undergraduate degree obtained at a foreign university, due to the differences in the structure of the curriculum and that of the degree system. It must be noted that there is no Bachelor level in the medical (and dental) education in Hungary and therefore such foreign degrees do not enjoy automatic acceptance in our country.

The general medical education in Hungary is a single, 6-year-long full time course that is divided into three modules: the basic medical sciences module (2 years), the preclinical module (1 year) and the clinical module (2 years). The sixth year of education is an internship year.

After successfully completing the sixth year and passing all the exams, medical students in Hungary obtain the Doctor of Medicine (MD) degree.

Against this background, holders of Bachelor-level degrees are not entitled to study at Semmelweis University as postgraduate students. However, one may sit for the entrance examination for the first academic year and after being accepted and enrolled, one may ask for exemptions on the documented previous studies and examinations of his/her Bachelor-level course.

For further information on our English language undergraduate programmes please visit the website at http://semmelweis.hu/english/education/english-language-program/

Those who already hold a Doctor of Medicine (MD) degree and wish to continue their studies in order to obtain a Ph.D. degree, may send an application to the School of Doctoral Studies. For further information please visit http://phd.semmelweis.hu/en/

School of Ph.D. Studies
Phone: +36 1 266-7483 és +36 1 266-2343
Fax: +36 1 317-4888 (only fax!)
Office hours:
Monday: closed
Tuesday, Thursday, Friday: 8.30-12.00
Wednesday: 13.00-16.00

Those persons who hold a Doctor of Medicine degree obtained at a non-Hungarian university and wish to join a medical Residency Training at Semmelweis University have to go through a special application procedure. Please note that a good command of the Hungarian language is a precondition to join the Residency Training. Further information can be obtained from http://semmelweis.hu/english/education/continuing-education/

Directorate of Continuing Education
Phone: +36-1-210-1784, +36-1-459-1446
Address: 1091 Budapest, Úllói út 25. (City Corner Office Block)
Mailing address: 1085 Budapest Úllói út 26.
E-mail: szakestovabbkepzes@semmelweis-univ.hu

Postgraduate Courses at Faculty of Dentistry
Address: 1088 Budapest, Szentkirályi u. 47. VII/751.
Phone: 36 1 266 7006
E-mail: szkepz@dent.semmelweis-univ.hu
Office hours:
Thursday: 09.00-11.00

Postgraduate Courses at Faculty of Pharmaceutical Sciences
Address: 1092 Budapest, Hőgyes Endre u. 7-9. B
Phone: + 36 1 266 8411
E-mail: szakkepzes@pharma.semmelweis-univ.hu
Office hours:
Monday, Tuesday, Thursday: 13.00 - 15.00
Wednesday: 10.00 - 13.30
Friday: 09.00 - 12.00
FACULTY OF HEALTH SCIENCES
Brief History of the Faculty of Health Sciences

The University’s second largest Faculty is the Faculty of Health Sciences. The Faculty started its first academic year in 1975 with the aim of training highly accomplished, skilled, committed and open-minded health care professionals. This was the first higher-level school in Hungary that trained dietitians, health visitors, physiotherapists, public health and epidemiology inspectors, vocational teachers and paramedics. During the past years both the structure of education and the curriculum have undergone changes in the spirit of modernization. The Faculty continuously expands the range of its Hungarian and English language training programmes. The Faculty offers study rooms, lecture halls, specialist laboratories, demonstration rooms and a public library that are all equipped with state-of-the-art technology, as well as a great variety of active student life and a motivating environment to prospective students. Following graduation, students of the Faculty can immediately be involved in different areas (ex.: health care, tourism, education, sociology) and they are able to improve their close and broad environment.

Facts and Figures

The Faculty of Health Sciences celebrated its 40th anniversary in 2015. Since its foundation, more than 23,000 students graduated from the Faculty and today about 3,500 students are studying at this institution. The Faculty is very proud of its library containing more than 50,000 volumes.

During the last four decades the Faculty has developed extensive international relations, and as a result we have connections with about 50 higher educational institutions throughout Europe, Asia and America. More than 30 students and staff members have the opportunity to take part in short- and long-term exchanges in the framework of the Erasmus+ programme in our partner institutions annually.

The Faculty’s Asian relations have also been largely extended by establishing a fruitful relationship with Shanghai Jiao Tong University School of Medicine (SJTU), moreover, with Heilongjiang University of Chinese Medicine (HLJUCM) that launched its off-campus BSc Traditional Chinese Medicine training at our Faculty. In the framework of the program, students study in Hungary during the first 4 years, while they can get acquainted with the science of Chinese Medicine at the Chinese university in the last year.

We are also proud of having operated our bilingual (Italian and English) BSc Physiotherapy training in Lugano, Switzerland since 2009. Over 250 students participate in our programme there. The scale of our international relationship is growing on a daily basis and we accept several groups of students from different countries on our 2-3 weeks advanced programmes mainly from the USA, China and Japan. In these programmes many opportunities are provided to our students to participate in and to build international professional connections.
Leadership, Dean’s Office

Address: H-1088 Budapest, Vas utca 17.

Phone: +(36-1)486-5910
Fax: +(36-1)486-5913
E-mail: student@se-etk.hu
Home Page: http://etk.semmelweis.hu/english

Dean Prof. Dr. Zoltán Zsolt Nagy MD, PhD, DSc
Vice Deans
Professor Dr. István Vingender PhD – Academic Affairs
Prof. Dr. János Rigó MD, PhD, DSc – Clinical Affairs
Prof. Dr. Gabriella Dörnyei PhD – Scientific Affairs

Director of the English Language Programmes

Professor Dr. István Vingender PhD

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Foreign Students’ Secretariat

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Fax: +(36-1)486-5913 room: 129
Mr. Mátyás Magyaros – Administrator
Phone: +(36-1)486-4970 e-mail: magyaros.matyas@se-etk.hu
Fax: +(36-1)486-5913 room: 129
Information about the BSc and MSc programmes

Training system

Hungary, as a member of the European Union, belongs to the unified European Higher Education Area, which in principal follows the multi-cycle (bachelor, master and doctorate) training system. In this system it is much easier for students, lecturers and researchers to travel and build international relations, moreover, as citizens of the European Union they can continue their studies and plan their future as employees or entrepreneurs in any of the member states.

These opportunities open up a wider field for non-European citizens studying in Hungary as well, since the possibilities of internal mobility inside the unified Europe are based on the training channels and close relationships between countries, in the labour market and among institutions.
Programmes of the Faculty

I. Bachelor of Science (BSc) Programmes

1. Nursing and Patient Care BSc Programme

Specialized programmes: Physiotherapy (Hungarian, English), Nursing (Hungarian, English), Midwifery (Hungarian, English), Dietetics (Hungarian, English), Paramedics (Hungarian)

Physiotherapy

Physiotherapists act as autonomous practitioners who are able to perform functional examinations, identify impairments, functional limitations, abilities and disabilities by using clinical decision making processes. Physiotherapists treat patients with therapeutic exercises, manual techniques and other therapeutic modalities as the professionals’ chief task is to improve the functions of the musculoskeletal system. The therapists develop movement therapies and apply electrotherapeutic treatment, therapeutic ultrasound, and different manual and massage treatments for the sake of healing and rehabilitation or for the prevention of health damage. Graduates take part in healing locomotor (orthopaedic, rheumatologic, traumatologic), cardiovascular, obstetrical, gynaecological, neurological and psychiatric disorders. Prevention and health promotion belong to the specialists’ profession, too. Physiotherapists plan, explain, carry out, and adapt an examination-based treatment, draw conclusions from the examination as a whole and rank the main problems according to priority.

Qualification
Physiotherapist

Nursing

The occupation of nurses is a vocation that is pursued for the sake of health preservation, promotion and patient healing. Nurses observe patients in the hospital and continuously monitor their needs, take part in disease prevention and act as active contributors to the process of the patient’s recovery and rehabilitation. They help patients absorb and understand the information on their health status. Nurses holding a BSc degree can organise, manage and supervise all their internal medical, surgical, obstetric-gynaecological, psychiatric, intensive nursing and primary care tasks in every area of health care. They are responsible for conducting the healing-nursing activities prescribed by the physician, and help the patient and the physician perform certain examinations. Graduates of the speciality are able to provide health care treatment for each age group from premature infants to elderly patients, explore the special needs of the patient and the person cared for, prepare nursing diagnoses and perform the tasks professionally on the basis of priorities, participate in planning, developing and implementing health care and social services.

Qualification
Nurse

Midwifery

Midwives fulfil caring and nursing tasks during pregnancies, in the postpartum period and on the occasion of gynaecological problems. Their responsibilities are to monitor pregnancies, labours and the postpartum progress while cooperating with other health care professionals in order to achieve the best possible outcome for each family. From the start of the parturition, midwives prepare and continuously support and encourage the woman during labour, monitor the process of deliveries and the mother-infant connection, assess and register their observations. Midwives individually assist deliveries, take care of the pro-
tection of the perineum and of the treatment of the woman and the newborn baby during the post-delivery period. Graduate midwives look after, nurse and care for female patients and perform the required specialised treatment. State of the art skill laboratories help the preparation of the students for their future profession.

**Qualification**
Midwife

**Dietetics**

Dietitians deal with the questions of human nutrition and possess knowledge about healthy diet and diseases caused by unhealthy nutrition. Graduates are able to practise diet therapy independently, or perform dietetic and catering tasks as members of a therapist team. The specialist’s tasks include individual and group counselling, preventing nutrition related chronic and non-contagious diseases, organising diet plans according to the client’s sensitivity and disease type. They manage catering units: lead the catering service, organise catering work procedures, and establish appropriate and acceptable conditions for catering. Dietitians play an important role in teaching how to lead a preventive and healthy life as they can also develop and implement programmes for health promotion.

