University of Pécs
Medical School

DENTISTRY
Major

STUDY PROGRAM
2017/2018

Subjects of the
Basic module
(obligatory subjects and
criterion requirements)
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<th>Course Code</th>
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<td>27</td>
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<td>OSA-FV2</td>
<td>The Basics of Dental Prevention 2</td>
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<td>OSA-MF2</td>
<td>Molecular Cell Biology for Students of Dentistry 2</td>
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<td>OSA-ZT1</td>
<td>Histology for Students of Dentistry 1</td>
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<td>Dental Assistant - Summer Practice</td>
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<td>OSA-AA2</td>
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<td>OSA-BKD</td>
<td>Biochemistry for Dentistry Students</td>
<td>47</td>
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<td>OSA-EF1</td>
<td>Human Physiology 1 for Dentistry Students</td>
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<td>OSA-FAN</td>
<td>Dental Anatomy</td>
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<td>OSA-FAT</td>
<td>Dental materials and technology</td>
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<td>OSA-IMF</td>
<td>Basic Immunology</td>
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<td>OSA-ZT2</td>
<td>Histology for Students of Dentistry 2</td>
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<td>Physical Education 3</td>
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<td>OSA-EF2</td>
<td>Human Physiology 2 for Dentistry Students</td>
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<td>Operative Dentistry 1 - Cariology</td>
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<td>OSA-K2K</td>
<td>Operative Dentistry 2 - Operative Dentistry Propedetics</td>
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<tr>
<td>OSA-K3K</td>
<td>Operative Dentistry 3 - Operative Dentistry Propedetics Practice</td>
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<td>OSA-MAX</td>
<td>Maxillofacial Anatomy, Neuroanatomy and Histology</td>
<td>80</td>
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<td>ATT1-2-3-4-5</td>
<td>Physical Education courses 1-2-3-4-5</td>
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<td>OSR-HUF-O</td>
<td>Final Examination in Medical Hungarian - oral</td>
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<td>OSR-HUF-W</td>
<td>Final Examination in Medical Hungarian - written</td>
<td>89</td>
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OSA-B2A  INTRODUCTION TO ANATOMY

Course director: DR. PÁL TÓTH, associate professor
Department of Anatomy

1 credit • semester exam • basic subject • autumn semester • recommended semester: 1
Number of hours/semester: 0 lectures + 16 practices + 0 seminars = total of 16 hours
Course headcount limitations (min.-max.): 1 – 100  Prerequisites: none

Topic
Anatomy describes the macroscopic structure of the human body. This is the first part of a two-semester subject. During the practices we give at first a general view about the structure of bones and joints, students will then learn the main muscle groups, vessels and nerves of the limbs and the trunk with the aid of human formaline-fixed cadavers. In the second part of the subject we describe the structure of the skull and the temporomandibular joint in details and at the end the vertebral column especially its cervical part.

Conditions for acceptance of the semester
Presence on at least 85% of course hours is required. Absence (for any reason) is max. 3 teaching hours (= 3x45 min.)

Mid-term exams
Making up for missed classes
Exceptionally, students may attend the practice of another group (on the same week). Students are allowed to make up only two classes in one semester this way. Student must ask the teacher of the other group for the permission to attend the class. In case the class is full, the teacher has the right to refuse the query.

Reading material
- Obligatory literature
  http://an-server.pote.hu
- Literature developed by the Department
  http://an-server.pote.hu
- Notes
  http://an-server.pote.hu
- Recommended literature
  http://an-server.pote.hu

Lectures
Practices
1  The main plains and directions. Classification of bones.
2  Components, types and movements of joint in general (with examples).
3  General myology (origin, insertion, action, fascia).
4  The muscle groups of the regions of the body (limbs without hand and foot, trunk with body walls).
5  The general overview of the blood circulation. The main arteries supplying the limbs, with emphasis put on arteries for testing pulse. The main veins of the limbs.
6  The spinal segments. The spinal nerve plexuses, their main branches and the muscle groups innervated by them.
7  The bones and the general structure of the skull.
8  The details of the bones forming neurocranium.
9  The cranial fossae, their openings and the structers passing through them.
10  The cranial fossae, their openings and the structers passing through them.
11  The details of the bones forming viscerocranium.
12  The details of the bones forming viscerocranium.
13  The cavities (orbit, nasal- and oral cavities) of the viscerocranium. Their openings and the structers passing through them.
14  The fossae (temporal, infratemporal and pterygopalatine) of the viscerocranium. Their openings and the structers passing through them.
15  The temporomandibular joint.
16  The main parts of vertebrae and those of the vertebral column. The characteristics of cervical vertebrae. The atlantooccipital and atlantoaxial joints.

Seminars
Exam topics/questions
http://an-server.pote.hu
Participants

Dr. Czeiter Endre (CZEFAAO.PTE), Dr. Farkas Boglárka Anett (FABFADO.PTE), Dr. Hollósy Tibor (HOTFAAO.PTE), Dr. Horváth-Opper Gabriella (HOGFAFO.PTE), Dr. Jüngling Adél (JUARAAO.PTE), Dr. Tamás Andrea (TAFAAO.PTE), Dr. Tóth Pál (TOPMAAO.PTE), Fábián Eszter (FAEGAAT.PTE), Kovács László Ákos (KOLQAAO.PTE), Opper Balázs (OPBFAB.T.JPTE)
DENTAL BIOPHYSICS 1

Course director: DR. EDINA SZABÓ-MELEG, assistant professor
Department of Biophysics

2 credit • semester exam • Basic subject • autumn semester • recommended semester: 1

Number of hours/semester:
14 lectures + 14 practices + 0 seminars = total of 28 hours

Course headcount limitations (min.-max.): 5 – 200

Prerequisites: none

Topic
The course addresses the physical relations between the structure and function of biological systems as well as the physical basis of diagnostic and therapeutic methods. The main topics include mechanics, electricity and thermodynamics.

Conditions for acceptance of the semester
Maximum of 25 % absence allowed

Mid-term exams
During the semester the students write mid-term test. Based on the result the students can be exempted from some parts of the colloquium.

Making up for missed classes
Acceptance of the semester: presence at least 75% of the lectures. Completion and proper documentation of each laboratory practice and approval thereof by the course instructor. Maximum 2 absences from practices. Students are not allowed to be late from the practicals. Being late counts as an absence. Missed practices can be made up on the basis of discussion with the lab instructor.

Reading material
- Obligatory literature

- Literature developed by the Department
  Online materials on departmental website: http://biofizika.aok.pte.hu

- Notes
  Own notes

- Recommended literature
  Damjanovich Sándor, Fidy Judit, Szöllösi János (eds.): Medical Biophysics, Medicina, Budapest, 2009

Lectures
1 Introduction: the significance of physics in dental medicine
   Dr. Szabó-Meleg Edina
2 Mechanics I.: Basics
   Dr. Bugyi Beáta
3 Mechanics II.: Statics
   Dr. Bugyi Beáta
4 Mechanics III.: Oscillations, waves, sound, vibration
   Szatmári Dávid
5 Ultrasound
   Dr. Szabó-Meleg Edina
6 Mechanics IV.: Hydrostatics and hydrodynamics
   Karádi Kristóf
7 Mechanics V.: Mechanics of solids
   Karádi Kristóf
8 Materials science: the most important physical characteristics of metals, ceramics, polymers and composites
   Dr. Szabó-Meleg Edina
9 Electricity I: Direct current
   Dr. Szabó-Meleg Edina
10 Electricity: Alternating current
    Dr. Szabó-Meleg Edina
11 Membrane potential, action potential, sensory receptors
    Dr. Szabó-Meleg Edina
| 12 | Thermodynamics I.  
|    | Dr. Lukács András Szilárd |
| 13 | Thermodynamics II.  
|    | Dr. Lukács András Szilárd |
| 14 | Diffusion, osmosis  
|    | Dr. Szabó-Meleg Edina |

**Practices**

1. Introduction. Laboratory safety rules, work protection.
2. Mathematical basics. Work in the laboratory
3. Mechanics I.
4. Mechanics II.
5. Ultrasound
6. Viscosity
7. Direct current measurements
8. Alternating current measurements
9. Electrical conductance measurements
10. Thermodynamics
11. Centrifugation
12. Swelling
13. Consultation
14. Consultation

**Seminars**

Exam topics/questions can be found on the departmental website: [http://biofizika.aok.pte.hu](http://biofizika.aok.pte.hu)

**Participants**

Czimbalek Lívia Mária (CZLAAA.T.JPTE), Dr. Bugyi Beáta (BUBEAB.T.JPTE), Dr. Grama László (GRLHAAO.PTE), Dr. Lukács András Szilárd (LUATAA0.PTE), Dr. Szabó-Meleg Edina (MEEDAA.T.JPTE), Kapronczai Róbert (KARWAA0.PTE), Karádi Kristóf (KAKSACT.PTE), Kis-Bicskei Nikolett (KINNAAT.PTE), Madarász Tamás (MATPAAT.PTE), Pirisi Katalin Erzsébet (PIKPACT.PTE), Szatmári Dávid (SZDHAAT.PTE), Telek Elek (TEEQAAT.PTE), Ujfalusi Zoltán (UJZDAA.T.JPTE), Ujfalusi-Pozsonyi Kinga (POKAAA.T.JPTE)
OSA-EAD | **MEDICAL ETHICS AND BEHAVIORAL SCIENCE FOR DENTISTS**  
Course director: **TIBOR SZOLCSÁNYI**, assistant professor  
Department of Behavioural Sciences

1 credit • midsemester grade • Basic subject • autumn semester • recommended semester: 1  
Number of hours/semester: 14 lectures + 0 practices + 0 seminars = total of 14 hours  
Course headcount limitations (min.-max.): 5 – 999  
Prerequisites: none

**Topic**

Technical and ethical decisions are inseparably interwoven in dentistry, and that is why the high quality of dental care requires professionals who are aware of the ethical standards governing health care activity. Within the course, students will acquire knowledge about the most fundamental norms of modern medical ethics, and about how these norms are implemented in dental practice. In addition, during the course, students will gain practically applicable knowledge about those sociological, communicational and psychological aspects of physician-patient relationship, which have ethical relevance in dental care.

**Conditions for acceptance of the semester**

Maximum of 15 % absence allowed

**Mid-term exams**

Written test taking place in the last class. To improve the grade, the test can be repeated two times in the first two weeks of the exam period. Oral exam is also an option for that purpose.

**Making up for missed classes**

According to the Code of Studies and Examinations.

**Reading material**

- **Obligatory literature**
  

- **Literature developed by the Department**

- **Notes**

- **Recommended literature**
  
  
  
  

**Lectures**

1. Introduction: the relation between technical and ethical decisions in dental care.  
   Dr. Szolcsányi Tibor
2. The most fundamental norms of medical ethics and their application to dentistry.  
   Dr. Szolcsányi Tibor
3. The ethics of duties versus respect for human dignity 1. The principle of medical informed consent.  
   Dr. Szolcsányi Tibor
4. The ethics of duties versus respect for human dignity 2. Standards for informing the patients. The duty of medical confidentiality.  
   Dr. Szolcsányi Tibor
5. Science and evidence-based medicine.  
   Dr. Szolcsányi Tibor
   Dr. Szolcsányi Tibor
7. Stereotypes, prejudice and equal opportunities.  
   Hartung István
8. The basic features of direct human communication, with special emphasis on some elements of non-verbal communication.  
   Hartung István
   Dr. Birkás Béla
10. The disclosure of medical errors.  
    Dr. Birkás Béla
11 On how to reduce the patients’ anxiety in dental practice.
   Dr. Tiringer István
12 The adaptation abilities and the quality of life of elderly patients.
   Dr. Tiringer István
13 Case studies.
   Dr. Szolcsányi Tibor
14 Written test exam.
   Dr. Szolcsányi Tibor

Practices
Seminars
Exam topics/questions

Participants
Dr. Birkás Béla (BIBGAAB.PTE), Dr. Szolcsányi Tibor (SZTAAJ.B.JPTE), Dr. Tiringer István (TIIHAAE.PTE), Hartung István (HAILAAT.PTE)
OSA-FV1  THE BASICS OF DENTAL PREVENTION 1

Course director: DR. ILDIKÓ BALÁS-SZÁNTÓ, assistant professor
Department of Dentistry, Oral and Maxillofacial Surgery

3 credit • semester exam • Basic subject • autumn semester • recommended semester: 1

Number of hours/semester: 14 lectures + 28 practices + 0 seminars = total of 42 hours
Course headcount limitations (min.-max.): 1 – 100  Prerequisites: none

Topic
During the course, students will learn about the basic anatomy of the mouth and preventive activities and treatments in the oral cavity.