**Qualification**
Dietitian

**Paramedics**

Graduates are able to approach professionally and safely patients or victims in prehospital emergency care (oxylogy), able to perform triage, on an individual basis and also during a catastrophic event. On the scene, paramedics familiarise themselves with the nature of the emergency, examine the patient, and make a primary diagnosis. They stabilise and care for the patient, decide on the possibilities of leaving the patient on the scene. Paramedics observe, monitor the patient during transport, communicate appropriately with the patient and his/her relatives, complete the necessary interventions, and provide psychological support for the suffering patient. Paramedics holding a BSc degree also complete standby on-call duties, organise teamwork in the system of emergency care within health institutions, teach First Aid, and participate in the further training of emergency nurses and ambulance car drivers. Paramedics work in close alliance with the control staff, ambulance assistants, physicians, and health care professionals of hospital emergency care.

**Qualification**
Ambulance Officer (Paramedic)

**Voice, speech and swallowing therapy**

Voice, speech and swallowing therapists perform diagnostic and therapeutic tasks in otolaryngology, phoniatics, neurology, paediatrics, geriatrics and rehabilitation units as well as in outpatient services and can treat certain functional disorders in private practice. Their responsibilities include the functional examination and therapy of phoniatics, articulation, speech-language abilities, nutrition intake (chewing, swallowing). Graduates are able to treat the disorders of two fundamental functions of human life: the disorders of communication and of food intake. They are able to contribute to the rehabilitation of persons suffering from these functional disorders, thus enabling them to manage their social responsibilities and to integrate into society. Graduates are able to participate in preventive, curative, nursing and rehabilitating professional work on any level of the health care and/or social care system.

**Qualification**
Voice, speech and swallowing therapist
2. Health Care and Disease Prevention BSc Programme

Specialised programmes: Health Visitor (Hungarian, English), Public Health Care Inspector (Hungarian)

Health Visitor

The health visitor is present in the families’ life during the most important steps of life: during pregnancy, reception of the newborn baby, formation of family life and at the time of enrolment to nursery and elementary school. Graduates are able to provide counselling concerning family planning and parenthood, help and provide nursing care to the pregnant woman, and perform screening tests. After childbirth, the health visitor teaches the mother the ways of breastfeeding and her tasks related to the child. They monitor the health condition and development of neonates, provide community health care for children (aged 3-18), aid in the prevention of behavioural disorders and bad habits, solve the problems of teenagers and direct them to the appropriate professional. Health visitors give mental hygiene support to families and organise vaccinations. Health visitors take part in planning, organising and conducting health development and promotion programmes for individuals and communities. They perform their duties either independently or in cooperation with doctors and other medical experts.

Qualification

Health Visitor

Public Health Care Inspector

A public health inspector deals with epidemiological tasks that consist of the organisation of public health investigations and the analysis of data retrieved during the investigations. Graduates of the speciality are able to perform public health related municipal activities, conduct appropriate municipal supervision based on current regulations, initiate, plan and manage epidemiological tasks, analyze, interpret, use and critically apply the results of epidemiological examinations, process and realize local and central health policies in order to improve the health status of the population. Public health supervisors plan and realize nosocomial surveillance, monitor the health status of the population, plan, organize, realize and evaluate preventive programmes.

Qualification

Public Health Supervisor

3. Medical Diagnostic Analysis BSc Programme

Specialised programmes: Optometry (Hungarian, English), Radiography (Hungarian)

Optometry

Optometrists are able to utilise their optic, optometric, measuring and clinical knowledge gained during the training programme, conduct the examination and correction of the eye individually and prescribe optical aids (eyeglasses, contact lenses) with the aim of attaining the optimal visual acuity in patients. The professionals are able to estimate the refractive medium, refractive ability, errors of refraction, the way eye muscles function, and the ability of heterophoria and convergence. Professionals examine binocular vision, the chamber of the eye, crystalline lens, vitreous humour and the eye fundus with the help of a slit lamp, and they estimate ocular tension. Optometrists utilize their clinical and nursing knowledge during their daily activities, actively participate in improving the culture of vision of individuals, communities and the population. Through
examinations, the optometrist recognises and evaluates the disorders of the eye and so contributes to the immediate receipt of specialised care.

**Qualification**
Medical Diagnostic Analyst (Optometrist)

**Radiography**

Medical diagnostic analysts individually operate modern diagnostic imaging appliances (e.g. X-ray, ultrasound, computer tomography /CT/) while keeping the related regulations and procedures. They process, evaluate and archive diagnostic imaging information, establish a daily contact with patients and prepare them for diagnostic imaging therapies. The specialists observe patients during examinations, perceive pathological situations, participate in therapeutic examinations, recognize health damaging effects as results of radiological interventions, and other technological errors, and they prevent them.

**Qualification**
Medical Diagnostic Analyst (Radiographer)

**4. Health Care Management BSc Programme**

**Specialized programme:** Health Tourism Management (Hungarian)

**Health Tourism Management**
Graduates of the training take part in organising and managing health promotion activities, prepare projects that aim at developing health tourism and strengthening international cooperation, and they participate in the implementation of tourism development programmes of the European Union. The health care manager is a versatile professional who is proficient both in health care processes and in the field of tourism. Their acquired knowledge comprises information on health, tourism and business, therefore they are not only able to see through, organise and coordinate the operation of health care institutions but with appropriate business knowledge they are able to market and manage them, too. The speciality provides the necessary knowledge to create health tourism, health preservation, curative and rehabilitation programmes.

**Qualification**
Health Care Manager (Health Tourism Management)
II. Master of Science (MSc) Programmes

Physiotherapy MSc Programme

Master’s level physiotherapists develop therapeutic procedures and protocols based on their extensive national and international knowledge and skills, recognise and analyse physical, anatomical, physiological and pathological factors affecting physical ability and capacity. They participate in solving scientific problems in physiotherapy, and finding new skills and knowledge in their expertise. The specialists perform scientific evaluation of the effectiveness of physiotherapeutic methods, organise and realise clinical research in physiotherapy, publish new scientific results and act as leaders in hospital units of physiotherapy, apply fundamental regulations and quality control principles in the management of health institutions and private enterprises. The promotion of health education on local, community, national and international levels also belongs to the tasks of a physiotherapist.

Qualification
Physiotherapist

Languages
Hungarian, English

Nursing MSc Programme

Master’s level nurses characterise the health status of the population, formulate problems, priorities and aims in public health. They conduct research and analyse technical literature, interpret the results of modern statistical methods, perform tasks of organisation and management related to the nursing process. They are able to perform human resource management tasks related to nursing. Planning budget and writing tenders, planning, realising and evaluating programmes, and establishing cooperation between institutions and individuals belong to the tasks of nurses, too. The health care professionals are acquainted with the role and the possibilities of the improvement of health sciences in the life of society, and they are able to characterise the health status of the population. Master’s level nurses formulate problems, priorities and aims in public health, they take part in solving the scientific problems of nursing, in finding new and constructing ideas about the profession and in the promotion of their practical usage.

Specialisations within the Nursing MSc programme

Emergency Nursing
Geriatric Nursing
Community Nursing
Anaesthesia Nursing
Perioperative Nursing
Intensive Nursing

Qualification
Nurse

Languages
Hungarian, English
Nutritional Sciences MSc Programme (Joint training of Semmelweis University and Szent István University)

Nutritionists develop quality food, functional food, food supplements, special nutrients, eco products and organic food. They develop food industrial innovations, determine food qualities considering hygienic aspects, take part in professional and counselling tasks in the field of nutrition sciences and catering. Master-level dietitians determine the composition of food and diets for healthy people and those with different diseases, perform innovative research and development work preferred by the support system of the European Union. Master’s level dietitians are able to understand and solve professional problems assertively, come up with reform ideas, and carry out innovative activities. The nutrition specialist plans and compiles healthy diets in the field of health industry, wellness, medical tourism and hotel industry. Nutritionists promote the achievements of nutrition science in order to improve public health figures, work as highly-qualified nutritionists, researchers, advisors and health educators.

Qualification
Nutritionist

Language
Hungarian

Teacher of Health Sciences and Health Care MSc Programme

Master’s level health care teachers are capable of educating people about healthy lifestyle using their knowledge gained in the fields of health sciences and pedagogy. For the sake of improving the quality of life of people, professionals plan, develop and adopt prevention programs in the specialist training, suggest problem solving and up-to-date life models in accordance with the altered health statuses. They give advice on career orientation, career choices and career planning. While applying health education methods, the teachers are able to recognize those negative effects that arise from harmful environment or poor social situation and lifestyle. In specialised health related interpersonal relationships, their activity is characterised by high communication standards and didactic preparedness. Master’s level health care teachers possess the ability to educate, and to demonstrate good example while teaching, moreover, they are able to recognize the relationship and development opportunities between the training institutions, the economy, the labour market and the social environment.

Qualification
Teacher of Health Sciences and Health Care

Language
Hungarian

III. Postgraduate specialist training courses

- Addictology Consulting (Hungarian)
- Wellness Management (Hungarian)
- Health Care Project Management (Hungarian)
- Special Translation and Interpretation in Health Sciences (Hungarian)
- Traditional Chinese Therapy (Hungarian)
- Rehabilitation-Creative Therapy (Hungarian)
- English Language Medical Communicator (Hungarian)
- Podiatrist (Hungarian)
DEPARTMENTS

INSTITUTE OF APPLIED HEALTH SCIENCES

Department of Nursing

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Background
The Department was founded in 1975 as a part of the College of Health Care of the Postgraduate Medical School (now Semmelweis University Faculty of Health Sciences). It was the first college in Hungary to award degree to health care teachers in 1977. Academic level training of nurses began with part-time courses in 1989/90; since 1990/91 a full-time course is offered as well. The College of Health Care was also the first to introduce a four-year baccalaureate certificate programme in nursing. The Masters-level programme in nursing was introduced in Academic Year 2002/2003.

Education
BSc Nursing is an eight-semester programme, either a full-time or part-time, which provides students a general knowledge of science related to nursing, health and social sciences. The BSc Nursing programme is based on the Directive 2005/36/EC of the European Parliament and the one of the European Council of 7 September 2005 on recognition of professional qualifications. Our programme has been running in English since the 2011/2012 academic year.
MSc Nursing is a three-semester part-time programme based on a former bachelor degree in nursing. During their studies, students learn the planning of nursing in all areas of health care, the organisation of the nursing work, the teaching of the basics of nursing and health care, the organisation of research projects in nursing, and the supervision of quality assurance in nursing care.