Conditions for acceptance of the semester
Maximum of 15 % absence allowed

Mid-term exams
Two anatomical pictures required. Final result evaluated with the last week written test.

Making up for missed classes
Not possible

Reading material
- Obligatory literature
  Harris, Norman O., Garcia-Godoy: Primary Preventive Dentistry
- Literature developed by the Department
  Lecture notes uploaded to Neptun
- Notes
- Recommended literature

Lectures
1  Introduction to primary preventive dentistry.
   Dr. Balásné Dr. Szántó Ildikó
2  Anatomy of the masticatory system.
   Dr. Balásné Dr. Szántó Ildikó
3  Anatomy and histology of the teeth.
   Dr. Balásné Dr. Szántó Ildikó
4  The development and structure of dental plaque, calculus and other dental deposits.
   Dr. Sándor Balázs Attila
5  The role of dental plaque in the etiology and progression of periodontal disease.
   Dr. Sándor Balázs Attila
6  Tools and agents of tooth cleaning.
   Dr. Balásné Dr. Szántó Ildikó
7  Professional tooth cleaning
   Dr. Sándor Balázs Attila
8  Scaling and Polishing
   Dr. Sándor Balázs Attila
9  Interdental cleaning.
   Dr. Sándor Balázs Attila
10 Development of the carious lesion I.
    Dr. Balásné Dr. Szántó Ildikó
11 Development of the carious lesion II.
    Dr. Balásné Dr. Szántó Ildikó
12 Development of the carious lesion III.
    Dr. Balásné Dr. Szántó Ildikó
13 The role and mechanism of action of fluoride in the prevention of caries. Toxicological aspects.
    Dr. Balásné Dr. Szántó Ildikó
14 Local and systemic fluoridation.
    Dr. Balásné Dr. Szántó Ildikó
Practices
1. Examination in the Oral Cavity. Basic anatomical studies
2. Examination in the Oral Cavity. Basic anatomical studies
7. Carving. Numbering systems
8. Carving. Numbering systems
9. Characteristics of Supragingival and Subgingival Calculus
10. Characteristics of Supragingival and Subgingival Calculus
11. Calculus Removing in Practice
12. Calculus Removing in Practice
13. Test
14. Test
15. Equipment of Oral-Health Self-Care
16. Equipment of Oral-Health Self-Care
17. Professional Dental-Hygienic Equipment
18. Professional Dental-Hygienic Equipment
19. Toothbrushing Methods. Dental Floss
20. Toothbrushing Methods. Dental Floss
21. The cleaning of the interproximal space.
22. The cleaning of the interproximal space.
23. Dental splint fabrication
24. Dental splint fabrication
25. Dental splint fabrication
26. Dental splint fabrication
27. Test
28. Test

Seminars

Exam topics/questions
1. Anatomy of the oral cavity
2. Anatomy and histology of the teeth
3. Tooth numbering systems
4. Dental deposits
5. Formation of carious lesions
6. Histology of incipient caries
7. Oral hygiene - Home care
8. Oral hygiene - professional care
9. Interdental cleaning
10. Chemical plaque control
11. Local fluoridation
12. Systemic fluoridation

Participants
Dr. Balánsné Dr. Szántó Ildikó (SZINAJP.PTE), Dr. Sándor Balázs Attila (SABFAA.TJPTE)
**OSA-MF1  MOLECULAR CELL BIOLOGY FOR STUDENTS OF DENTISTRY 1**

<table>
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<tr>
<th>Course director:</th>
<th>GYÖRGY SÉTÁLÓ DR. JR., associate professor</th>
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<tr>
<td>Department:</td>
<td>Department of Medical Biology</td>
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</table>

3 credit • semester exam • Basic subject • autumn semester • recommended semester: 1

**Number of hours/semester:**

42 lectures + 0 practices + 0 seminars = total of 42 hours

**Course headcount limitations (min.-max.):**

1 – 200

**Prerequisites:** none

**Topic**

To provide a molecular and cell biological basis for anatomy, biochemistry, physiology, pathology, pathophysiology, microbiology and pharmacology studies of dentistry students. The course covers cellular and molecular characteristics of the structure and function of cells, the mechanisms of storage, replication and expression of the genetic information.

**Conditions for acceptance of the semester**

Maximum of 25 % absence allowed

**Mid-term exams**

Mid-term tests

**Making up for missed classes**

It is not possible to make up for missed lectures. Alternatively, the students can try to attend the lecture of the same topic in the Hungarian or German Program.

**Reading material**

- **Obligatory literature**
  

- **Notes**

- **Recommended literature**
  
  Gerald Karp: Cell and Molecular Biology
  
  
  Lodish et al.: Molecular Cell Biology
  
  Alberts et al.: Molecular Biology of the Cell
  
  Szeberényi J.: Experiments in Molecular Cell Biology

**Lectures**

1  Introduction
   ifj. Dr. Sétáló György
2  Cellular organization in general
   ifj. Dr. Sétáló György
3  Nucleic acids
   ifj. Dr. Sétáló György
4  Proteins
   ifj. Dr. Sétáló György
5  Lipids and carbohydrates
   ifj. Dr. Sétáló György
6  Light microscopy
   Dr. Ábrahám Hajnalka Gabriella
7  Electron microscopy
   Dr. Ábrahám Hajnalka Gabriella
8  Restriction endonucleases and modification methylases
   ifj. Dr. Sétáló György
9  DNA amplification in bacterial systems
   ifj. Dr. Sétáló György
10 DNA amplification in vitro
    Dr. Ábrahám Hajnalka Gabriella
11 The Sanger method
    Dr. Ábrahám Hajnalka Gabriella
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<tr>
<th>No.</th>
<th>Course Title</th>
<th>Instructor(s)</th>
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<td>12</td>
<td>Genetically modified organisms</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<td>13</td>
<td>DNA chips</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<tr>
<td>14</td>
<td>The cell nucleus</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<td>15</td>
<td>Unique and repetitive sequences</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<tr>
<td>16</td>
<td>The structure and chemical composition of chromatin</td>
<td>ifj. Dr. Sétáló György</td>
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<tr>
<td>17</td>
<td>Interphase, mitosis and meiosis</td>
<td>ifj. Dr. Sétáló György</td>
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<tr>
<td>18</td>
<td>Regulation of the cell cycle</td>
<td>ifj. Dr. Sétáló György</td>
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<td>19</td>
<td>DNA synthesis in prokaryotes</td>
<td>ifj. Dr. Sétáló György</td>
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<tr>
<td>20</td>
<td>DNA synthesis in eukaryotes</td>
<td>ifj. Dr. Sétáló György</td>
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<td>21</td>
<td>DNA repair</td>
<td>ifj. Dr. Sétáló György</td>
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<td>22</td>
<td>RNA synthesis in prokaryotes</td>
<td>Dr. Pap Marianna</td>
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<td>23</td>
<td>rRNA synthesis in eukaryotes</td>
<td>Dr. Pap Marianna</td>
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<td>24</td>
<td>mRNA transcription in eukaryotes, modifications of the 5’ and 3’ ends</td>
<td>Dr. Pap Marianna</td>
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<td>25</td>
<td>Processing of pre-m RNA in eukaryotes</td>
<td>Dr. Pap Marianna</td>
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<td>26</td>
<td>Cytoplasmic organelles</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<td>27</td>
<td>The components of protein synthesis</td>
<td>Dr. Pap Marianna</td>
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<td>28</td>
<td>The genetic code</td>
<td>Dr. Pap Marianna</td>
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<td>The mechanism of translation</td>
<td>Dr. Pap Marianna</td>
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<td>30</td>
<td>Regulation of gene expression in prokaryotes</td>
<td>Kiss Katalin</td>
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<td>31</td>
<td>Levels of gene regulation in eukaryotes</td>
<td>Dr. Pap Marianna</td>
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<td>32</td>
<td>Transcription factors</td>
<td>Dr. Pap Marianna</td>
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<td>Rough endoplasmic reticulum</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<td>34</td>
<td>Golgi complex, secretion</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<td>35</td>
<td>Endocytosis, vesicular transport</td>
<td>Dr. Ábrahám Hajnalka Gabriella</td>
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<td>36</td>
<td>Lysosomes, smooth endoplasmic reticulum</td>
<td>Dr. Bátor Judit</td>
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<td>37</td>
<td>Oxygen free radicals, membrane damage</td>
<td>Dr. Kemény Ágnes</td>
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<td>38</td>
<td>ATP synthesis in mitochondria</td>
<td>ifj. Dr. Sétáló György</td>
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<td>Mitochondrial DNA</td>
<td>ifj. Dr. Sétáló György</td>
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<td>40</td>
<td>Microfilaments</td>
<td>ifj. Dr. Sétáló György</td>
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41 Intermediate filaments and microtubules  
   Dr. Fekete Zsuzsanna
42 The cell membrane  
   Dr. Berta Gergely

Practices

Seminars

Exam topics/questions

1. Proteins
2. Lipids
3. Carbohydrates
4. Nucleosides, nucleotides
5. The DNA molecule
6. DNA as the genetic material (experimental evidences)
7. Types of RNA
8. Pro- and eukaryotic cells
9. Methods of immunocytochemistry
10. Restriction endonucleases
11. Southern blotting
12. Determining the sequence of DNA
13. DNA chips
14. Genomic libraries
15. Polymerase chain reaction
16. Transgenic organisms
17. Targeted gene inactivation at the DNA level
18. Inhibition of gene expression at the level of mRNA
19. cDNA libraries
20. Northern blotting
21. Immunoprecipitation and Western blotting
22. The structure of the nucleus
23. Multilevel chromatin organization
24. Unique and repetitive sequences
25. The chemical composition of chromatin
26. Phases of the cell cycle
27. Regulation of the cell cycle
28. Mitosis
29. Meiosis
30. General features of replication
31. Mechanism of replication in prokaryotes
32. Eukaryotic replication
33. DNA repair
34. The mechanism of prokaryotic transcription
35. General features of eukaryotic transcription
36. Synthesis and processing of eukaryotic pre-rRNA
37. Synthesis of pre-mRNA in eukaryotes, modifications at the 5' and 3' ends
38. Pre-mRNA splicing
39. Synthesis of aminoacyl-tRNA
40. The structure and function of ribosomes
41. The genetic code
42. Initiation of translation
43. Elongation and termination of translation
44. General features of translation
45. The lactose operon
46. The tryptophan operon
47. Cloning by nuclear transplantation
48. Regulation of pre-mRNA synthesis and processing in eukaryotes
49. Regulation of mRNA transport, translation and degradation in eukaryotes
50. Regulation of protein activity and degradation in eukaryotes
51. Eukaryotic transcription factors
52. The mechanism of action of steroid hormones
53. Rough endoplasmic reticulum
54. Golgi complex and the glycosylation of proteins
55. The mechanism of secretion
56. Endocytosis
57. The mechanism of vesicular transport
58. Lysosomes and the smooth endoplasmic reticulum
59. Oxygen free radicals and membrane damage
60. The structure and function of mitochondria
61. The genetic apparatus of mitochondria
62. Mitochondrial diseases

Participants
OSA-ORF  CHEMISTRY FOR DENTISTRY STUDENTS

Course director: DR. PÉTER JAKUS, assistant professor
Department of Biochemistry and Medical Chemistry

6 credit • semester exam • Basic subject • autumn semester • recommended semester: 1

Number of hours/semester: 42 lectures + 28 practices + 14 seminars = total of 84 hours

Course headcount limitations (min.-max.): 1 – 200  Prerequisites: none

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic

Medical chemistry includes the topics of general chemistry which are necessary for medical students. It deals also with the chemistry of organic functional groups in concise way. Majority of the curriculum deals with the bioorganic chemistry, which means the chemistry and descriptive biochemistry of biomolecules. The purpose of practices is to study some analytical chemistry and the knowledge of materials. Curriculum of medical chemistry contains the basic knowledge that is necessary to understand biochemistry, pharmacology and clinical chemistry.

Conditions for acceptance of the semester

The student has to attend minimum 80% of the classes (she/he can miss maximum 9 hours out of 42; 3 lab (6x45min lab and 3x45min seminar).

Mid-term exams

Requirement for acceptance of Medical Chemistry is: The student has to attend minimum 80% of the classes (she/he can miss maximum 9 hours out of 42; 3 lab (6x45min lab and 3x45min seminar). During weeks 3-14 of the semester there are short tests at the beginning of each practice. Additional requirement for acceptance of Medical Chemistry is writing 10 out of these 12 tests, and minimum 7 out of them should be correct and accepted by the lab instructor. It is obligatory to write lab-notes. Result of the short test is acknowledged only if the lab-note of the practice is accepted by the lab instructor. If somebody is late less than 10 minutes, though his/her test is zero point, but he/she may perform the lab experiments and this occasion will not be considered as an absence. Less than 5 minutes late is accepted.

The exam is written and the max. points are 120 (12p+108p). The satisfactory level is 71p.

Making up for missed classes

None

Reading material

- Obligatory literature
  P. Gergely (ed.): Organic and Bioorganic Chemistry for Medical Students, latest edition, Univ. Med. School of Debrecen

- Literature developed by the Department

- Notes

- Recommended literature
  Veronika Nagy (ed.): Laboratory Experiments in Medical Chemistry, Internet edition, Univ. Med. School of Pécs, 2011
  Hein-Pattison-Arena-Best: Introduction to Chemistry General, Organic, and Biochemistry, latest edition
  P. Gergely (ed.): Organic and Bioorganic Chemistry for Medical Students, latest edition, Univ. Med. School of Debrecen

Lectures

1  Introduction to Medical Chemistry, its relationship with medicine.
   Dr. Ohmacht Róbert
2  The periodic table, the electronic structure of atoms.
   Dr. Nagy Veronika
3  Chemical bonds. Ionic, covalent and metallic bond
   Dr. Nagy Veronika
4  Chemical bonds. Basics of MO and VB theories.
   Dr. Nagy Veronika
5  Secondary interactions.
   Dr. Nagy Veronika
6  Chemistry, types and properties of the elements.
   Dr. Berente Zoltán
7  Oxides, hydroxides, acids, bases and salts.
   Dr. Berente Zoltán
8  States of matter, gas laws.
   Dr. Takátsy Anikó
9 Water and aqueous solutions. Colligative properties of dilute solutions. Composition of biofluids
   Dr. Takátsy Anikó
10 Role of electrolytes in living organisms
   Dr. Berente Zoltán
11 Chemical equilibrium, mass action law
   Dr. Lóránd Tamás
12 Heterogeneous equilibria. Solubility product constant. Gallstones and kidney stones
   Dr. Lóránd Tamás
13 Acids and bases
   Dr. Lóránd Tamás
14 Ion product constant of water, pH, pOH
   Dr. Lóránd Tamás
15 Hydrolysis of salts. Buffer solutions.
   Dr. Lóránd Tamás
16 Buffer systems in living organisms
   Dr. Berente Zoltán
17 Structure and formation of complexes.
   Dr. Agócs Attila
18 Metal complexes in living organisms and in medical diagnosis
   Dr. Agócs Attila
19 Colloid systems
   Dr. Ohmacht Róbert
20 Colloid systems in living organisms
   Dr. Dóczi Tamás
21 Chemical kinetics
   Dr. Ohmacht Róbert
22 Thermodynamics: Energy changes in chemical reactions
   Dr. Ohmacht Róbert
23 Thermodynamics: spontaneous and non-spontaneous reactions
   Dr. Ohmacht Róbert
24 Photochemistry. Light induced reactions in living organisms
   Dr. Ohmacht Róbert
25 Electrochemistry
   Dr. Berente Zoltán
26 Electron transfer processes in living organisms
   Dr. Berente Zoltán
27 Introduction to organic chemistry
   Dr. Agócs Attila
28 Reaction types in organic chemistry
   Dr. Agócs Attila
29 Saturated hydrocarbons: Alkanes. Paraffins in medicine
   Dr. Lóránd Tamás
30 Unsaturated hydrocarbons: Alkenes and alkynes
   Dr. Lóránd Tamás
31 Isomerism among alkanes, cycloalkanes and alkenes
   Dr. Lóránd Tamás
32 Aromatic hydrocarbons. Organic halides
   Dr. Lóránd Tamás
33 Optical isomerism. Relative and absolute configuration.
   Dr. Agócs Attila
34 Alcohols
   Dr. Lóránd Tamás
35 Phenols
   Dr. Lóránd Tamás
36 Ethers
   Dr. Lóránd Tamás
37 Organic thio compounds
   Dr. Lóránd Tamás
Aldehydes and their derivatives  
Dr. Agócs Attila

Ketones, quinones  
Dr. Agócs Attila

Amines and their biologically relevant derivatives  
Dr. Lóránd Tamás

Carboxylic acids  
Dr. Lóránd Tamás

Carboxylic esters, phosphate esters and sulphate esters  
Dr. Lóránd Tamás

Practices
1 Laboratory regulations. Accident and fire protection
2 Laboratory regulations. Accident and fire protection
3 Introductory discussion
4 Introductory discussion
5 Experiments with compounds of halogens, oxygen-group and nitrogen group elements
6 Experiments with compounds of halogens, oxygen-group and nitrogen group elements
7 Experiments with compounds of carbon-group, aluminium and s-block elements
8 Experiments with compounds of carbon-group, aluminium and s-block elements
9 Discussion
10 Discussion
11 Titration of Betacid solution
12 Titration of Betacid solution
13 Potentiometry. Buffer solutions.
14 Potentiometry. Buffer solutions.
15 Reactions of coordinative (complex) compounds.
16 Reactions of coordinative (complex) compounds.
17 Experiments on colloidal systems, chemical equilibria, and catalysis
18 Experiments on colloidal systems, chemical equilibria, and catalysis
19 Experiments in electrochemistry
20 Experiments in electrochemistry
21 Organic chemistry I. Reactions of functional groups I
22 Organic chemistry I. Reactions of functional groups I
23 Organic chemistry I. Reactions of functional groups II
24 Organic chemistry I. Reactions of functional groups II
25 Organic chemistry I. Reactions of functional groups III
26 Organic chemistry I. Reactions of functional groups III
27 Closing remarks, repetition
28 Closing remarks, repetition

Seminars
1 Basic concepts, stoichiometric calculations
2 Stoichiometric calculations
3 Geometry and polarity of molecules. Intermolecular interactions
4 Concentration of solutions
5 Structure of simple organic molecules
6 Naming organic molecules. Isomerism
7 Structure and properties of various types of organic compounds
8 Stereochemistry I. Chirality, enantiomers
9 Stereochemistry II: Diastereomers
10 Reactions in organic chemistry I: Types of reactions
11 Reactions in organic chemistry II: Alkenes and aromatic compounds
12 Reactions in organic chemistry III: Alcohols
13 Reactions in organic chemistry IV: Aldehydes and ketones
14 Reactions in organic chemistry V: Carboxylic acids

Exam topics/questions
The exam is based on the topic of the lectures and labs. The lectures are identical with the General Medicine program.
Participants

Dr. Agócs Attila (AGAQAAP.PTE), Dr. Berente Zoltán (BEZLAAP.PTE), Dr. Jakus Péter (JAPAAA.T.JPTE), Dr. Lóránd Tamás (LOTGAAO.PTE), Dr. Takátsy Anikó (TAAAAA.T.JPTE), Jámbor Éva (JAEHAAT.PTE)
**OSR-ELS  FIRST AID**

**Course director:**

**Dr. Lajos Bogár, professor**

Department of Anaesthesiology and Intensive Therapy

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**0 credit • signature • Criterion requirement subject • autumn semester • recommended semester: 1**

**Number of hours/semester:**

0 lectures + 14 practices + 0 seminars = total of 14 hours

**Course headcount limitations (min.-max.):** 1 – 250

**Prerequisites:** none

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**Topic**

Short description of the curriculum:

The first year students are expected to learn the basic elements of the emergency treatment and the methods of life saving interventions during the 14 class practice. The teaching will provide enough skill training for recognizing the signs of cardiac and breathing arrests and for performing the steps of basic life support interventions. Furthermore, the students are also expected to learn how to avoid life threatening secondary complications in accident victims on the scene and during transportation as well as in the emergency room. They will have to properly diagnose and help patients with acute chest pain, severe poisoning, metabolic disorders and acute central nervous diseases. The students are also expected to properly deal with acute airway obstructions using different first aid maneuvers.

Goals of the course in relation to the medical curriculum:

The discipline has two major goals. First: the students will have to be able to provide first aid to patients in acute illness in out-of-hospital settings. Second: the student being at the beginning of their medical curriculum should receive practical information reflecting the importance of the preclinical disciplines. In this way the students' interest will hopefully rise towards the theoretical subjects and they can understand the scientific connections between basic and applied medical sciences.

**Conditions for acceptance of the semester**

The maximal absences are 20% of the practice time.

**Mid-term exams**

-  

**Making up for missed classes**

The student can join other group for the supplementation.

**Reading material**

- **Obligatory literature**
- **Literature developed by the Department**
- **Notes**
- **Recommended literature**


**Lectures**

**Practices**

1. Principles of basic life support (first aid in life threatening emergencies, ABC of resuscitation, indications, methods of external cardiac compression, skill).
3. First workout of the elements of basic life support.
4. First workout of the elements of basic life support.
5. Acute chest pain syndromes (acute myocardial infarction, etc.)
6. Acute chest pain syndromes (acute myocardial infarction, etc.)
9. Severe poisoning.
10. Severe poisoning.
11. Dangerous metabolic abnormalities, airway obstructions, acute central nervous
12. Dangerous metabolic abnormalities, airway obstructions, acute central nervous
13. Second workout of the elements of basic life support.
14. Second workout of the elements of basic life support.
Seminars

Exam topics/questions

Participants
Dr. Báta István (BAIMABO.PTE), Dr. Csontos Csaba (CSCSAAP.PTE), Dr. Jáksó Krisztán (JAKFAAO.PTE), Dr. Kiss Tamás (KITFAAO.PTE), Dr. Loibl Csaba (LOCGAAO.PTE), Dr. Molnár Tihamér (MOTTA0.PTE), Dr. Nagy Bálnint János (NABGAAO.PTE), Dr. Nagy Judit (NAJFAAO.PTE), Dr. Szabó Péter (SZPFABO.PTE), Dr. Szabó Zoltán (ZZSUABO.PTE), Dr. Toldi János (TOJFADO.PTE), Dr. Tóth Ildikó (TOISAAA.PTE), Dr. Tóth Krisztian (TOKFAEO.PTE)
Topic

This subject provides theoretical and practical information for the students to maintain and improve their physical condition and helps to deepen the knowledge in the field of healthy lifestyle.

Theoretical and practical knowledge during different types of exercises e.g. how to improve endurance, muscle force, motor skills and how to prevent the body from injuries.

Conditions for acceptance of the semester

Active participation at least 20 practical lessons provided by the Institute of Human Movement Sciences or regular participation of the trainings of the Medikus Sport Club or PEAC.

Mid-term exams

Making up for missed classes

We provide opportunities to attend extra lessons in the first week of the exam period in that case the requirements are not fulfilled till the end of the teaching weeks with agreement of the PE Teacher.

Reading material

- Obligatory literature
- Literature developed by the Department
  Not available.
- Notes

Recommended literature Lectures Practices

1-28 For the list of actual courses please turn to the end of this document

Seminars

Exam topics/questions

Participants

Farkas György (FAGMAAO.PTE), Lipcsik Zoltán (LIZIAAT.PTE), Németh Attila Miklós (NEAGAET.PTE), Téczely Tamás (PETLAAT.PTE)
INTRODUCTION TO BIOCHEMISTRY FOR DENTISTRY STUDENTS

Course director: DR. PÉTER JAKUS, assistant professor
Department of Biochemistry and Medical Chemistry

3 credit • semester exam • Basic subject • spring semester • recommended semester: 2

Number of hours/semester:
- 28 lectures + 14 practices + 0 seminars = total of 42 hours

Course headcount limitations (min.-max.):
- 1 – 200

Prerequisites: none

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic

- Introduction to Biochemistry - includes the topics of organic and bioorganic chemistry along with basic biochemistry which are necessary for medical students. It deals with the structure, chemistry, and cellular degradation of essential biomolecules like proteins, carbohydrates and lipids. The purpose of practices is to study some analytical chemistry and the knowledge of materials. Curriculum of medical chemistry contains the basic knowledge that is necessary to understand biochemistry, pharmacology and clinical chemistry.