Research
The previous members of the Department’s staff supported projects such as the development of a nursing curriculum with the introduction of distance education methodology into nursing training programmes (in collaboration with Columbia University, School of Nursing (USA) in 1995-98 and a Hungarian-Canadian nursing programme for a methodology and model of prior learning assessment and recognition (PLAR) of nurse-candidates (Douglas College, Canada) in 1999-2000.
In co-operation with the Chamber of Hungarian Health Care Professionals, the present members of the Department performed investigative research into the Hungarian situation with regard to needles-stick injuries in 2006, 2008, 2013, 2018 among health care professionals. The objectives of the study were twofold: to reveal the trend in the extent to which health workers are affected, and to draw the attention of economic and education decision-makers to the importance and prevalence of the issue.

The other research program aims to explore from an international perspective the meaning of care from the point of view of nurses and patients and to find common and shared definitions between these partners of caring. In addition, it aims to identify the relationship between nurse caring and patient satisfaction and to clarify the opinion of nurses and patients on individualized nurse caring. In this study (2008-2014), participants from 6 EU countries: Cyprus, Czech Republic, Finland, Greece, Hungary and Italy united their efforts in order to achieve the aims of the study. More information is available on the common webpage: http://www.cut.ac.cy/careProject/publications/

Europe faces severe population ageing in the near future. A new positive vision of ageing and promotion of possibilities in older age is needed. The challenge is how to transfer this vision into practice. Higher Education Institutes and associations agreed to apply a project. Funding was received from Life Long Learning Program-Erasmus Academic Networks for a project for the years 2013-2016. More information is available on the projects’ webpage: http://ellan.savonia.fi

**Department of Clinical Studies in Obstetrics and Gynaecology**

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**Background**  
The Department of Clinical Studies in Obstetrics and Gynaecology was founded in 2014. Earlier, the training of midwives was performed by the Division of Midwifery of the Department of Nursing. Academic level training of nurses began through part-time courses in 1989/90; since 1990/91 a full-time training programme is offered as well. Additional programmes have been introduced in recent years, including the training of midwives (2002) and a masters-level programme in nursing (2003). The English language midwifery training programme was introduced in the 2011/12 academic year.

**Education**  
The BSc midwifery training programme can be completed on either a full-time or part time track. Those who receive a midwifery degree upon successful completion of this program are able to carry out communicational/informational/documentation activities, provide a safe and hygienic environment, complete general midwifery tasks, and provide first aid, complete

Research

Members of the Department’s staff support projects and research in different fields of health care and health care education, e.g.: health behaviour of practising midwives, simulation education and curriculum development, and the impact of maternal depression on pregnancies and early attachment.

Department of Physiotherapy

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Background

Underwater therapy equipment was used in the Császár baths as early as 1891. The first physiotherapy training in Hungary, which was more of an artistic movement therapy, was started by Alice Madzsar in 1912. The need for physiotherapy arose during the time of the Poliomyelitis epidemic, resulting in the foundation of a proper physiotherapy school in Budapest in 1955. At this time, the training was two years long, the duration of studies increased to four years only in 2000.

Education

The Department’s aim is to train physiotherapists who can be valuable members of a health care team of prevention, care and rehabilitation. The Physiotherapy undergraduate programme consists of 240 credits, which corresponds to the requirements of a Bachelor’s degree. The Department also offers the 3-semesters Master Programme for another 90 credits in 3 semesters. Each term consists of courses corresponding to 30 credits. Courses are divided into theoretical and practical units, each unit covering a particular field of physiotherapy. At the BSc programme the supervised clinical practice takes place from 1th to 7th semester (two to three weeks), and in the 8th semester (12 weeks) at a variety of medical centres. Physiotherapy programme comprises an independent graduate project corresponding to 1152 clinical practice hours, which is equal with 48 credits. The Master programme’s last semester can be divided into two halves. At the beginning the students have theoretical and practical courses and in the last 8 weeks they attend specialised clinical practice and scientific research.
Successful completion of the programme requires that students:

- acquired sufficient knowledge and skills to be able to work independently as physiotherapists;
- acquired knowledge and skills of physiotherapeutic methods of assessment and treatment, as well as knowledge of the connection between science and long-established experience;
- developed their self-recognition and capacity for empathy, thereby paying attention to ethical considerations;
- and familiarised themselves with conditions in society which affect people’s health, and gained an ability to initiate and take part in the health-promoting and preventive efforts.

Biomechanical Lab

The biomechanical lab is equipped with the latest technology. With these modern pieces of equipment we can perform dynamic and kinematic measurements to demonstrate the discrepancies of musculoskeletal, neurological and other problems, moreover, we can compare the physiological and pathological movement patterns. The use of these devices helps us to test the validity of traditional physiotherapy examination methods, as well as measuring the effectiveness of the therapies by objective data. In addition, our laboratory with the new visual stimulation biofeedback equipment can be used not only to analyse the walking but to correct and develop it. So now it is suitable for therapeutic interventions.

Both the BSc and MSc programmes’ curriculum include subjects that instruct the students how to use these devices for their thesis, dissertation research and for projects in the Students’ Scientific Association.

Research

Some areas of research interests at the Department:

- the biomechanical characteristics of standing stability and balance maintenance, testing by biomechanical equipment and therapeutic possibilities with physiotherapy
- examination of posture with ultrasound-based 3D movement analyser equipment, correction of posture by physiotherapy
- treatment of incontinence with complex physiotherapy methods
- effects of positive end-expiratory pressure in cystic fibrosis
- conservative therapeutic options of the knee-instabilities
- chest physiotherapy in cystic fibrosis with the specific features of childhood
- clinical features of paraneoplastic syndrome in the musculoskeletal system
- the effect of exercise in cardiac rehabilitation;
- the effect of exercise in musculoskeletal rehabilitation;
- gait analysis according to the ultrasound-based 3D method.

Division of Physical Education

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The Division of Physical Education teaches the 4-semesters long criteria subject, the Physical Education (PE) for each full-time BSc student. PE classes enable students to several opportunities for sport (swimming, volleyball, handball, basketball, football, floorball, conditioning, aerobic) in different locations (gym, swimming pool).

Apart from the PE course, therapeutic swimming that is highly demanded by our students is also launched as a selective subject in each semester.

Colleagues of the Division participate in the operation of the Student Sport Association (DSE). Primarily, the Association provides student participation in the university’s system of sport competitions.
Department of Dietetics and Nutrition Sciences

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Background
Education of dietetics in Hungary dates back to the 1920s and was initiated by Aladár Soós. The Department of Dietetics was founded in 1975 as part of the newly established College of Health Care (now Semmelweis University Faculty of Health Sciences). The main task of the Department is the undergraduate and graduate training of dieticians while providing courses on nutritional sciences and dietotherapy for other health professionals educated at the Faculty. The Department of Dietetics and Nutrition Sciences is responsible also for the training of masters of nutrition and food sciences. The programme is carried out in collaboration with Szent István University.

Education
Over the last 40 years, as many as 2000 dietitians completed their studies here. The undergraduate training course consists of eight semesters, with a total number of 240 ECTS, of which 40% is devoted to theoretical training and 60% to practice. During the education students are taught about each scope of dietetic practice such as clinical, administrative and public health/community dietitians. Graduate students can be employed in different areas of public health nutrition and nutritional research fields. Postgraduate training programmes are also available for dietitians. In the 2009/2010 academic year a new training program, the Master of Nutrition and Food Sciences was launched. Students are taught by experienced teachers who are recognized as experts in the field of nutrition and food technology as well as in research methodology. The duration of the training is 4 semesters with a total number of 120 ECTS. Graduate students can be employed in different areas of public health nutrition and nutritional research fields. Postgraduate training programmes are also available for dietitians. Graduating as masters of nutrition and food sciences allows students to continue their studies at PhD level at Semmelweis University Doctoral School in the Health Sciences Researches programme.

The Department of Dietetics and Nutrition Sciences has collaborative partnership with the European Federation of the Associations of Dietitians (EFAD).

Research
The Department has been involved in several projects sponsored by, for example, the EU: the “Ageing Nutrition” project (2004-06, organised by the Department), the “PORGROW” project (2004-06), furthermore, the Department participated as partner institution in the thematic network called DIETS1, „Dietitians Improving the Education and Training Standards (2006-09)“ and DIETS2, ‘Dietitians ensuring education, teaching and professional quality’ (funded by the EACEA 2010-13). The Department is involved in the preparation of the Hungarian version of EPODE Project collaborating with the Association of Hungarian Dietitians (2014).

Members of the Department’s staff are involved in the PhD education as tutor teachers.
Research area:
- Food production by fermentation for patients with food allergy and intolerance
- Nutrition Science Analysis and Diet hoterapic Interventions
- Innovation in public catering
- Disease Specific Nutrition Therapy and Communication Method
- Examination of the nutrition and nutritional status of the elderly

Fields of scientific interest are:
- Investigation of biologically active component of vegetable and fruit during cultivation, post harvesting, food technology and food preparation
- Determination of mycotoxin contamination in foodstuffs
- Monitoring of allergen contamination of equipment, tools and food preparation process
- Role of food labelling in order to improve informed and safe food choice of people with special dietetic needs
- Monitoring of different groups’ nutritional status and nutrient intake for the purpose of health preservation and to identify risk factors of diet-related diseases
- Assessment and analysis of the fluid consumption habits, attitudes and product choice preferences and education of theme for the purpose of health preservation
- Teaching correct dietary habits in children’s catering, development of eating behaviours
- Members of the Department’s staff are actively involved in the boards of various professional organizations in the field of nutrition, such as Hungarian Society of Nutrition, Association of -Hungarian Dieticians, Hungarian Food Allergy and Food Intolerance Databank, College of -Health Dietetics and Human Nutrition Council, National Association of Catering Managers.
- Moreover, they hold positions in the editorial boards of several professional periodicals.