Conditions for acceptance of the semester

Maximum of 15 % absence allowed

Mid-term exams

There is lab practice at every EVEN NUMBERED EDUCATIONAL weeks(2-4-6-8-10-12-14). There are short tests from week 4-14 at the beginning (5 minutes) of the labs (6 occasions). Each test is worth 2 points, (6 occasions x 2p max. 12p). Requirement for acceptance is writing 5 out of these 6 tests, and to gain at least 7p from the maximum 12p. Delaying over 5 minutes there is no possibilities to write a short test. No more than 10 minutes delay is accepted, over of it, it is an absence. No more than 1 absence is allowed from the 7 lab occasions (15%).

It is obligatory to write lab-notes. Result of the short test is acknowledged only if the lab-notes of the practice is accepted by the lab instructor. The exam is based on the topic of the lectures and labs. The lectures are identical with the General Medicine program. The exam is 100p (12+88). The satisfactory level is 61p.

Making up for missed classes

None

Reading material

- Obligatory literature
- Literature developed by the Department
- Notes
- Recommended literature
  http://bcs.whfreeman.com/lehninger5e
  Berg, Tymoczko, Stryer: Biochemistry, 7th ed.
  http://bcs.whfreeman.com/berg7e

Lectures

1 Other derivatives of carboxylic acids
   Dr. Lóránd Tamás
2 Heterocyclic compounds, carbonic acid derivatives
   Dr. Lóránd Tamás
3 Biologically relevant heterocyclic compounds
   Dr. Lóránd Tamás
4 Alkaloids, pharmacologically active compounds
   Dr. Lóránd Tamás
5 Nucleosides, nucleotides, nucleic acids
   Dr. Nagy Veronika
6 Nucleotide coenzymes, bioenergetics
   Dr. Berente Zoltán
7 Amino acids, peptides
   Dr. Berente Zoltán
8 Proteins, primary structure, sequencing
   Dr. Berente Zoltán
9 Protein 3D structure and function  
Dr. Berente Zoltán
10 Hemoglobin, oxygen transport  
Dr. Takátsy Anikó
11 Basics of enzyme kinetics  
Dr. Berente Zoltán
12 Regulation and inhibition of enzymatic activity, isoenzymes  
Dr. Berente Zoltán
13 Structure and reactivity of carbohydrates  
Dr. Nagy Veronika
14 Medically relevant mono-, di- and oligosaccharides  
Dr. Nagy Veronika
15 Reactions of glycolysis  
Dr. Jakus Péter
16 Regulation of glycolysis  
Dr. Jakus Péter
17 Metabolic pathways linked to glycolysis  
Dr. Jakus Péter
18 Composition of simple and complex lipids  
Dr. Nagy Veronika
19 Biologically relevant lipids (prostaglandins, terpenoids)  
Dr. Nagy Veronika
20 Biologically relevant lipids (steroids)  
Dr. Lóránd Tamás
21 Characterization of biological membranes  
Dr. Takátsy Anikó
22 Fatty acid oxidation  
Dr. Nagy Veronika
23 Reactions of TCA cycle (PDC included)  
Dr. Nagy Veronika
24 Regulation of TCA cycle  
Dr. Nagy Veronika
25 Respiratory chain and its inhibition  
Dr. Takátsy Anikó
26 ATP synthesis  
Dr. Takátsy Anikó
27 Mitochondrial transport processes, shuttles  
Dr. Takátsy Anikó
28 Supramolecular organization of functionally related enzymes  
Dr. Berente Zoltán

Practices
1 Introduction, chemistry of heterocyclic compounds
2 Introduction, chemistry of heterocyclic compounds
3 Stereochemistry, molecular modelling exercises
4 Stereochemistry, molecular modelling exercises
5 Proteins, gel filtration, dialysis
6 Proteins, gel filtration, dialysis
7 Enzymatic catalysis
8 Enzymatic catalysis
9 Properties of carbohydrates
10 Properties of carbohydrates
11 Properties of lipids
12 Properties of lipids
13 Metabolism
14 Metabolism
Seminars

Exam topics/questions


Participants
Dr. Agócs Attila (AGAQAAP.PTE), Dr. Jakus Péter (JAPAAA.T.JPTE), Dr. Radnai Balázs (RABCAB.T.JPTE), Dr. Takátsy Anikó (TAAAAA.T.JPTE), Dr. Tapodi Antal (TAAAAAB.T.JPTE), Dr. Veres Balázs (VEBAAB.T.JPTE)
OSA-BZ2  DENTAL BIOPHYSICS 2
Course director: DR. EDINA SZABÓ-MELEG, assistant professor
Department of Biophysics

2 credit • final exam • Basic subject • spring semester • recommended semester: 2
Number of hours/semester: 14 lectures + 14 practices + 0 seminars = total of 28 hours
Course headcount limitations (min.-max.): 5 – 200 Prerequisites: OSA-BZ1 completed

Topic
The course, stemming from „Dental Biophysics” addresses the physical relations between the structure and function of biological systems as well as the physical basis of diagnostic and therapeutic methods. The main topics include atomic and nuclear physics, spectroscopy, diagnostic and research methods and investigation methods in materials science.

Conditions for acceptance of the semester
Maximum of 25 % absence allowed

Mid-term exams
During the semester the students write mid-term tests. Based on the results the students can be exempted from some parts of the final exam.

Making up for missed classes
Missed practices can be made up on the basis of discussion with the lab instructor.

Reading material
- Obligatory literature
  - Literature developed by the Department
    Online materials on departmental website: http://biofizika.aok.pte.hu
- Notes
  - Own notes
- Recommended literature
  Damjanovich Sándor, Fidy Judit, Szöllösi János (eds.): Medical Biophysics, Medicina, Budapest, 2009

Lectures

1 Basics of atomic and quantum physics
   Szatmári Dávid
2 Radioactivity
   Dr. Szabó-Meleg Edina
3 Electromagnetic waves, UV-light
   Dr. Szabó-Meleg Edina
4 Production and application of lasers I.
   Dr. Lukács András Szilárd
5 Production and application of lasers II.
   Dr. Lukács András Szilárd
6 Polymers, photopolymers
   Dr. Lukács András Szilárd
7 X-ray: production and diagnostics I.
   Dr. Grama László
8 X-ray: production and diagnostics II.
   Dr. Grama László
9 Spectroscopy I: absorption and fluorescence
   Dr. Bugyi Beáta
10 Spectroscopy II: infrared and Raman spectroscopy, anisotropy
   Dr. Bugyi Beáta
11 NMR, ESR, MRI
   Szatmári Dávid
12 3D-printing: technics and possibilities
   Telek Elek
13 Structure analysis I.
   Dr. Szabó-Meleg Edina
14 Structure analysis II.
   Dr. Szabó-Meleg Edina

Practices
1 Introduction
2 Radioactivity
3 The Geiger-Müller Counter. Radioactive half-life I.
4 Gamma absorption
5 Dead-time. Counting efficiency factor. Radioactive half-life II.
6 Scintigraphy
7 Optics
8 Microscopy
9 Laser
10 Spectroscopy
11 3D-printing
12 Consultation
13 Consultation
14 Test/consultation

Seminars

Exam topics/questions
Exam topics and questions can be found on the departmental website: [http://biofizika.aok.pte.hu](http://biofizika.aok.pte.hu)

Participants
Czimbalek Lívia Mária (CZLAAA.T.JPTE), Dr. Bugyi Beáta (BUBEAB.T.JPTE), Dr. Grama László (GRLHAAO.PTE), Dr. Lukács András Szilárd (LUATAA0.PTE), Dr. Szabó-Meleg Edina (MEEDAA.T.JPTE), Kapronczai Róbert (KARWAA0.PTE), Karádi Kristóf (KAKSACT.PTE), Kis-Bicskei Nikolett (KINNAAT.PTE), Madarász Tamás (MATPAAT.PTE), Pirisi Katalin Erzsébet (PIKPACT.PTE), Szatmári Dávid (SZDHAAT.PTE), Telek Elek (TELQAAT.PTE), Ujfalusi Zoltán (UJZDAA.T.JPTE), Ujfalusi-Pozsonyi Kinga (POKAAA.T.JPTE)
**OSA-FI1  DENTAL CLINICAL INFORMATICS AND STATISTICS 1**

*Course director:* DR. LÁSZLÓ PÓTÓ, associate professor

Institute of Bioanalysis

2 credit • semester exam • Basic subject • spring semester • recommended semester: 2

**Number of hours/semester:** 14 lectures + 14 practices + 0 seminars = total of 28 hours

**Course headcount limitations (min.-max.):** 1 – 200

**Prerequisites:** none

The subject can only be registered in case of a PASSED and valid health aptitude test!

**Topic**

Practicing basic computing and data-handling skills which are necessary in your future job.

As a first course in statistics it covers the following main blocks: Basic data handling and computer use. Exploring data by graphical and numerical characterization. Basic concepts of probability and statistical inference. The basic methods for statistical inference most frequently used in medicine.

As the main goal it focuses on the power of „statistical thinking” that is new to students and increasingly important at medical field - not only in the science but also in everyday work at the bedside. So we introduce students to the basics of Medical Decision Making.

**Conditions for acceptance of the semester**

Two written test, no more than two missed classes.

There is a three-steps exam for the grade: an entry-test, a problem to be solved by the computer (using SPSS) and a theory question. All the three should be completed at least ‘satisfactory’ for a successful exam.

**Mid-term exams**

One home assignment should be completed from the first block.

**Making up for missed classes**

One extra class.

**Reading material**

- **Obligatory literature**

- **Literature developed by the Department**

- **Notes**

- **Recommended literature**

**Lectures**

1. Hardware basics, operating systems, the main fields of computer (PC-) application.
   Dr. Pótó László
2. Wordprocessing
   Dr. Pótó László
3. Wordprocessing
   Dr. Pótó László
4. Wordprocessing
   Dr. Pótó László
5. Wordprocessing
   Dr. Pótó László
6. Datahandling by the PC
   Dr. Pótó László
7. Datahandling by the PC
   Dr. Pótó László
8. Datahandling by the PC
   Dr. Pótó László
9. Datahandling by the PC
   Dr. Pótó László
10. Datahandling by the PC
    Dr. Pótó László
Practices

1. Using Windows, Introduction to wordprocessing
2. Using Word - the basics. Entering and editing text.
3. Formatting characters and paragraphs.
4. Tables.
6. Types of data, enter and coding data. The SPSS software. Overviewing your data - the histogram.
7. Descriptive statistics - the mean and the standard deviation.
9. The distribution of the sample mean. The Confidence Interval for the expected value.
10. The basic scheme of hypothesis testing. The one sample and the paired samples t tests.
11. Type 1 and Type 2 errors. The independent samples t test. Medical decision making (MDM) basics 1.
12. Connection between two continuous variables. The linear regression and correlation.
14. Nonparametric tests, Exercises. MDM basics 2. The way ahead: ANOVA.

Seminars

Exam topics/questions

On the main semester exam: A written entry test, one data analysis problem solved by the SPSS and two theory questions from the below list. One of them is out of the MDM questions.