Department of Oxyology and Emergency Care

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Background

Oxyology – the science of rapid intervention as described by the famous Hungarian physician Aurel Gabor is a specialisation that has been recognized since 1975. The main task of the Department of Oxyology and Emergency Care is the training of paramedics at the highest possible level. It is our mission to qualify health care providers not only for the National Ambulance Services but also for the national emergency departments. The department is also responsible for the first aid teaching at the Faculty of Medicine in English and German language, and for first aid at the Faculty of Dentistry.

Besides theoretical and practical BSc trainings we offer postgraduate specialist trainings for qualified nurses and paramedics, and regular accredited courses in different areas of acute care for physicians and nurses. We have been participating in the training of the Doctoral School of the Faculty with an independent research subject since 2009, while regularly offering advanced education for the students of Semmelweis University’s School of PhD Studies.

The Department manages its tasks with four full-time members and a number of highly qualified consulting teachers. Practical teaching is organized with the co-operation of the National Ambulance Service, hospital practices are completed in accredited teaching hospitals.

Education

- Regularly provides vocational and postgraduate trainings.
- Closely connected with the new University Emergency Centre where practical teaching takes place.
- An established relationship with the University of Massachusetts, Department of Emergency Medicine in the area of research and development.
- Members of the Department participate in numerous professional and societal organizations of acute care and hold leading positions in the Society of Emergency Medicine and Oxyology.
- The leader of the Department is an active Examiner in Emergency Medicine for the European Board of Emergency Medicine.
- Students can join the PhD School offering participation and thesis work on “Point-of-care technologies in emergency medical care”.
- An MSc training programme targeting the intrahospital emergency care has been started resulting in the qualification of advanced practice nurses (APN), those capable health care professionals who work in the emergency departments under the supervision of the lead physician.
- We have launched a monthly meeting named OxyNox for trainee and graduate paramedics. This event is held in the Vas utca building where a well-known representative of prehospital care is invited as guest speaker followed by case discussions from everyday practice.
- The Paramedic Day is organised each May, where students demonstrate their practical skills during a competition.

Research

PhD research topics:
- Point of Care technologies in emergency medical care

Students’ Scientific Association research topics:
- Acute Coronary Syndrome
- First aid training
- Position and activities of paramedics in the Emergency Department
- Care of the multiple injured patients
- Shock management
- Mental aspects of rescue/emergency work
- Complex cardiopulmonary resuscitation
- Communication in emergency situations
- Role players and standardized patients in HiFi simulation
Background
Academic level training of health visitors (similar to district or family nurse) started in 1975 in Hungary.

Education
The aim of this eight-semester programme is to train health visitors who can give assistance to children and pregnant women in social care and in the prevention of illnesses. Practical training takes place under clinical and real-life circumstances (e.g. in hospitals and district consulting rooms).

The basic subjects (e.g. anatomy, physiology, pathology, biology) are followed by special studies in paediatrics, nursing, obstetrics, sanitation and nursing methodology. Pedagogy, psychology, health education, social sciences and information sciences are integrated into the curriculum. After submitting a thesis, students are tested in theoretical, practical and professional skills before attaining their diploma. Upon completion of the programme health visitors are entitled to work in municipal primary health care facilities, or in schools and in the area of primary preventive medical services. They can perform their duties either independently or in cooperation with doctors and other medical experts.

Research
- Preventive/visiting nurse system in Europe
- The characteristics of childhood onset depression according to depressive symptoms, co-morbidities and quality of life
- Influence of smoking during pregnancy on preterm-birth and low birth-weight
- Connection between childhood obesity, IDDM and physical activity
Department of Epidemiology

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Background
As the legal successor of the Department of Public Health, the Department for Epidemiology is the newest institutional unit of the Institute for Health Promotion and Clinical Methodology. The overall duty of the Department is to provide appropriate training for health practitioners in the field of public health and carry out different research projects. Our aim is to equip students with the knowledge and skills to make valuable contribution to public health.

The Department offers undergraduate degree programmes at BSc level and a master programme will be introduced in the near future.

Courses of disease prevention and health promotion are available in English for full time students of physiotherapy. The Department for Epidemiology offers a wide-range of research topics with professional assistance for students, and they also contribute to the improvement of our doctoral degree programme.

A well-equipped laboratory belongs to the Department for laboratory practices of microbiology and infection control investigations.

Education
Within epidemiology, students are taught both general and specific aspects of pest control and disinfection techniques, including insect and rodent control. Following the fourth and sixth semesters, students take part in four-week practice sessions, and during the eighth semester they participate in a thirteen-week practicum.

Research

Infection Control Centre
In order to prevent nosocomial and health-care associated infections the Department forms an infection control centre in collaboration with external public health partners.
The key elements of active laboratory surveillance system:
- molecular biology methods for comparison/characterization of strains isolated from different sources
- monitoring infections
- computer data analysis of bacterial isolates including antimicrobial-resistance patterns

**Burial customs and funeral practices**
- Treatment of dead persons according to the law and the process of mourning
- Dead people – from a public health and cultural historical view
- Characteristics and forms of burial from an intercultural perspective

**Research Projects for the Students’ Scientific Association**
- Epidemiology and prevention of infectious diseases
- Epidemiology of diseases of civilization
- Profile of secondary prevention in Hungary and in the EU
- Appropriate food hygiene practice, infestation of food, food poisoning
- Probiotics and their effects on the human body
- The impact of climate change on food safety
- Research on natural antimicrobial proteins

**Department of Clinical Studies**

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**Background**
The tasks of the Department of Clinical Studies are: instruction of clinical knowledge in the frame of the bachelor and master degree programmes of the Faculty of Health Sciences, and participation in health sciences programmes of Semmelweis University’s School of Ph.D. Studies as consultant or reviewer.
Education

The Department’s educational activities include:
- transmission of evidence-based, modern, medical-clinical knowledge, and familiarization with the etiology and pathomechanism of different diseases;
- enabling students to recognize the signs of diseases, evaluate symptoms, and complete adequate patient care based on competences;
- providing basic pharmacological knowledge, therapeutic possibilities and effects, side effects, therapeutic responses;
- helping students to gain insights into the clinical significance of most important laboratory, radiological and endoscopic examinations, into the methods of clinical problem-solving, and into the pharmacological basis of medical therapy;
- preparation for the assistance in advanced diagnostic and therapeutic methods, the understanding of current medical science, and the acquirement of the competences required for health practitioners;
- the development of the solid approach of prevention-remedy-nursing-care-rehabilitation.

The Department actively participates:
- in the preparation of student-focused didactical strategies;
- in the development of new subjects and training programmes;
- in the preparation of textbooks and lecture books;
- and in special didactical and applied clinical researches.

Research

- Hemostasis changes in pregnancies
- Diagnosis and therapy of thrombophilias
- The methodology of teaching clinical knowledge
- Fitting the level of higher education to the European Qualification Framework
- Development of validation processes in higher education
- Family planning, family care
- Social and cultural background of health care employees
- The support of parents expecting their first child; application of the APP model (Ph.D research)
- Family planning and maternity plans of Health Visitor and Police Officer students
- Anaesthesiology and intensive therapy – patient security/safety, monitoring
- Clinical nutrition and its management with pharmaceutical aspects
- Risk screening, nutritional assessment, oral nutrition support, enteral and parenteral nutrition,
- Parenteral nutrition compatibility and incompatibility
- Methods of examination of TPN emulsions, physicochemical stability of TPN
- Role of nutrition team
INSTITUTE FOR HEALTH PROMOTION AND CLINICAL METHODOLOGY

Department of Family Care Methodology

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Department of Epidemiology

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Department of Clinical Studies

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- Parenteral nutrition compatibility and incompatibility
- Methods of examination of TPN emulsions, physicochemical stability of TPN
- Role of nutrition team
INSTITUTE OF HEALTH DIAGNOSTIC

Department of Clinical Ophthalmology

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Background
The education of optometry started in 1992 in Hungary at the College of Health Care (now Semmelweis University Faculty of Health Sciences). The Department of Clinical Ophthalmology was established in 2008. Prior to this, the education of optometry belonged to the tasks of the Department of Clinical Studies. The Department is responsible for training optometrists. This includes developing the curriculum of the optometry training, organising clinical and optical trainings for students, and keeping connection with educators and institutions who participate in the practical training.

Education
The training is the one and only optometry training in Hungary, and runs as a part time training programme. The undergraduate training programme consists of eight semesters and 240 ECTS with a total number of 1062 contact hours and 6138 individual hours, of which 40% is devoted to theoretical training and 60% to practice.
Graduate training programmes are also available after completion of the basic training.

Research
The Department conducts scientific research activities in two ways:

1. In cooperation with the Department of Ophthalmology at the University in the following fields:
   - Femtolaser in the surgery of cataracts.
   - Development of a new intraocular lens in surgery of cataracts.
The Department’s individual scientific work is carried out in the following fields:
- Correction of presbyopia with contact lens.
- Screening of the visual acuity and ametropia of children of age 7 to 14.
- Contact lens related dry eye.
- Contact lens wearing in childhood
- Computer Vision Syndrome and its connection with ametropies

Department of Imaging and Medical Instrumentation

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Background
The Department of Imaging and Medical Instrumentation conducts teaching, scientific and supplemental activities. The Department is responsible for the education of imaging diagnostic analyst specialists corresponding to the task of training highly qualified radiographers who are experienced in every sub-field of radiology.

Education
In the four-year part-time BSc education the first three basic semesters are followed by specialist courses (Conventional radiology, US, MRI, Nuclear Medicine, Interventional therapy, Radiation therapy).

Students attaining the degree are able to use imaging tools to plan and perform examinations on their own, and to process and apply the obtained information.

Teaching is performed by leading radiologists and radiographers mainly of Semmelweis University and of large teaching hospitals. Practical training takes place in these hospitals as well.