Theory questions:

1. The main goal of biometrics/biostatistics
   Compare the two models - what are the main differences?
   Relate them and show how they both have its role in the scientific work and in medicine.
   (Mainly from the lectures 1, 3, and 6-7-8)

2. The key feature of the statistical thinking - the probability
   Show this term - use a simple example, please. When can it be (and when can not be) calculated? Illustrate how both ways can be used in practical medical situations - by some examples.
   (Mainly from the lectures 1, 2, 6-7-8 and 12)

3. The idea of the probability distribution - discrete distributions - 1,
   Demonstrate on the example of the binomial distribution how the probability calculations (games of chances case) can be used in real life situations. How can you illustrate a distribution (graphically). Trace its role on the decision making.
   (Mainly from the lectures 2, 6-7-8 and 12)

4. The idea of the probability distribution - discrete distributions - 2,
   Contrast the binomial and the Poisson distributions: similarities and differences - demonstrated by some examples. Show the importance of discrete distributions trough examples. (Which hypothesis testing methods are based on this approximation?)
   (Mainly from the lectures 2, 6-7-8 and 12)

5. The basic principles of statistical thinking - from the data to the decision
   The way to the decision - and some pitfalls. (Size of the sample, representativity, lurking variables, probability decision, risk of errors, - and handling them)
   (Mainly from the lectures 3 and 6-7-8)

6. Types of the data (variables) and displaying them with graphs
   The three most frequent types of data and the methods for summarizing and displaying them.
   Applications of some diagrams - strength and weaknesses. What specific info can be observed from a given type of graph? When to choose a given type?
   (Mainly from the lecture 3 and 10)

7. The population and the sample
   Explain both terms in case of some different types of data. How to characterize (by pictures or numbers) the sample and the population in these examples? Discuss the basic role of both terms in the statistical inference and decision making
   (Mainly from the lectures 2, 3, 6-7-8 and 12)
8. Numerical description of continuous data
   Contrast the five number and three number descriptions. When to use one and when the other?
   Prove and demonstrate by examples the basic role of the two description while selecting the appropriate decision making (or hypothesis testing) method.
   (Mainly from the lectures 4, 6-7-8 and 12)
9. The idea of the probability distribution - continuous distributions
   Symmetrical and skewed distributions. How the measures of the sample show (mirror) the shape of the distribution? Demonstrate them on the example of the normal and some skewed distributions. Prove the importance of distinction between them (think to the condition of the decision making methods).
   (Mainly from the lectures 4, 6-7-8 and 12)
10. The normal distribution 1
    Features. Why is it so frequently used in biology and medicine?
    Application examples (reference range, ...).
    How does the normal approximation method demonstrate its importance (application examples) ... and how does the conditions of the hypothesis testing methods?
    (Mainly from the lectures 4, 5, 6-7-8 and 12)
11. The normal distribution 2
    How the distribution of the mean shows its importance? Verify the basic role of the distribution of the mean while statistical inference and decision making.
    (Mainly from the lectures 4, 5, 6-7-8-9-10)
12. Statistical inference
    The statistical inference is the main goal (final step) of the statistical thinking. Contrast the point- and the interval estimation from this point of view. Trace both methods (and the use of them) on the example of the confidence interval for the expected value (the p% CI of the expected value).
    (Mainly from the lectures 5 and 6)
13. The confidence interval of the population mean
    You can find the 95% CI on most of the SPSS output (that you learned). What is that and why can you meet it so frequently at statistical analysis? Give examples of results screens (methods): why is it included in the given method - what is the use of it there?
    (Mainly from the lectures 5 and 6 - and all the lectures from then)
14. The basic idea of hypothesis testing
    Prove the relevance of the five steps method - and demonstrate it on every-day and medical examples. What are the simple given steps of the five steps and those that are require personal evaluation from case to case? Discuss these later ones on examples.
    (Mainly from the lectures 7 - and all the lectures from then)
15. The one sample and the paired t test
    At what kind of data (-structure) should you use this method? When hypothesis testing? Relate the two methods to each other. What can be done when the application conditions do not fit? Why not use these later methods at all the situations than?
    (Mainly from the lectures 6-7-8-9 and 12)
16. The confidence interval and the hypothesis testing
    Contrast the two methods: similarities and differences - strength and weaknesses.
    Demonstrate your evaluation on examples.
    (Mainly from the lectures 6-7-8)
17. The risk of errors and the power of a test
    Discuss the essential feature of the statistical decisions the risk of errors. How can you handle these risks? When should you handle these risks?
    Explain on examples: when can you use the value of the risk of a certain error and when to use the power of the test? (Which questions call for this kind of answers?)
    (Mainly from the lectures 8 and 9)
18. The two (independent) samples t test
    Contrast the paired and independent samples t tests? What are the typical questions which call for the later method? What is the specific requirement (condition) of this method - and how can you handle this with the help of the F test?
    (What should we pay for that solution? Why not to use always the solution which has less requirements?)
    (Mainly from the lecture 9)
19. Connection between two variables - continuous variables
    Contrast the one variable - two samples and the two variables - paired data (one sample) cases. What are the typical questions in the two cases?
    Use examples to explain the method of the linear regression and correlation analysis. Stress the steps where there is an obvious role of statistical thinking.
    Is this method a hypothesis test?
    (Mainly from the lecture 10)
20. Connection between two variables - categorical variables
   Relate to each other the two variables methods for continuous and categorical variables - similarities and differences. Which numbers are to be evaluated in the later case?
   Which hypothesis testing method(s) are available for that? Explain the five steps on an example. What are the conditions for applying the method(s) and what to do when those conditions are not valid?
   (Mainly from the lectures 11 and 12)

   Why the chi-squares test is not applicable in the medical practice frequently? What to do then? When to use the Fisher’s exact test - out of those cases? What the exact word means in the name?
   (Mainly from the lectures 11 and 12)

   How to qualify a diagnostic test? Which questions can be answered by the sensitivity, specificity and the predictive value(s) of the test?
   The confidence interval for the proportion. Explain (using the previous term) why the chi-squares test gives not significant result at evaluations of medical data frequently.
   (Mainly from the lectures 11 and 12)

23. Nonparametric tests - 1.
   When to refuse the application of a t test - and when to apply the sign test instead? Demonstrate the five steps on an example using the sign test. Contrast this method and the appropriate parametric one? What are the strength and weaknesses of this method?
   (Mainly from the lectures 2, 7 and 12)

   When to refuse the application of a t test - and when to apply the Wicoxon and the Mann-Whitney test instead? Demonstrate the application of both tests on examples. Contrast these methods and the appropriate parametric ones? What are the strength and weaknesses of these methods?
   (Mainly from the lectures 2, 9 and 12)

25. The principle of the ANOVA
   Demonstrate the application of the ANOVA method on an example
   What is the basic idea of the evaluation? Illustrate it on the case of comparing several group means simultaneously.
   What is the strength of this method in contrast to the several t tests for pairs of groups?
   (Mainly from the lectures 2, 8, 9 and 13)

MDM-1 Medical Decision Making, basic principles 1
   Demonstrate please the application of statistical decision making terms and principles (Ho, Type-1 and 2 error risks, change the alpha decision borderline, ...) to a simple medical or any everyday life decision making situation.
   Use your calculation exam problem or select your own problem for demonstration.
   (Mainly from the lecture 8)

MDM-2 Medical Decision Making - basic principles 2
   Demonstrate please the application of statistical decision making terms and principles (clinical evidences, probabilities, treatment borderline, further examination options, ...) to a simple medical decision making situation.
   Use your calculation exam problem or select your own problem for demonstration.
   (Mainly from the lectures 13-14)

Data handling skill:
   solve a data evaluation problem by the SPSS.

Participants
   Borbásné Dr. Farkas Kornélia (FAKAAA.T.JPTE), Dr. Pótó László (POLGABO.PTE), Königné Péter Anikó (PEAAB.T.JPTE)
**OSA-FV2  THE BASICS OF DENTAL PREVENTION 2**

**Course director:**  
**DR. ILDIKÓ BALÁS-SZÁNTÓ**, assistant professor  
Department of Dentistry, Oral and Maxillofacial Surgery

<table>
<thead>
<tr>
<th>3 credit • semester exam • Basic subject • spring semester • recommended semester: 2</th>
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<tbody>
<tr>
<td>Number of hours/semester: 14 lectures + 28 practices + 0 seminars = total of 42 hours</td>
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<tr>
<td>Course headcount limitations (min.-max.): 1 – 100</td>
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<tr>
<td>Prerequisites: OSA-FV1 completed</td>
</tr>
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</table>

The subject can only be registered in case of a PASSED and valid health aptitude test!

**Topic**

Brief review of the previous semester. New preventive educational methods will be introduced to the students.

**Conditions for acceptance of the semester**

Maximum of 15 % absence allowed

**Mid-term exams**

Two midterm projects are necessary for evaluation.

**Making up for missed classes**

Generally not possible, single case the student can join to the other groups.

**Reading material**

- **Obligatory literature**  
  Harris, Norman O.; Garcia-Godoy: Primary Preventive Dentistry

- **Literature developed by the Department**  
  Lecture notes uploaded to Neptun

- **Notes**

- **Recommended literature**

**Lectures**

1. Ergonomic guidelines, setup and equipment of the dental surgery.  
   Dr. Sándor Balázs Attila

2. Pit and fissure sealing  
   Dr. Sándor Balázs Attila

3. Measurement of caries prevention. The DMF-index, SiC index, ICDAS system  
   Dr. Balásné Dr. Szántó Ildikó

   Dr. Balásné Dr. Szántó Ildikó

5. The role of diet in the formation of caries. Caries protective diet.  
   Dr. Balásné Dr. Szántó Ildikó

6. Sugar and sugar substitutes  
   Dr. Sándor Balázs Attila

7. The role of a dental hygienist.  
   Dr. Balásné Dr. Szántó Ildikó

8. Complex dental prevention according to the age  
   Dr. Balásné Dr. Szántó Ildikó

9. Preventive dental care for handicapped patients  
   Dr. Sándor Balázs Attila

10. Geriatric Preventive Care  
    Dr. Sándor Balázs Attila

11. Different dental fields in terms of prevention: pediatric dentistry, orthodontics  
    Dr. Balásné Dr. Szántó Ildikó

12. Different dental fields in terms of prevention: oral surgery, periodontology, prosthodontics  
    Dr. Balásné Dr. Szántó Ildikó

13. Rationale, guidelines and procedures for dental prevention  
    Dr. Balásné Dr. Szántó Ildikó

14. Summary, consultation  
    Dr. Balásné Dr. Szántó Ildikó
Practices

1. Acquaintance with the Dental Office
2. Acquaintance with the Dental Office
3. Histology of the tooth. Effect of calcium phosphate.
5. Pit-and-Fissure Sealing
6. Pit-and-Fissure Sealing
7. Extended Fissure Sealing. Demonstration
8. Extended Fissure Sealing. Demonstration
11. Caries activity tests, plaque measuring tests in practice. Demonstration
12. Caries activity tests, plaque measuring tests in practice. Demonstration
13. 1st HOMEWORK
14. 1st HOMEWORK
15. Sugar and other sweeteners, tea tasting
16. Sugar and other sweeteners, tea tasting
17. 2nd HOMEWORK
18. 2nd HOMEWORK
19. Promotion in school
20. Promotion in school
21. Patient referatum: surgery
22. Patient referatum: surgery
23. Patient referatum: orthodontics
24. Patient referatum: orthodontics
25. Oral-Health Promotion in Geriatric Patients
26. Oral-Health Promotion in Geriatric Patients
27. Consultations
28. Consultations

Seminars

Exam topics/questions

1. The macroscopic anatomy of oral cavity
2. The anatomy and histology of the tooth
3. Locations and directions of the dental arch. Surfaces of the teeth
5. The aims and possibilities of prevention. Dental splint fabrication
6. Dental hand instruments
7. Dental mechanical instruments
8. The setup and equipment of the dental surgery. The tasks of the dental personnel
9. Histology of the dentin caries
10. Dental deposits
11. The removal of dental deposits
12. Tools of mechanical plaque control
13. The materials of chemical plaque control
14. Characteristics of toothbrushes. Toothbrushing techniques
15. The ingredients of toothpastes
16. Supplementary tooth cleaning tools. Ingredients of mouthrinses
17. Oral hygiene in patients with prosthodontic appliances
18. Oral hygiene in orthodontic patients
19. The tools and materials of polishing
20. Dental plaque
21. The development and progression of the carious lesion
22. The clinical aspect and histology of incipient caries
23. The effects of fluoride. Fluoride toxicity
24. Local fluoridation
25. Systemic fluoridation
27. Pit and fissure sealing
28. DMF number, SiC index, ICDAS system
29. Caries activity tests
30. Caries protective diet
31. Methods and tools of cleaning the interproximal surfaces
32. The role of sugars in the development of caries
33. Artificial sweeteners and other sugar substitutes
34. Dental education program in 2-5 years old age group
35. Dental education program in 6-12 years old age group
36. Dental education program in 12-18 years old age group
37. Surgical and trauma prevention
38. Preventive care in elderly patients
39. Preventive care in pregnant patients

Participants

Dr. Balásné Dr. Szántó Ildikó (SZINAJP.PTE), Dr. Sándor Balázs Attila (SABFAA.T.JPTE)
OSA-MF2 Molecular Cell Biology for Students of Dentistry 2

Course director: GYÖRGY SÉTÁLÓ DR. JR., associate professor
Department of Medical Biology

3 credit • final exam • Basic subject • spring semester • recommended semester: 2

Number of hours/semester: 28 lectures + 14 practices + 0 seminars = total of 42 hours

Course headcount limitations (min.-max.): 1 – 200

Prerequisites: OSA-MF1 completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
To teach students aspects of molecular cell biology that are essential for clinical subjects, with special respect to the cell membrane and the extracellular matrix, intracellular signal transduction, cellular and molecular mechanisms of carcinogenesis and molecular medicine.