The Medical Engineering group teaches “Basics of Biophysics and Medical Technology” and “Info-Communication” to dietitian, nurse, health visitor, physiotherapist, paramedic/ambulance officer and public health supervisor students.
The Department continuously produces innovative books, image collections and other teaching materials necessary for the education. For this purpose the Department works in collaboration with the other 3 similar departments in the country to harmonize the teaching materials and the requirements.

An emphasized task of the Department is the graduate teaching of radiographers including the organisation of courses.

Research

The professors of the Department have leading positions in associations of radiology, radiography and medical technology inside and outside Hungary, and they are in the editorial boards of various scientific papers. The focus of the researchers is on clinical decision support, medical informatics, self-monitoring, on developing an immersive learning environment, or a virtual learning environment. Higher interest is put on emergency care systems, on the reduction of supply times and on successful cooperation with emergency departments.

Moreover, the Department joined the European Association of Radiographers.
INSTITUTE OF BASIC HEALTH SCIENCES

Department of Applied Psychology

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Acting Head of Department
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Education
The main task of the Department is to offer basic psychological knowledge for all departments of the Faculty of Health Sciences in four modules which are as follows:

- **Basics of Psychology** – theoretical course including general psychology, developmental psychology, theories of personality.
- **1485483445 Social Psychology** – theoretical course including group dynamics, social phenomena, attitudes, prejudices, attributes, stereotypes.
- **1485483445 Communication and Personal-Development** – We use structured exercises to develop skills in the following fields: enhance group cohesion, basic communication skills, assertive communication, emphatic communication, stress managing methods, conflict management, and profession-specific communication strategies.
- **Health Psychology** – Health psychology is the field within psychology devoted to understanding psychological influences on how people stay healthy, why they become ill, and how they respond when they do get ill. It focuses on health promotion and maintenance; prevention and treatment of illness; the ethology and correlates of health, illness, and dysfunctions; and improvement of the health care system and the formulation of health policy. Health psychologists’ fields of work: behaviour risk factors/”pathogens” (possibilities of intervention for correction of risk behaviour) behaviour health preservation / „immunogenic”. Making research of what are the views, opinions, attributes of health and illness among everyday people. Communication, cooperation, decision-making (health professional – patient interaction). The environment of treatment (how the work environment influences the health worker). Psychology of patients with chronic diseases (disabled, dying).
Division of Applied Pedagogy

Another task of the Department is promoting the basic knowledge of theoretical and practical health education and prevention for students in BSc and MSc trainings; emphasising the pedagogical aspects of patient-care; improving the indispensable skills in counselling and education in paramedical professions; teaching methods of health promotion, and the possibilities of development of health culture, lifestyle and health behaviour.

Research

Since the Department’s scope is necessarily broad, staff members have been participating in research activities of various psychological fields:
- Nutritional and sport habits of students
- Stress among the Professional helpers
- The exploration of the learning attitude among 19-26 years old students
- The relationship between burn out, emotion regulation and empathy among health professionals
- Assessment of ethical and legal issues regarding professional tasks of doctors and nurses working in perinatal centres from the point of view of dilemmas related to the beginning and the end of life

Department of Addictology

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Background

The Department of Addictology coordinates the educational and research activities of the Faculty related to addictive disorders. Some of our fields are the symptomatology, therapy, and prevention of addictive problems. Addiction medicine is present at every specialization of our Faculty; secondary topics like intravenous drug-use, models of preventive medicine are especially practical and optional courses. Our students are involved in many of our research programs in collaboration with other institutions in Hungary or abroad. The new fields of addiction medicine like gambling and Internet-addiction are also present in our teaching and research activities.
We have close contacts with therapeutic and rehabilitation institutions in Hungary, preventive and outpatient centers (Blue Point Center).

**Education**

Our Department coordinates the „Addiction Counsellor” specialization, which is the first and only opportunity to study addiction counselling in our country. The most important specialists of this field are our invited teachers, too. Our counsellors are also taught economics and management which are necessary for their everyday work as coordinators of therapeutic and financial processes. They are also able to organize preventive courses on alcohol and illegal drug abuse fields.

**Research**

Our research interests include the application and adaptation of counselling methods in the health and social care of alcohol and drug abusers, the analytic epidemiological study of deviant behaviour, biological and ethic sides of human behaviour, the social background of medical organizations, and researches about the newest therapeutical approaches for intravenous drug users and dependent patients as well as the qualitative and quantitative approaches in the study of hidden substance users (epidemiological, qualitative and quantitative studies on the users of new psychoactive substances).

**Department of Morphology and Physiology**

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**Head of Department**

Professor Dr. Gabriella Dörnyei PhD

**Contact person**

Senior lecturer Dr. Judit Kiss PhD  
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**Background**

The Department of Morphology and Physiology as a unit of the Institute of Basic Health Sciences has been operating at Semmelweis University Faculty of Health Sciences since its foundation in 1975. The Department participates in the education of the full time English language physiotherapy BSc program since 2005. The full time English language training of nurses and midwives was introduced in the 2011/2012 academic year.
Education

The Department’s educational tasks include the teaching of core and optional subjects to students participating in the full- and part-time trainings of the Faculty, as well as to students taking part in the Master's level programmes, in the doctorate courses and in vocational trainings. Members of the Department’s staff contribute to different medical and health care research projects, too.

The Morphology Working Group teaches Anatomy and Applied Biology, whilst the Physiology Working Group teaches Physiology-Pathophysiology, Chemistry and Biochemistry in the first, second and third semesters. The following optional subjects are offered in English language:

- Biology of stem cells
- From classical genetics to epigenetics
- Chapters of venous circulation and hemodynamics
- The genetic basis of muscle disorders
- Functions of hormone receptors: scientific research and clinical practice, health and disease
- Applied sport physiology and sport health sciences

Research

The main research areas of the teaching staff are as follows:

- Maintaining of functional abilities and prevention of falls among older adults
- The examination of decreased function due to low back pain with validated, self-reported questionnaires
- The examination of posture balance and talent parameters of high school student age group
- Signalling pathways and autophagy in cancer
- Stem cells: prospects and challenges
- Statistical analysis of Hungarian twin data
- Signal transduction pathways in maternal-fetal interactions in normal and complicated pregnancies
- A possible model of venous varicosity in rats
- Effects of hormones on vascular remodelling
- Roles of G protein-coupled receptor signalling in the vascular function
- Roles of physical activity in prevention of chronic diseases
- Signs of cardiovascular sport adaptation
- Gerontokinesiology – translational animal models: organization of motor control and cognitive functions
- Walking assessment and dementia prediction
- Prevention of falling and fracture in elderly
- Movement/sport nutrition
- Active and passive exercise (experimental and human studies)
- Bariatric and metabolic surgery in rats
- Neurocardiological aspects of exercise-driven rehabilitation in rats
- Survey of environmental factors influencing ADHD symptoms among elementary school children
Department of Social Sciences

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email: h.feith@se-etk.hu

Background
The Department of Social Sciences belongs to the Institute of Basic Health Sciences, furthermore it has a specialised unit: the Division of Foreign Languages and Communication. The role of the Department is to support all students to recognize and to prepare for the social, cultural and economic embeddedness of their future health care professions. Our Department offers theoretical and practice oriented knowledge – discussing general and special health care related problems – in the fields of Sociology, Social Anthropology, History of Health Sciences, Law, Ethics, Scientific Research Methods, as well as Medical Economy and Management. These modules – as essentials in health care labour market – are to improve conscious employee competencies and social responsibility. Our Department actively participates in an extended Europe-wide network, COHEHRE, by delegating one of the council members for its management who serves as vice president of the organization. The members of the Department of Social Sciences occupy leading positions in several professional and social organizations and take part in their work (Hungarian Association of Medical History, Public Body of Hungarian Academy of Sciences, Hungarian Sociological Association, American Anthropological Association, The European Association for the History of Medicine and Health (EAHMH), Hungarian Association of Sport Studies). Furthermore, our colleagues have a hand in the edition of different scientific journals, such as Development and Financing, Central European Studies, Kaleidoscope – Journal of History of Culture, Science and Medicine, and the newly initiated Developments of Health Sciences.

Education
The Department takes part in the educational development of all BSc and MSc programmes of the Faculty and in the elaboration of curricular directives. As a participant of full time and part time trainings in Nursing and Patient Care, Health Care and Disease Prevention, and Medical Laboratorial Diagnostic Imaging programmes, the Department is responsible for teaching the following subjects: Health and Society, Introduction to Health Care Economics, Health Care Management, Health Care Law, Bioethics and Professional Ethics, Philosophy of Health, Thesis Methodology. Additionally, the Department organises the Health Care Project Manager postgraduate course (in Hungarian) from 2008, which enables graduates of the course to successfully (project) manage tasks and situations in every area of the health system. As a result of educational cooperation
between Semmelweis University Faculty of Health and Public Services, Semmelweis University Faculty of Health Sciences and the Budapest Metropolitan University, the Health Care Management BSc started in Hungarian language (with Health Tourism Management speciality) in a form of part time programme in September 2014. The programme is supervised by the Faculty of Health and Public Services (the programme supervisor is Dr. Miklós Szócska). Our Department is involved in the coordination and teaching work relating to the programme.

The Health Care Management BSc programme enables graduates of the course to successfully design and construct client-centred health tourism programs, to analyse statistical data relating to tourism, and coordinate touristic and health touristic projects with the implementation of knowledge about the system of health care and touristic institutions.

One of the main concerns of the Department is to provide adequate and flexible knowledge in the most suitable ways, therefore we devote special importance to the innovation of our methods of instruction. To keep a continuous interdisciplinary discussion about this topic, we have organized five ‘Professional Days on Teaching and Research Methodologies’ so far. Most of our staff have experiences in teaching abroad, which has broadened our perspectives and made us more conscious about the approaches we apply.

**Research and professional forums**

With the aim of building networks of knowledge relating to social sciences and health, the Department of Social Sciences highly engaged with the creation of forums for interdisciplinary and inter-professional discussion. As a result the Department hosted various professional days and conferences in the past years.

Due to this work, in 2016 the Department organized the 5th Professional Day and Conference on Patient Rights. The next edition of this bi-yearly event was in the fall of 2018. The aim of the conference was to examine the current ethical and legal issues arising in the everyday practice of health care with the involvement of a wide circle of scientific and professional audience. The highlighted topics of the conference are the ethical and legal questions of health care for children, the dilemmas relating to informed consent and communicational gaps during health care delivery, the questions of legal liability in emergency care and the opportunities for implication patients’ rights during health care delivery.

In 2018 the Department gave place for the Professional Day on Health Tourism. The programme of the event put emphasis on the facilitation of discussion about the opportunities, weak points, results and possible legal regulation of health tourism.

With the initiation of the Faculty of Health Sciences, Department of Social Sciences a conference has been organized since 2017 with the title of ‘Harmful/Protective Society’. The conference is a fruit of cooperation between three organizational units of Semmelweis University: the Faculty of Medicine, Institute of Behavioural Sciences, the Faculty of Health and Public Services, Institute of Mental Health and the Faculty of Health Sciences, Department of Social Sciences. The primary aim of the conference is to build a scientific community for those researchers who work on better understanding of the interconnectedness of health and society. The programme of the conference represents the results of ongoing research projects in the fields of Medical Sociology and Sociology of Health, with the emphasis on the mental, physical, and social dimension of health. Furthermore, the participants may share their experiences about challenges of teaching social sciences in health care training programs.

Main research areas of the Department include: labour migrants in the health care sector; health and social care of migrants and minorities in Europe; comparative analysis of archive sources, legal sources on health care of the 18-19th centuries; epistemology of interpretive anthropology; developing intercultural competences; minority education and its effects on cultural connectedness; comparative analysis of dentistry business income producing capability; typology of ancient votive uterus-representations; analysis of the archival sources related to the birth-control and the midwife training; ethical and legal dilemmas in the practice of perinatal intensive care from the point of view of the beginning and the end of life; the socio-economic status of nurses and its sociocultural context; modern pedagogical approaches of Hungarian health promotion by peer education (TANTUdSZ Programme).

Our department provides external review and evaluation for the Healthy Diversity project, which is an international consortium of 7 different organisations aiming at developing training materials for health care professionals in VET sector.
Division of Foreign Languages and Communication

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Background
The Division of Foreign Languages and Communication is a unit of the Department of Social Sciences.

Education
The main tasks of the Division of Foreign Languages and Communication are to plan and develop the principles and system of language education at the Faculty of Health Sciences; to teach Medical Latin, Health Care Terminology, English and German for Healthcare Purposes to full-time and part-time students. Students with a B2 language certificate also receive language training; they can choose from various competence-based courses. The Division offers a wide variety of elective courses (from Interpreting medical diagnoses and prescriptions through Abstract writing to Computer-aided translation) to provide opportunity for further language development.

The Division coordinates the postgraduate Medical Translation and Interpreting program as well as the English Language Medical Communication program.

The Division of Foreign Languages and Communication is also responsible for teaching Medical Terminology and Hungarian as a Foreign Language to foreign students enrolled in the English and German programs of the Faculty of Medicine, and the English programs of the Faculty of Pharmacy and the Faculty of Health Sciences.

Our division functions as a teaching practice venue for teacher trainees of Hungarian as a foreign language of Károli Gáspár University of the Reformed Church in Hungary.

All our courses are supplemented by textbooks/seminar notes compiled by our teachers and an online language learning program specially designed for teaching Health Care Terminology and Language for Healthcare Purposes.

The Faculty is a test venue for the state accredited Professional Language Certification (PROFEX).

The members of the Division also take part in the work of various professional associations, such as the Hungarian Association of Applied Linguists and Language Teachers and the National Association of Teachers and Researchers of Languages for Specific Purposes (SZOKOE).

Research
The Division’s research interests include the origins of the functional approach in Hungarian linguistics, linguistic identity, logical relationships in health care translations, and exploring the terminological awareness of health science students.
Appendix

(yearly programs for the 2nd, 3rd, 4th, 5th and 6th year medical students)

Full training program for students starting the 2nd year in 2019/2020:

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKANT461_3A</td>
<td>Anatomy, Cell, Histology and Embryology III.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Histology and Embryology II., Medical Biochemistry I.</td>
</tr>
<tr>
<td>AOKELT466_1A</td>
<td>Medical Physiology I.</td>
<td>6</td>
<td>5</td>
<td>10</td>
<td>semi-final</td>
<td>Anatomy, Histology and Embryology II., Medical Biochemistry I., Medical Biophysics II.</td>
</tr>
<tr>
<td>AOKOBI463_2A</td>
<td>Medical Biochemistry II.</td>
<td>3</td>
<td>2,5</td>
<td>5</td>
<td>semi-final</td>
<td>Medical Biochemistry I.</td>
</tr>
<tr>
<td>AOKOVMO466_2A</td>
<td>Molecular Cell Biology II.</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>final</td>
<td>Molecular Cell Biology I., Medical Biochemistry I.</td>
</tr>
<tr>
<td>AOKLEK228_3A</td>
<td>Hungarian Medical Terminology III.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology II.</td>
</tr>
<tr>
<td>AOKTSI009_3A</td>
<td>Physical Education III.</td>
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<td>1</td>
<td>–</td>
<td>signature</td>
<td>–</td>
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<tr>
<td>AOKMAG398_1A</td>
<td>Behavioral Sciences I. (Medical Communication)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>semi-final</td>
<td>–</td>
</tr>
</tbody>
</table>

Total Number of Credit Points from Compulsory Subjects: 29

Obligatory elective subjects

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOVCSA249_1A</td>
<td>Introduction to Clinical Medicine</td>
<td>–</td>
<td>2</td>
<td>2</td>
<td>pract. mark</td>
<td>Behavioral Sciences I. (Medical Communication)*</td>
</tr>
</tbody>
</table>

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

* The prerequisite is that registration has been done for the marked subject – corequisite - as well
## 2nd year

### 4th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKANT461_4A</td>
<td>Anatomy, Cell, Histology and Embryology IV.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>final#</td>
<td>Anatomy, Histology and Embryology III.</td>
</tr>
<tr>
<td>AOKELT466_2A</td>
<td>Medical Physiology II.</td>
<td>6</td>
<td>4,5</td>
<td>10</td>
<td>final#</td>
<td>Medical Physiology I.</td>
</tr>
<tr>
<td>AOKOBI463_3A</td>
<td>Medical Biochemistry III.</td>
<td>3</td>
<td>2,5</td>
<td>5</td>
<td>final#</td>
<td>Medical Biochemistry II.</td>
</tr>
<tr>
<td>AOKLEK228_4A</td>
<td>Hungarian Medical Terminology IV.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>pract. mark</td>
<td>Hungarian Medical Terminology III.</td>
</tr>
<tr>
<td>AOKTSI009_4A</td>
<td>Physical Education IV.</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>AOKNSG331_1A</td>
<td>Compulsory Nursing Practice (in summer, either after the 1st year or the 2nd year)</td>
<td>– 1 month/ 170 hours workload</td>
<td>–</td>
<td>signature</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects**  20

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

# The grade influences the qualification of the Diploma

## 3rd year

### 5th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKKOR510_1A</td>
<td>Pathophysiology I.</td>
<td>1,5</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKMIK022_1A</td>
<td>Medical Microbiology I.</td>
<td>1,5</td>
<td>2,5</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKPTK023_1A AOKPAT024_1A</td>
<td>Pathology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKGEN470_1A</td>
<td>Immunology</td>
<td>2</td>
<td>1,5</td>
<td>3</td>
<td>semi-final#</td>
<td>Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKBL1602_SA</td>
<td>Internal Medicine – Propedeutics</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKBV1026_1A</td>
<td>Medical Aspects of Disaster Preparedness and Response I.</td>
<td>1×2/semester</td>
<td>–</td>
<td>0</td>
<td>signature</td>
<td>–</td>
</tr>
<tr>
<td>AOKLEK228_5A</td>
<td>Hungarian Medical Terminology V.</td>
<td>–</td>
<td>4</td>
<td>2</td>
<td>final</td>
<td>Hungarian Medical Terminology IV.</td>
</tr>
</tbody>
</table>

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

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

# The grade influences the qualification of the Diploma.
### 3rd year

#### 6th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKKOR510_2A</td>
<td>Pathophysiology II.</td>
<td>1,5</td>
<td>2,5</td>
<td>4</td>
<td>final#</td>
<td>Pathophysiology I., Immunology</td>
</tr>
<tr>
<td>AOKMIK022_2A</td>
<td>Medical Microbiology II.</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
<td>final#</td>
<td>Medical Microbiology I., Immunology</td>
</tr>
<tr>
<td>AOKPTK023_2A</td>
<td>Pathology II.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>final#</td>
<td>Pathology I.</td>
</tr>
<tr>
<td>AOKBL3473_1A</td>
<td>Internal Medicine I.</td>
<td>1,5</td>
<td>3</td>
<td>5</td>
<td>semi-final</td>
<td>Internal Medicine – Propedeutics, Pathophysiology II.<em>, Pathology II.</em></td>
</tr>
<tr>
<td>AOKMAG398_2A</td>
<td>Behavioral Sciences II. (Medical Psychology)</td>
<td>1</td>
<td>2,5</td>
<td>3</td>
<td>final</td>
<td>Behavioral Sciences I. (Medical Communication) Medical Sociology,</td>
</tr>
<tr>
<td>AOKBVI026_2A</td>
<td>Medical Aspects of Disaster Preparedness and Response II.</td>
<td>1x2/semester</td>
<td>–</td>
<td>0</td>
<td>signature</td>
<td></td>
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<tr>
<td>AOKKMI020_1A</td>
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<td>1,5</td>
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<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II.</td>
</tr>
<tr>
<td>AOKFIZ036_1A</td>
<td>Medical Imaging</td>
<td>12 hours / semester</td>
<td>16 hours / semester</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Biophysics, Anatomy, Histology, and Embryology IV.</td>
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<tr>
<td>AOKGEN030_1A</td>
<td>Genetics and Genomics</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>semi-final#</td>
<td>Medical Biochemistry III., Molecular and Cell Biology II.</td>
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<tr>
<td>AOKNSG600_1A</td>
<td>Internal Medicine Practice (in summer)</td>
<td>–</td>
<td>170 hours workload</td>
<td>–</td>
<td>signature</td>
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</table>