Conditions for acceptance of the semester
Maximum of 25 % absence allowed

Mid-term exams
Mid-term tests

Making up for missed classes
It is not possible to make up for missed lectures. Alternatively students may try to attend lectures with the same topic on the Hungarian or German program.

Reading material
- Obligatory literature
- Literature developed by the Department
  Szeberényi, J., Komáromy, L.: Molecular Cell Biology Syllabus
- Notes
- Recommended literature
  Gerald Karp: Cell and Molecular Biology
  Lodish et al.: Molecular Cell Biology
  Alberts et al.: Molecular Biology of the Cell
  Szeberényi J.: Experiments in Molecular Cell Biology

Lectures
1 Opening lecture
   Dr. Sétáló György
2 Passive transport
   Dr. Bátor Judit
3 Active transport
   Dr. Fekete Zsuzsanna
4 The extracellular matrix
   Dr. Ábrahám Hajnalka Gabriella
5 Types of chemical signaling
   Dr. Ábrahám Hajnalka Gabriella
6 Heterotrimeric G-proteins in signaling
   Dr. Ábrahám Hajnalka Gabriella
7 Signal by catalytic receptors
   Dr. Ábrahám Hajnalka Gabriella
8 Signaling of cellular stress
   Dr. Pap Marianna
9 Cytokine and integrin signaling
   Dr. Pap Marianna
10 General features of signal transduction
   Dr. Pap Marianna
11 The molecular basis of development
   Dr. Sétáló György
12 Types of cell death: necrosis and apoptosis
   Dr. Pap Marianna
13 The mechanism of apoptosis
   Dr. Pap Marianna
14 The tumor cell
   Dr. Ábrahám Hajnalka Gabriella
15 DNA tumor viruses
   Dr. Ábrahám Hajnalka Gabriella
16 RNA tumor viruses
   Dr. Ábrahám Hajnalka Gabriella
17 Retroviral oncogenes
   Dr. Ábrahám Hajnalka Gabriella
18 Cellular oncogenes I
   Dr. Pap Marianna
19 Cellular oncogenes II
   Dr. Pap Marianna
20 Cellular oncogenes III
   Dr. Pap Marianna
21 Tumor suppressor genes I
   ifj. Dr. Sétáló György
22 Tumor suppressor genes II
   ifj. Dr. Sétáló György
23 Oncogenes and the cell cycle
   Dr. Berta Gergely
24 The multistage mechanism of carcinogenesis I: Experimental carcinogenesis
   ifj. Dr. Sétáló György
25 The multistage mechanism of carcinogenesis II: Tumor invasion and metastasis formation
   ifj. Dr. Sétáló György
26 Molecular diagnostics
   ifj. Dr. Sétáló György
27 Gene therapy
   ifj. Dr. Sétáló György
28 Closing lecture
   ifj. Dr. Sétáló György

Practices
1 Introduction
2 Light microscopy
3 Isotopes
4 Centrifugation and chromatography
5 The magnification of micrographs
6 Protein electrophoresis and Western blotting
7 DNA isolation
8 Histochemistry of macromolecules, immune and enzyme histochemistry
9 Phase contrast microscopy, polarisation microscopy
10 The tumor cell I
11 The tumor cell II
12 Apoptosis I
13 Apoptosis II
14 Exam consultation

Seminars

Exam topics/questions
Theoretical examination questions
1. Proteins
2. Lipids
3. Carbohydrates
4. Nucleosides, nucleotides
5. The DNA molecule
6. DNA as the genetic material (experimental evidences)
7. Types of RNA
8. Pro- and eukaryotic cells
9. Methods of immunocytochemistry
10. Restriction endonucleases
11. Southern blotting
12. Determining the sequence of DNA
13. DNA chips
14. Genomic libraries
15. Polymerase chain reaction
16. Transgenic organisms
17. Targeted gene inactivation
18. Inhibition of gene expression at the level of mRNA
19. cDNA libraries
20. Northern blotting
21. Immunoprecipitation and Western blotting
22. The structure of the nucleus
23. Multilevel chromatin organization
24. Unique and repetitive sequences
25. The chemical composition of chromatin
26. Phases of the cell cycle
27. Regulation of the cell cycle
28. Mitosis
29. Meiosis
30. General features of replication
31. Mechanism of replication in prokaryotes
32. Eukaryotic replication
33. DNA repair
34. The mechanism of prokaryotic transcription
35. General features of eukaryotic transcription
36. Synthesis and processing of eukaryotic pre-rRNA
37. Synthesis of pre-mRNA in eukaryotes, modifications at the 5’ and 3’ ends
38. Pre-mRNA splicing
39. Synthesis of aminoacyl-tRNA
40. The structure and function of ribosomes
41. The genetic code
42. Initiation of translation
43. Elongation and termination of translation
44. General features of translation
45. The lactose operon
46. The tryptophan operon
47. Cloning by nuclear transplantation
48. Regulation of pre-mRNA synthesis and processing in eukaryotes
49. Regulation of mRNA transport, translation and degradation in eukaryotes
50. Regulation of protein activity and degradation in eukaryotes
51. Eukaryotic transcription factors
52. The mechanism of action of steroid hormones
53. Rough endoplasmic reticulum
54. Golgi complex and the glycosylation of proteins
55. The mechanism of secretion
56. Endocytosis
57. The mechanism of vesicular transport
58. Lysosomes and the smooth endoplasmic reticulum
59. Oxygen free radicals and membrane damage
60. The structure and function of mitochondria
61. The genetic apparatus of mitochondria
62. Mitochondrial diseases
63. Microtubules
64. Microfilaments
65. Intermediate filaments
66. The cell membrane
67. Cell junctions
68. Passive transport
69. Active transport
70. The extracellular matrix
71. Types of chemical signaling
72. cAMP-mediated signal transduction
73. Phospholipid-derived second messengers
74. Growth factor signaling
75. Cytokine signaling
76. Stress signaling
77. Cell-matrix connections, integrin signaling
78. TGF-beta, Wnt, Notch, Hedgehog signaling
79. The role of protein kinases in cell regulation
80. Signal amplification. Signal termination. Signaling networks
81. The molecular basis of embryonic development
82. The physiological and pathological role of apoptosis
83. The mechanism of apoptosis
84. General features of the tumour cell
85. Oncogenic DNA viruses
86. Retroviruses
87. Retroviral oncogenes
88. Identification of cellular oncogenes by gene transfer
89. Oncogenesis by weakly transforming retroviruses
90. Mechanisms of cellular oncogene activation
91. General features of tumour suppressor genes
92. Rb and p53 proteins
93. The role of tumour suppressor genes in Wilms tumour, neurofibromatosis, colon and breast cancer
94. The role of oncogenes in cell cycle regulation
95. Phases of experimental carcinogenesis
96. Steps of carcinogenesis in naturally occurring tumors
97. Molecular diagnosis of inherited diseases
98. Molecular diagnosis of tumors and infectious diseases
99. Methods of gene transfer
100. Human gene therapy

Laboratory exam questions:
Theoretical questions
1. Structure and operation of the light microscope
2. Sample preparation for light microscopy
3. Radioactive isotopes in molecular cell biology
4. Homogenisation
5. Cell fractionation
6. Hypopycnic gradient centrifugation
7. Isopycnic gradient centrifugation
8. Gel filtration
9. Ion exchange chromatography
10. Affinity chromatography
11. Protein electrophoresis
12. Isolation of mammalian DNA
13. Structure and operation of the polarisation microscope
14. Structure and operation of the phase-contrast microscope
15. Histochemistry of the cytoplasm
16. Immune cytochemistry und enzyme histochemistry
17. Analysis of apoptotic processes
18. Structure and operation of the electron microscope
19. Sample preparation for electron microscopy, from fixation through sectioning
20. Contrasting methods for electron microscopy

Practical tasks
21. Observation of prokaryotic cells by immersion objective, Gram staining
22. Determination of the cell diameter by light microscopy
23. Analysis of human peripheral blood smear, May-Grünwald-Giemsa staining
24. Analysis of a light microscopic autoradiographic preparation
25. Analysis of bromodeoxyuridine labeling
26. Preparation of a linear density gradient
27. Analysis of the result of gel filtration
28. Steps of protein electrophoresis, detection of proteins in the gel and on the membrane
29. Steps of Western blot, analysis of the result
30. Operation of the photometer - determination of DNA and RNA concentrations
31. Operation of the polarisation microscope
32. Centring adjustment and operation of the phase-contrast microscope
33. Analysis of a nucleic acid histochemistry preparation, chromosomes stained by Giemsa dye
34. Analysis of a cytoplasm histochemistry preparation
35. Analysis of immune histochemical preparations
36. Comparison of normal and Burkitts lymphoma lymph nodes, identification of mitotic cells
37. Identification of normal and cancer cells in Papanicolaou smears
38. Identification of normal and apoptotic cells
39. Identification of nuclear components on micrographs
40. Identification of cytoplasmic organelles on micrographs

Participants
Dr. Berta Gergely (BEGFADO.PTE), ifj. Dr. Sétálo György (SEGMAAO.PTE), Kiss Katalin (KIKFABO.PTE)
### OSA-ZT1  
**Histology for Students of Dentistry 1**

<table>
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<tr>
<th>Course director:</th>
<th>Dr. Judit Horváth, associate professor</th>
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<td><strong>Number of hours/semester:</strong></td>
<td>18 lectures + 26 practices + 0 seminars = total of 44 hours</td>
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<td>5 – 260</td>
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<td>OSA-MF1 completed + OSA-B2A completed</td>
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#### Topic

Basic histology (tissues). Microscopic and ultrastructural composition of the basic tissues. This is the first part of a two-semester subject. Histology is important to understand normal physiological processes on microscopic level and to explain pathological changes in diseases.

#### Conditions for acceptance of the semester

In the histology practices, the students must prepare a histology notebook (Histology-1 notebook) with the drawings of every slide studied during the semester. The notebook will be double-checked and signed by the practice leader at the end of the semester. Presence on at least 85% of course hours is required. Absence (for any reason) is max. 7 teaching hours (= 7x45 min.) including max. 5 practice hours.

#### Mid-term exams

There are no tests during the semester.

#### Making up for missed classes

Exceptionally, students may attend the class of another group (strictly on the same week, twice in a semester).

#### Reading material

- **Obligatory literature**
  - [http://an-server.pote.hu/INFO/eIrod.htm](http://an-server.pote.hu/INFO/eIrod.htm)

- **Literature developed by the Department**
  - [http://an-server.pote.hu](http://an-server.pote.hu)

- **Notes**

- **Recommended literature**

#### Lectures

1. Introduction to histology. Microscopic techniques. Basic tissue types.  
   Dr. Horváth Judit
2. Epithelial tissues.  
   Dr. Csernus Valér
3. Surface epithelia  
   Dr. Csernus Valér
4. Glandular epithelia  
   Dr. Csernus Valér
5. Connective tissue cells  
   Dr. Tamás Andrea
6. Fibers and ground substance of connective tissue.  
   Dr. Tamás Andrea
7. Types of connective and supportive tissues.  
   Dr. Tamás Andrea
8. Histology of the cartilages  
   Dr. Csernus Valér
9. Bone tissues. Intramembranous bone formation  
   Dr. Csernus Valér
10. Intracartilaginous bone formation  
    Dr. Csernus Valér
11. Muscle tissues 1  
    Dr. Csernus Valér
12. Muscle tissues 2  
    Dr. Csernus Valér
<table>
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<th>Week</th>
<th>Topic</th>
<th>Instructor</th>
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<tr>
<td>13</td>
<td>Nerve tissue 1</td>
<td>Dr. Gaszner Balázs</td>
</tr>
<tr>
<td>14</td>
<td>Nerve tissue 2</td>
<td>Dr. Gaszner Balázs</td>
</tr>
<tr>
<td>15</td>
<td>Blood and blood cells</td>
<td>Dr. Reglődi Dóra</td>
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<td>16</td>
<td>Haematopoiesis</td>
<td>Dr. Reglődi Dóra</td>
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<td>17</td>
<td>Histology of blood vessels</td>
<td>Dr. Reglődi Dóra</td>
</tr>
<tr>
<td>18</td>
<td>Review of basic tissues</td>
<td>Dr. Horváth Judit</td>
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### Practices

1. Basic histological techniques. Use of the microscope.
2. Basic histological techniques. Use of the microscope.
3. Simple epithelia
4. Simple epithelia
5. Columnar epithelia
6. Columnar epithelia
7. Stratified epithelia, transitional epithelium, pigmented epithelium
8. Stratified epithelia, transitional epithelium, pigmented epithelium
9. Glandular epithelia
10. Glandular epithelia
11. Cells and fibers of the connective tissue
12. Cells and fibers of the connective tissue
13. Types of the connective tissues
14. Types of the connective tissues
15. Histology of the cartilage and the bone
16. Histology of the cartilage and the bone
17. Bone formation
18. Bone formation
19. Histology of the muscle tissues
20. Histology of the muscle tissues
21. Nerve tissue
22. Nerve tissue
23. Blood cells. Haemopoiesis
24. Blood cells. Haemopoiesis
25. Histology of the blood vessels
26. Histology of the blood vessels

### Seminars

Exam topics/questions

http://an-server.pote.hu

### Participants

Dr. Csernus Valér (CSVGAAO.PTE), Dr. Gaszner Balázs (GABFADO.PTE), Dr. Hollósy Tibor (HOTFAAO.PTE), Dr. Horváth Gábor (HOGNAAO.PTE), Dr. Horváth Judit (HOJIAAO.PTE), Dr. Kiss Péter (KIPFABO.PTE), Dr. Kvárik Timea (KVTOAA-O.PTE), Dr. Mammel Barbara (MABMAAB.PTE), Dr. Pethőné Lubics Andrea (PELMAAO.PTE), Dr. Reglődi Dóra (REDMAAO.PTE), Dr. Rékási Zoltán (REZMAAO.PTE), Dr. Sétáló György (SEGGAAO.PTE), Dr. Tamás Andrea (TAAFIAO.PTE), Dr. Tima Lajos (TILGAAO.PTE), Kovács László Ákos (KOLQAAO.PTE), Opper Balázs (OPBFAB.T.JPTE)
OSR-AFG  Dental Assistant - Summer Practice

Course director: DR. ILDIKÓ BALÁS-SZÁNTÓ, assistant professor
Department of Dentistry, Oral and Maxillofacial Surgery

- Credit: 0
- Signature:
- Criterion requirement subject: summer semester
- Recommended semester: 2

Number of hours/semester:
0 lectures + 60 practices + 0 seminars = total of 60 hours

Course headcount limitations (min.-max.): 1 – 40
Prerequisites: OSA-FV2 parallel

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
During the practice students should acquire the basics of being a dental assistant and a dental hygienist. Demonstration in a dental technician’s laboratory is presented.

Conditions for acceptance of the semester
Students are required to hand in a record with their own personal notes during the practices which has to be signed by a responsible dental educator. The student has to declare that which /European Union/ Dental Office can accept his/her practice until the 8th week of the semester. A written form daily notes and signed certification is necessary for acceptance of the practice.

Mid-term exams
none

Making up for missed classes
None, the students are allowed to accomplish the practice in any two weeks of the summer.

Reading material
- Obligatory literature
  Primary Preventive Dentistry book.
- Literature developed by the Department
- Notes

Recommended literature Lectures Practices

1. Basic hygienic practices
2. Basic hygienic practices
3. Basic hygienic practices
4. Basic hygienic practices
5. Basic hygienic practices
6. Basic hygienic practices
7. Assisting for dentists in the pediatric dentistry
8. Assisting for dentists in the pediatric dentistry
9. Assisting for dentists in the pediatric dentistry
10. Assisting for dentists in the pediatric dentistry
11. Assisting for dentists in the pediatric dentistry
12. Assisting for dentists in the pediatric dentistry
13. Assisting for dentists in the orthodontic dentistry
14. Assisting for dentists in the orthodontic dentistry
15. Assisting for dentists in the orthodontic dentistry
16. Assisting for dentists in the orthodontic dentistry
17. Assisting for dentists in the orthodontic dentistry
18. Assisting for dentists in the orthodontic dentistry
19. Assisting for dentists in the dentoalveolar surgery
20. Assisting for dentists in the dentoalveolar surgery
21. Assisting for dentists in the dentoalveolar surgery
22. Assisting for dentists in the dentoalveolar surgery
23. Assisting for dentists in the dentoalveolar surgery
24. Assisting for dentists in the dentoalveolar surgery
25. Assisting for dentists in the periodontology
26. Assisting for dentists in the periodontology
27. Assisting for dentists in the periodontology
28. Assisting for dentists in the periodontology
Assisting for dentists in the periodontology

Assisting for dentists in the prosthodontic surgery

Assisting for dentists in the periodontology

Assisting for dentists in the prosthodontic surgery

Assisting for dentists in the prosthodontic surgery

Assisting for dentists in the prosthodontic surgery

Assisting for dentists in the periodontology

Assisting for dentists in the prosthodontic surgery

Visiting the dental technician laboratory

Visiting the dental technician laboratory

Visiting the dental technician laboratory

Visiting the dental technician laboratory

Visiting the dental technician laboratory

Visiting the dental technician laboratory

Registration of patients

Registration of patients

Registration of patients

Registration of patients

Registration of patients

Registration of patients

Desinfection, sterilisation in the dental office

Desinfection, sterilisation in the dental office

Desinfection, sterilisation in the dental office

Desinfection, sterilisation in the dental office

Desinfection, sterilisation in the dental office

Desinfection, sterilisation in the dental office

Desinfection, sterilisation in the dental office

Different materials using in dental surgery

Different materials using in dental surgery

Different materials using in dental surgery

Different materials using in dental surgery

Different materials using in dental surgery

Different materials using in dental surgery

Seminars

Exam topics/questions

None

Participants

Dr. Balásné Dr. Szántó Ildikó (SZINAJP.PTE), Dr. Sándor Balázs Attila (SABFAA.T.JPTE)
UP MS Dentistry major – subjects of the Basic module - Course descriptions – academic year of 2017/2018

 ATT2  PHYSICAL EDUCATION 2
Course director: TAMÁS TÉCZELY, physical education teacher
UP MS Sports Facilities

0 credit • signature • Criterion requirement subject • both semesters semester • recommended semester: 2
Number of hours/semester: 0 lectures + 28 practices + 0 seminars = total of 28 hours
Course headcount limitations (min.-max.): 2 – 50  Prerequisites: ATT1 completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
This subject provides theoretical and practical information for the students to maintain and improve their physical condition and helps to deepen the knowledge in the field of healthy lifestyle.
Theoretical and practical knowledge during different types of exercises e.g. how to improve endurance, muscle force, motor skills and how to prevent the body from injuries.

Conditions for acceptance of the semester
Active participation at least 20 practical lessons provided by the Institute of Human Movement Sciences or regular participation of the trainings of the Medikus Sport Club or PEAC.

Mid-term exams
-

Making up for missed classes
We provide opportunities to attend extra lessons in the first week of the exam period in that case the requirements are not fulfilled till the end of the teaching weeks with agreement of the PE Teacher.

Reading material
- Obligatory literature
- Literature developed by the Department
  Not available.
- Notes

Recommended literature Lectures Practices
1-28  For the list of actual courses please turn to the end of this document

Seminars

Exam topics/questions

Participants
Farkas György (FAGMAAO.PTE), Lipcsik Zoltán (LIZIAAT.PTE), Németh Attila Miklós (NEAGAET.PTE), Téczely Tamás (PETLAAT.PTE)
**OSA-AA2  ANATOMY 2**

**Course director:**

**DR. ANDREA TAMÁS**, associate professor
Department of Anatomy

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5 credit • semester exam • Basic subject • autumn semester • recommended semester: 3

**Number of hours/semester:** 14 lectures + 56 practices + 0 seminars = total of 70 hours

**Course headcount limitations (min.-max.):** 5 – 200

**Prerequisites:** OSA-B2A completed + OSA-ZT2 parallel

The subject can only be registered in case of a PASSED and valid health aptitude test!

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**Topic**

Anatomy-2 involves the macroscopic structure of the human body including its functional aspects. This is the second part of a two-semester subject. Students get insight into the macroscopic structure of viscera. Anatomy-2 is completed by a semester exam.

**Conditions for acceptance of the semester**

Presence on at least 85% of course hours is required. Absence (for any reason) is max. 11 teaching hours (= 11x45 min.) including max. 9 practice hours.

**Mid-term exams**

[http://an-server.pote.hu](http://an-server.pote.hu)

**Making up for missed classes**

Exceptionally, students may attend the lab of another group (on the same week), maximum two labs in a semester.

**Reading material**

- **Obligatory literature**
  [http://an-server.pote.hu](http://an-server.pote.hu)

- **Literature developed by the Department**
  [http://an-server.pote.hu](http://an-server.pote.hu)

- **Notes**
  [http://an-server.pote.hu](http://an-server.pote.hu)

- **Recommended literature**
  [http://an-server.pote.hu](http://an-server.pote.hu)

**Lectures**

   Dr. Tóth Pál

2. Respiratory system. Larynx and phonation.
   Dr. Rékási Zoltán

   Dr. Rékási Zoltán

4. Gross anatomy of the heart, cardiac cavities and valves.
   Dr. Gaszner Balázs

5. Vascular supply and conducting system of the heart. Clinical considerations.
   Dr. Gaszner Balázs

   Dr. Tamás Andrea

   Dr. Csernus Valér

8. Topography, section and structure of the kidneys.
   Dr. Csernus Valér

9. Retroperitoneum.
   Dr. Rékási Zoltán

10. Gross anatomy of the male reproductive system.
    Dr. Tamás Andrea

11. Gross anatomy of the male reproductive system.
    Dr. Rékási Zoltán
Muscles and fasciae of the pelvic floor. Perineum.
Dr. Kiss Péter

Clinical aspects of the anatomy of nasal- and oral cavity, larynx and pharynx
Dr. Lujber László

Vascular supply and lymphatic drainage of the gastrointestinal tract. The vascular anastomoses and their clinical importance.
Dr. Szántó Zalán János

Practices

1. Oral cavity and teeth 1.
2. Oral cavity and teeth 1.
5. Pharynx; Retro- and parapharyngeal spaces 1.
6. Pharynx; Retro- and parapharyngeal spaces 2.
7. Larynx 1.
8. Larynx 2.
10. Structure of the chest wall. Intercostal nerves and vessels 2.
13. Term and division of the mediastinum.
15. Anterior mediastinum 2.
17. Cavities, valves and vascular supply of the heart 1.
18. Cavities, valves and vascular supply of the heart 2.
19. Lungs and bronchi 1.
20. Lungs and bronchi 2.
22. Posterior mediastinum 2.
23. Posterior mediastinum 3.
25. Structure of the abdominal wall (repetition).
27. Hepatoduodenal ligament 1.
29. Coeliac trunk.
30. Topography, vascular supply and lymphatic drainage of the stomach.
31. Topography, vascular supply and lymphatic drainage of duodenum and spleen.
32. Topography, surfaces, and peritoneal relations of liver.
33. Topography and vascular supply of pancreas 1.
34. Topography and vascular supply of pancreas 2.
35. Vascular supply and lymphatic drainage of the small and large intestines 1.
36. Vascular supply and lymphatic drainage of the small and large intestines 2.
37. Topography of kidneys.
38. Section of the kidney.
40. Removal of the bowels 2.
41. Retroperitoneum.
42. Paired branches of the abdominal aorta.
43. Lumbar plexus.
44. Diaphragm.
45. Topography of the true pelvis.
46. Branches of the internal iliac artery. Sacral plexus.
47. Male and female reproductive organs 1.
49. Median sagittal sections of the male and female pelvis 1.
50. Median sagittal sections of the male and female pelvis 2.
51 Perineum, external genital organs 1.
52 Perineum, external genital organs 2.
53 Recapitulation 1.
54 Recapitulation 2.
55 Recapitulation 3.
56 Recapitulation 4.