**Total Number of Credit Points from Compulsory Subjects:** 30

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

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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<tbody>
<tr>
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<td>Laboratory Medicine</td>
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<td>semi-final</td>
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</table>

* The prerequisite is that registration has been done for the marked subject – corequisite - as well

# The grade influences the qualification of the Diploma.
4th year – with supplementary material from the new curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit</th>
<th>Number of lessons</th>
<th>Number of weeks</th>
</tr>
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<tbody>
<tr>
<td>Internal Medicine I. Nephrology, Gastro</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>98</td>
<td>5</td>
</tr>
<tr>
<td>Cardiology-cardiac surgery, angiology-vascular surgery</td>
<td>2</td>
<td>4.5</td>
<td>6.5</td>
<td>91</td>
<td>4</td>
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<td>6</td>
<td>84</td>
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<td>1</td>
<td>2</td>
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<td>42</td>
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<tr>
<td>Orthopaedics</td>
<td>1.5</td>
<td>2</td>
<td>3.5</td>
<td>49</td>
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<td>Medical Imaging</td>
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<td>2</td>
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<td>42</td>
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<tr>
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<td>3</td>
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<td>4</td>
<td>56</td>
<td>3</td>
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<tr>
<td>Oral surgery and dentistry</td>
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<td>1</td>
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<td>28</td>
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<td>Pulmonology - Thoracic surgery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>2</td>
</tr>
<tr>
<td>Oncology-plastic surgery</td>
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<td>1</td>
<td>2</td>
<td>28</td>
<td>1</td>
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+ Medical ethics

**Final Exam in Pharmacology at the End of the Academic Year; summer practice in Surgery that ends with a practical exam**
## 5th year

<table>
<thead>
<tr>
<th>Course</th>
<th>Lecture</th>
<th>Practicals</th>
<th>Total</th>
<th>Number of lessons</th>
<th>Number of weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine II. Hemat., Infect., Immunology, Rheumatology</td>
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<td>7.5</td>
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<td>5</td>
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<td>Obstetrics-Gynecology</td>
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<td>4</td>
<td>6</td>
<td>84</td>
<td>4</td>
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<td>6</td>
<td>8</td>
<td>112</td>
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<td>Urology</td>
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<td>2</td>
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<td>42</td>
<td>3</td>
</tr>
<tr>
<td>Anesthesiology and Intensive therapy (ITO)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
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<tr>
<td>Ophthalmology</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
</tr>
<tr>
<td>Neurology-Neurosurgery</td>
<td>2</td>
<td>4.5</td>
<td>6.5</td>
<td>91</td>
<td>4</td>
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<tr>
<td>Psychiatry, psychotherapy</td>
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<tr>
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<td>1.5</td>
<td>21</td>
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<td>2</td>
<td>28</td>
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<td>5</td>
<td>70</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>59</strong></td>
<td><strong>826</strong></td>
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*+ Physical Education

## 6th year

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infect. + 1 week Family Med.</td>
<td>8 weeks</td>
<td></td>
</tr>
<tr>
<td>Surgery + 1 week Vascular Surg. + 2 Trauma.</td>
<td>6 weeks</td>
<td>4 weeks Surgery + 1 week Vascular Surg. + 1 week Traumatology</td>
</tr>
<tr>
<td>Obstetrics, Gynecology</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>6 weeks</td>
<td></td>
</tr>
<tr>
<td>Neurology</td>
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<tr>
<td>Psychiatry</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Ambulance</td>
<td>2 weeks</td>
<td></td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>6 weeks</td>
<td>It can be completed at any clinical department or clinic</td>
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</tbody>
</table>

**Comments:**

6 weeks of elective practice: It can be completed at any Clinical Department or clinic. Major subjects that end with a final exam are also elective

+ Physical Education
Full training program for students starting the 3\textsuperscript{rd} year in 2019/2020:

\textbf{3\textsuperscript{rd} year}

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOKKOR510_1A</td>
<td>Pathophysiology I.</td>
<td>1,5</td>
<td>3</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKMIK022_1A</td>
<td>Medical Microbiology I.</td>
<td>1,5</td>
<td>2,5</td>
<td>4</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKPTK023_1A, AOKPAT024_1A</td>
<td>Pathology I.</td>
<td>3</td>
<td>4</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKGEN470_1A</td>
<td>Immunology</td>
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<td>1,5</td>
<td>3</td>
<td>semi-final#</td>
<td>Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKBL1602_SA</td>
<td>Internal Medicine – Propedeutics</td>
<td>2</td>
<td>5</td>
<td>7</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II., Medical Biochemistry, Molecular and Cell Biology III.</td>
</tr>
<tr>
<td>AOKBVI026_1A</td>
<td>Medical Aspects of Disaster Preparedness and Response I.</td>
<td>1×2/semester</td>
<td>–</td>
<td>0</td>
<td>signature</td>
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<tr>
<td>AOKLEK228_5A</td>
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<td>–</td>
<td>4</td>
<td>2</td>
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<td>Hungarian Medical Terminology IV.</td>
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</table>

\textbf{Total Number of Credit Points from Compulsory Subjects:} \hspace{1cm} 27

\textbf{Obligatory elective / Elective subjects: At least 4 credit points from the obligatory electives/electives} must be collected in each semester. See the detailed list of obligatory electives and elective subjects after the 3\textsuperscript{rd} year curriculum.

\# The grade influences the qualification of the Diploma.
### 3rd year

#### 6th semester

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Compulsory Subjects</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit Points</th>
<th>Examination</th>
<th>Prerequisite</th>
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</thead>
<tbody>
<tr>
<td>AOKKOR510_2A</td>
<td>Pathophysiology II.</td>
<td>1,5</td>
<td>2,5</td>
<td>4</td>
<td>final#</td>
<td>Pathophysiology I., Immunology</td>
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<tr>
<td>AOKMIK022_2A</td>
<td>Medical Microbiology II.</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
<td>final#</td>
<td>Medical Microbiology I., Immunology</td>
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<tr>
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<td>3</td>
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<td>final#</td>
<td>Pathology I.</td>
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<tr>
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<td>–</td>
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<td>signature</td>
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<tr>
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<td>Basic Surgical Techniques</td>
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<td>1,5</td>
<td>2</td>
<td>semi-final</td>
<td>Anatomy, Histology, and Embryology IV., Medical Physiology II.</td>
</tr>
<tr>
<td>AOKFIZ036_1A</td>
<td>Medical Imaging</td>
<td>12 hours / semester</td>
<td>16 hours / semester</td>
<td>2</td>
<td>semi-final</td>
<td>Medical Biophysics, Anatomy, Histology, and Embryology IV.</td>
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<td>2</td>
<td>4</td>
<td>semi-final#</td>
<td>Medical Biochemistry III., Molecular and Cell Biology II.</td>
</tr>
<tr>
<td>AOKNSG600_1A</td>
<td>Internal Medicine Practice (in summer)</td>
<td>–</td>
<td>170 hours workload</td>
<td>–</td>
<td>signature</td>
<td>–</td>
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</tbody>
</table>

**Total Number of Credit Points from Compulsory Subjects:** 30

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

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Lectures</th>
<th>Examinations</th>
<th>Prerequisite</th>
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<tbody>
<tr>
<td>AOKLMI033_1A</td>
<td>0.75</td>
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<td>–</td>
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</table>

* The prerequisite is that registration has been done for the marked subject – corequisite - as well
* The grade influences the qualification of the Diploma.
4th year – with supplementary material from the new curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit</th>
<th>Number of lessons</th>
<th>Number of weeks</th>
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</thead>
<tbody>
<tr>
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<td>1</td>
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<td>7</td>
<td>98</td>
<td>5</td>
</tr>
<tr>
<td>Cardiology-cardiac surgery, angiology-vascular surgery</td>
<td>2</td>
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<td>6.5</td>
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<td>4</td>
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<td>6</td>
<td>84</td>
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<td>3</td>
<td>42</td>
<td>3</td>
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<tr>
<td>Orthopaedics</td>
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<td>3.5</td>
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<td>3</td>
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<td>Oral surgery and dentistry</td>
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</tr>
<tr>
<td>Pulmonology - Thoracic surgery</td>
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<td>3</td>
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<td>2</td>
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<td>Oncology-plastic surgery</td>
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<td>taught evenly throughout the academic year</td>
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<td>1</td>
<td>1</td>
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+ Medical ethics
Final Exam in Pharmacology at the End of the Academic Year; summer practice in Surgery that ends with a practical exam
### 5th year

<table>
<thead>
<tr>
<th>Course</th>
<th>Lecture</th>
<th>Practicals</th>
<th>Total</th>
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<th>Number of weeks</th>
<th>Comments</th>
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<tr>
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<td>2.5 credits</td>
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<td>Obstetrics-Gynecology</td>
<td>2</td>
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<td>84</td>
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<tr>
<td>Pediatrics</td>
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<td>6</td>
<td>8</td>
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<td>2</td>
<td>3</td>
<td>42</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Anesthesiology and Intensive therapy (ITO)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
<td></td>
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<tr>
<td>Ophthalmology</td>
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<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Neurology-Neurosurgery</td>
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<td>4.5</td>
<td>6.5</td>
<td>91</td>
<td>4</td>
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<td>98</td>
<td>4</td>
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<tr>
<td>Sports Medicine</td>
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<td>1.2</td>
<td>1.5</td>
<td>21</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>28</td>
<td>1</td>
<td>New subject</td>
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<td>3</td>
<td>5</td>
<td>70</td>
<td>3</td>
<td>plus 2 credits Prevention</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td></td>
<td></td>
<td><strong>59</strong></td>
<td><strong>826</strong></td>
<td><strong>39</strong></td>
</tr>
</tbody>
</table>

*+ Physical Education

### 6th year

<table>
<thead>
<tr>
<th>Course</th>
<th>Number of weeks</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infect. + 1 week Family Med.</td>
<td>8 weeks</td>
<td></td>
</tr>
<tr>
<td>Surgery + 1 week Vascular Surg. + 2 Trauma.</td>
<td>6 weeks</td>
<td>4 weeks Surgery + 1 week Vascular Surg. + 1 week Traumatology</td>
</tr>
<tr>
<td>Obstetrics, Gynecology</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>6 weeks</td>
<td></td>
</tr>
<tr>
<td>Neurology</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Psychiatry</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Ambulance</td>
<td>2 weeks</td>
<td></td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>6 weeks</td>
<td>It can be completed at any clinical department or clinic</td>
</tr>
</tbody>
</table>

**Comments:**

6 weeks of elective practice: It can be completed at any Clinical Department or clinic. Major subjects that end with a final exam are also elective

+ Physical Education

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735
### Full training program for students starting the 4th year in 2019/2020:

**4th year – with supplementary material from the new curriculum**

<table>
<thead>
<tr>
<th>Course</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Credit</th>
<th>Number of lessons</th>
<th>Number of weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine I. Nephrology, Gastro</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>98</td>
<td>5</td>
</tr>
<tr>
<td>Cardiology-cardiac surgery, angiology-vascular surgery</td>
<td>2</td>
<td>4.5</td>
<td>6.5</td>
<td>91</td>
<td>4</td>
</tr>
<tr>
<td>Surgery I-II.</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>84</td>
<td>4</td>
</tr>
<tr>
<td>Traumatology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>3</td>
</tr>
<tr>
<td>Orthopaedics</td>
<td>1.5</td>
<td>2</td>
<td>3.5</td>
<td>49</td>
<td>3</td>
</tr>
<tr>
<td>Medical Imaging</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>1</td>
</tr>
<tr>
<td>Otorhinolaryngology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>3</td>
</tr>
<tr>
<td>Dermatology</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
</tr>
<tr>
<td>Oral surgery and dentistry</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>Pulmonology - Thoracic surgery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>2</td>
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<tr>
<td>Oncology-plastic surgery</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>2</td>
</tr>
<tr>
<td>Oxyology</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>5</td>
<td>5</td>
<td>10</td>
<td>140</td>
<td>taught evenly throughout the academic year</td>
</tr>
<tr>
<td>Family Medicine</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>59.5</td>
<td>833</td>
<td>37</td>
</tr>
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</table>

+ Medical ethics

Final Exam in Pharmacology at the End of the Academic Year; summer practice in Surgery that ends with a practical exam.
5th year – new curriculum!

<table>
<thead>
<tr>
<th>Course</th>
<th>Lecture</th>
<th>Practicals</th>
<th>Total</th>
<th>Number of lessons</th>
<th>Number of weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine II. Hemat., Infect., Immunology, Rheumatology</td>
<td>1</td>
<td>2</td>
<td>7.5</td>
<td>105</td>
<td>5</td>
</tr>
<tr>
<td>Forensic Medicine</td>
<td>1</td>
<td>1.5</td>
<td>2.5</td>
<td>35</td>
<td>2</td>
</tr>
<tr>
<td>Obstetrics-Gynecology</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>84</td>
<td>4</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>112</td>
<td>5</td>
</tr>
<tr>
<td>Urology</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>42</td>
<td>3</td>
</tr>
<tr>
<td>Anesthesiology and Intensive therapy (ITO)</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>1.5</td>
<td>2.5</td>
<td>4</td>
<td>56</td>
<td>3</td>
</tr>
<tr>
<td>Neurology-Neurosurgery</td>
<td>2</td>
<td>4.5</td>
<td>6.5</td>
<td>91</td>
<td>4</td>
</tr>
<tr>
<td>Psychiatry, psychotherapy</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>98</td>
<td>4</td>
</tr>
<tr>
<td>Sports Medicine</td>
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<td>2</td>
<td>28</td>
<td>1</td>
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<tr>
<td>Clinical Genetics</td>
<td>0</td>
<td>1.2</td>
<td>1.5</td>
<td>21</td>
<td>1</td>
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<tr>
<td>Rehabilitation</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>28</td>
<td>1</td>
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<td>Public Health</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>59</strong></td>
<td><strong>826</strong></td>
<td><strong>39</strong></td>
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</tbody>
</table>

*+ Physical Education VIII.

6th year – new curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infect. + 1 week Family Med.</td>
<td>8 weeks</td>
<td></td>
</tr>
<tr>
<td>Surgery + 1 week Vascular Surg. + 2 Trauma.</td>
<td>4 weeks</td>
<td>4 weeks Surgery + 1 week Vascular Surg. + 1 week Traumatology</td>
</tr>
<tr>
<td>Obstetrics, Gynecology</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>6 weeks</td>
<td></td>
</tr>
<tr>
<td>Neurology</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Psychiatry</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Ambulance</td>
<td>2 weeks</td>
<td></td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>6 weeks</td>
<td>It can be completed at any clinical department or clinic</td>
</tr>
</tbody>
</table>

Comments:
6 weeks of elective practice: It can be completed at any Clinical Department or clinic. Major subjects that end with a final exam are also elective.
Full training program for students starting the 5th year in 2019/2020:

5th year – old curriculum

<table>
<thead>
<tr>
<th>9th Semester</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Total/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine IV. Gastro</td>
<td>1.5</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>Oncology</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Surgery III.</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Obstetrics, Gynecology I.</td>
<td>2</td>
<td>1 week</td>
<td>~4</td>
</tr>
<tr>
<td>Pediatrics I.</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Neurology I.</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
</tr>
<tr>
<td>Psychiatry I.</td>
<td>1.5</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>Forensic Medicine I.</td>
<td>1</td>
<td>1.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Oxyology</td>
<td>1.5</td>
<td>1.1</td>
<td>2.6</td>
</tr>
<tr>
<td>Urology</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Family Med.</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Intensive Therapy, Anesthesiology</td>
<td>1.5</td>
<td>1.3</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Lessons in total</strong></td>
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<td><strong>34.9</strong></td>
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</table>

<table>
<thead>
<tr>
<th>10th Semester</th>
<th>Lectures</th>
<th>Practicals</th>
<th>Total/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Medicine V. Hematol.</td>
<td>1.5</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Traumatology</td>
<td>1.5</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>Obstetrics, Gyne. II.</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Pediatrics II.</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Neurology II.</td>
<td>2</td>
<td>1.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Psychiatry II.</td>
<td>1.5</td>
<td>2</td>
<td>3.5</td>
</tr>
<tr>
<td>Forensic Medicine II.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Lessons in total</strong></td>
<td></td>
<td></td>
<td><strong>29</strong></td>
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</table>
### Old curriculum

<table>
<thead>
<tr>
<th></th>
<th>Practicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infect. + 1 week Family Med.</td>
<td>9 weeks</td>
</tr>
<tr>
<td>Surgery 1 week, Vascular Surg. 2 weeks, Trauma.</td>
<td>9 weeks</td>
</tr>
<tr>
<td>Obstetrics, Gyneco.</td>
<td>5 weeks</td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>8 weeks</td>
</tr>
<tr>
<td>Neurology</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Ambulance</td>
<td>1 week</td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
</tr>
<tr>
<td>Elective</td>
<td>1 week</td>
</tr>
</tbody>
</table>

### New curriculum

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infect. + 1 week Family Med.</td>
<td>8 weeks</td>
<td>4 weeks Surgery + 1 week Vascular Surg. + 1 week Traumatology</td>
</tr>
<tr>
<td>Surgery + 1 week Vascular Surg. + 2 Trauma.</td>
<td>6 weeks</td>
<td></td>
</tr>
<tr>
<td>Obstetrics, Gyneco.</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>6 weeks</td>
<td></td>
</tr>
<tr>
<td>Neurology</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Psychiatry</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Ambulance</td>
<td>2 weeks</td>
<td></td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>6 weeks</td>
<td>It can be completed at any clinical department or clinic</td>
</tr>
</tbody>
</table>

### Comments:

6 weeks of elective practice: It can be completed at any Clinical Department or clinic. Major subjects that end with a final exam are also elective.
Training program for students starting the 6th year in 2019/2020:

6th Year – old and new curricula

Old curriculum

<table>
<thead>
<tr>
<th>Subject</th>
<th>Practicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infect. + 1 week Family Med.</td>
<td>9 weeks</td>
</tr>
<tr>
<td>Surgery 1 week, Vascular Surg. 2 weeks, Trauma.</td>
<td>9 weeks</td>
</tr>
<tr>
<td>Obstetrics, Gyneco.</td>
<td>5 weeks</td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>8 weeks</td>
</tr>
<tr>
<td>Neurology</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Ambulance</td>
<td>1 week</td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
</tr>
<tr>
<td>Elective</td>
<td>1 week</td>
</tr>
</tbody>
</table>

New curriculum

<table>
<thead>
<tr>
<th>Subject</th>
<th>Practicals</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>Internal Med. + 1 week Infect. + 1 week Family Med.</td>
<td>8 weeks</td>
<td></td>
</tr>
<tr>
<td>Surgery + 1 week Vascular Surg. + 2 Trauma.</td>
<td>6 weeks</td>
<td>4 weeks Surgery + 1 week Vascular Surg. + 1 week Traumatology</td>
</tr>
<tr>
<td>Obstetrics, Gyneco.</td>
<td>4 weeks</td>
<td></td>
</tr>
<tr>
<td>Pediatrics + 1 week Infectology</td>
<td>6 weeks</td>
<td></td>
</tr>
<tr>
<td>Neurology</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Psychiatry</td>
<td>3 weeks</td>
<td></td>
</tr>
<tr>
<td>Ambulance</td>
<td>2 weeks</td>
<td></td>
</tr>
<tr>
<td>Transfusion</td>
<td>1 week</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
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<td>It can be completed at any clinical department or clinic</td>
</tr>
</tbody>
</table>

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