Seminars

Exam topics/questions

http://an-server.pote.hu

Participants

Dr. Csernus Valér (CSVGAO.PTE), Dr. Farkas József (FAJHAO.PTE), Dr. Gaszner Balázs (GABFADO.PTE), Dr. Hollósy Tibor (HOTFAAO.PTE), Dr. Horváth Gábor (HOGNAAO.PTE), Dr. Horváth Judit (HOJIAAO.PTE), Dr. Horváth-Öpper Gabriella (HOGFAFO.PTE), Dr. Jüngling Adél (JUARAAO.PTE), Dr. Kiss Péter (KIPFABO.PTE), Dr. Kvárik Timea (KVTOAA-O.PTE), Dr. Nagy András Dávid (NAAFAO.PTE), Dr. Pethőné Dr. Lubics Andrea (PELMAAO.PTE), Dr. Reglődi Dóra (REDMAAO.PTE), Dr. Rékási Zoltán (REZMAAO.PTE), Dr. Tamás Andrea (TAAFAAO.PTE), Dr. Tima Lajos (TILGAAO.PTE), Dr. Tóth Pál (TOPMAAO.PTE), Fábián Eszter (FAEGAAT.PTE), Gaszner Tamás (GATRAAO.PTE), Kovács László Ákos (KOLQAAO.PTE)
OSA-BKD  Biochemistry for Dentistry Students

Course director: Dr. Péter Jakus, assistant professor
Department of Biochemistry and Medical Chemistry

3 credit • final exam • Basic subject • autumn semester • recommended semester: 3

Number of hours/semester: 42 lectures + 0 practices + 0 seminars = total of 42 hours

Course headcount limitations (min.-max.): 1 – 200
Prerequisites: OSA-ORF completed + OSA-BEF completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic

The subject gives an overview of the molecular processes occurring in living organisms from two major aspects. On the one hand, following the subject -Introduction to Biochemistry&-, it describes the metabolism of the four major types of biomolecules (carbohydrates, lipids, amino acids/proteins and nucleotides/nucleic acids) along with the indirect enzymatic regulation of these processes. On the other hand, built on the subject -Molecular Cell Biology&-, accounts for the molecular processes responsible for the transmission of information within the living organisms from molecular biological (DNA-RNA-protein-metabolite) as well as hormonal point of view. The subject lies down the foundations of the subjects Medical Biochemistry, Pharmacology and Clinical Chemistry.

Conditions for acceptance of the semester

Maximum of 15 % absence allowed

Mid-term exams

Visiting the lectures are obligatory.

Making up for missed classes

Non

Reading material

- Obligatory literature

- Literature developed by the Department

- Notes

- Recommended literature

Lectures

1  Introduction
   Dr. Veres Balázs

2  The pentose phosphate pathway
   Dr. Veres Balázs

3  Gluconeogenesis in animal cells
   Dr. Kovács Krisztina

4  Glycogen synthesis and degradation
   Dr. Veres Balázs

5  Regulation of glycogen synthesis and degradation
   Dr. Veres Balázs

6  Regulation and disorders of carbohydrate metabolism
   Dr. Kovács Krisztina

7  Fatty acid synthesis (with elongation and desaturation)
   Dr. Gallyas Ferenc

8  Synthesis of complex lipids
   Dr. Gallyas Ferenc

9  Structure and biological activities of steroids
   Dr. Gallyas Ferenc

10 Synthesis of cholesterol and ketone bodies
    Dr. Gallyas Ferenc
<table>
<thead>
<tr>
<th>No.</th>
<th>Subject</th>
<th>Instructor</th>
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</thead>
<tbody>
<tr>
<td>11</td>
<td>Regulation and disorders of lipid metabolism</td>
<td>Dr. Gallyas Ferenc</td>
</tr>
<tr>
<td>12</td>
<td>Amino acid metabolism; the fate of the amino group</td>
<td>Dr. Debreceni Balázs</td>
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<tr>
<td>13</td>
<td>Urea cycle</td>
<td>Dr. Debreceni Balázs</td>
</tr>
<tr>
<td>14</td>
<td>Amino acid metabolism; the fate of the carbon skeleton</td>
<td>Dr. Debreceni Balázs</td>
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<tr>
<td>15</td>
<td>Synthesis of non-essential amino acids</td>
<td>Dr. Debreceni Balázs</td>
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<tr>
<td>16</td>
<td>Enzymopathies of amino acid metabolism</td>
<td>Dr. Debreceni Balázs</td>
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<tr>
<td>17</td>
<td>Synthesis of biologically active molecules from amino acids</td>
<td>Dr. Debreceni Balázs</td>
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<td>18</td>
<td>Synthesis of purine and pyrimidine nucleotides</td>
<td>Marquettené Dr. Bock Ildikó</td>
</tr>
<tr>
<td>19</td>
<td>Degradation of purine and pyrimidine nucleotides</td>
<td>Marquettené Dr. Bock Ildikó</td>
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<tr>
<td>20</td>
<td>Genes and chromosomes</td>
<td>Dr. Sümegi Balázs</td>
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<tr>
<td>21</td>
<td>DNA replication</td>
<td>Dr. Sümegi Balázs</td>
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<td>22</td>
<td>DNA repair</td>
<td>Dr. Sümegi Balázs</td>
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<tr>
<td>23</td>
<td>RNA metabolism 1</td>
<td>Dr. Veres Balázs</td>
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<tr>
<td>24</td>
<td>RNA metabolism 2</td>
<td>Dr. Veres Balázs</td>
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<tr>
<td>25</td>
<td>Short RNA molecules</td>
<td>Dr. Veres Balázs</td>
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<tr>
<td>26</td>
<td>Retroviruses</td>
<td>Dr. Veres Balázs</td>
</tr>
<tr>
<td>27</td>
<td>Protein synthesis 1. Participants and mechanism</td>
<td>Dr. Berente Zoltán</td>
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<tr>
<td>28</td>
<td>Protein synthesis 2. Regulation, posttranslational modifications</td>
<td>Dr. Berente Zoltán</td>
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<tr>
<td>29</td>
<td>Protein folding, chaperones</td>
<td>Dr. Berente Zoltán</td>
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<tr>
<td>30</td>
<td>Protein targeting and vesicular transport of proteins</td>
<td>Dr. Berente Zoltán</td>
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<tr>
<td>31</td>
<td>Intracellular proteolysis</td>
<td>Dr. Sümegi Balázs</td>
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<tr>
<td>32</td>
<td>Regulation of gene expression 1</td>
<td>Dr. Sümegi Balázs</td>
</tr>
<tr>
<td>33</td>
<td>Regulation of gene expression 2</td>
<td>Dr. Sümegi Balázs</td>
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<tr>
<td>34</td>
<td>Mitochondrial protein synthesis, mitochondrial genome</td>
<td>Dr. Sümegi Balázs</td>
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<tr>
<td>35</td>
<td>Recombinant DNA technologies</td>
<td>Dr. Debreceni Balázs</td>
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<tr>
<td>36</td>
<td>Hormones 1</td>
<td>Dr. Tapodi Antal</td>
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<tr>
<td>37</td>
<td>Hormones 2</td>
<td>Dr. Tapodi Antal</td>
</tr>
<tr>
<td>38</td>
<td>Cell signalling and kinases I</td>
<td>Dr. Veres Balázs</td>
</tr>
<tr>
<td>39</td>
<td>Cell signalling and kinases II</td>
<td>Dr. Veres Balázs</td>
</tr>
</tbody>
</table>
40  Cell signalling, CO and NO as signals, transcription factors
Dr. Veres Balázs

41  Water soluble vitamins
Marquettené Dr. Bock Ildikó

42  Lipid soluble vitamins
Marquettené Dr. Bock Ildikó

Practices

Seminars

Exam topics/questions

The exam based on the lectures and labs of the previous semesters and the lectures of the actual semester.
After entering into the website of the UNI: http://aok.pte.hu/en/egyseg/oktatasyanyagok/20

Participants
OSA-EF1

**HUMAN PHYSIOLOGY 1 FOR DENTISTRY STUDENTS**

Course director: DR. ZOLTÁN KARÁDI, professor
Institute of Physiology

<table>
<thead>
<tr>
<th>Credit</th>
<th>Semester exam</th>
<th>Basic subject</th>
<th>Autumn semester</th>
<th>Recommended semester: 3</th>
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<td>5</td>
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</table>

**Number of hours/semester:** 42 lectures + 28 practices + 0 seminars = total of 70 hours

**Course headcount limitations (min.-max.):** 1 – 200

**Prerequisites:** OSA-BZ2 completed + OSA-MF2 completed + OSA-BEF completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

**Topic**

The most important mission of the Physiology Course in medical education is to familiarize students with the attributes of healthy functions of the living organism.

While acquiring knowledge about the most important functional characteristics of the human body the students can rely on their prior studies in biology, biophysics, chemistry-biochemistry and anatomy.

During the semester we introduce the most important elements of functioning of the organs and organ systems, as well as their cooperation also required to adapting to the environment, and the factors affecting these processes.

Special emphasis is placed on the neural and humoral regulatory processes of these life-functions, which are vital to maintain and preserve the homeostasis of the organism.

With the transfer of all this knowledge we would like to mould a holistic attitude and thinking of students, which will enable them to better understand the functions of the now healthy, however, later dysfunctional human organism.

**Conditions for acceptance of the semester**

Maximum of 15% absence allowed

**Mid-term exams**

Written test on the 11th week Friday at 16:00.

**Making up for missed classes**

The missed lab practice is advised to be covered by joining another group while the same topic is on schedule.

**Reading material**

- **Obligatory literature**
  

- **Literature developed by the Department**
  
  Figures of the lectures given are available on the homepage of Institute of Physiology and on the Neptun Meet Street.
  Important messages on new information will be announced at the lectures and will be sent to you by course mails.
  Please always find the current updated information and study materials on the homepage of the Institute of Physiology (physiology.aok.pte.hu).

- **Notes**
  
  Homepage of PTE ÁOK Institute of Physiology: Physiology Lab Practices 1, internet study material, printable notebook, 2014
  Homepage of PTE ÁOK Institute of Physiology: Physiology Lab Practice Worksheets 1, internet study material, printable notebook, 2014

- **Recommended literature**
  
  Fonyó: Principles of Medical Physiology, Medicina Publishing, 2002
  J.B. West (ed.): Best and Taylor’s Physiological Basis of Medical Practice, Williams and Wilkins, 1998

**Lectures**

1. Introduction. Principles of the homeostatic regulations.
   Dr. Környei József László

   Dr. Környei József László

   Dr. Buzás Péter

4. Fluid distribution in the body. The blood.
   Dr. Vértes Zsuzsanna
<table>
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<tr>
<th>Page</th>
<th>Subject</th>
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<tbody>
<tr>
<td>5</td>
<td>Anorganic and organic blood constituents.</td>
<td>Dr. Vértes Zsuzsanna</td>
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<tr>
<td>6</td>
<td>Structure and metabolism of hemoglobin. Metabolism of iron.</td>
<td>Dr. Nagy Bernadett</td>
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<tr>
<td>7</td>
<td>The physiological role of leukocytes.</td>
<td>Dr. Nagy Bernadett</td>
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<tr>
<td>8</td>
<td>Mechanism of blood coagulation.</td>
<td>Dr. Szabó István</td>
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<td>9</td>
<td>Blood group systems.</td>
<td>Dr. Szabó István</td>
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<tr>
<td>10</td>
<td>The cardiac cycle. Generators and conductors of impulses in the heart.</td>
<td>Dr. Környei József László</td>
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<tr>
<td>11</td>
<td>Electrocardiogram.</td>
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<tr>
<td>12</td>
<td>Distribution of blood volume, pressure flow and resistance in the heart.</td>
<td>Dr. Környei József László</td>
</tr>
<tr>
<td>13</td>
<td>Cardiac output and cardiac work.</td>
<td>Dr. Környei József László</td>
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<tr>
<td>14</td>
<td>Distribution of blood volume, pressure flow and resistance. Blood pressure. Arterial pulse.</td>
<td>Dr. Ábrahám István Miklós</td>
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<tr>
<td>15</td>
<td>Circulation through the capillaries. Circulation in the veins.</td>
<td>Kóbor Péter</td>
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<td>16</td>
<td>Pulmonary circulation, cerebral circulation.</td>
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<tr>
<td>17</td>
<td>Neural and humoral regulatory mechanisms of the cardiovascular system.</td>
<td></td>
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<tr>
<td>19</td>
<td>Gaseous exchange in the lungs and tissues. Chemical control of respiration. O2 and CO2 transport mechanism and pH regulation.</td>
<td>Dr. Környei József László</td>
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<tr>
<td>20</td>
<td>Neural regulatory mechanisms of respiration. Mechanisms of acclimatization.</td>
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<tr>
<td>21</td>
<td>The gastrointestinal tract. Function and control of salivary secretion.</td>
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<td>22</td>
<td>Duodenal processes. Biliary secretion. Secretion and absorption in the small intestine.</td>
<td>Dr. Buzásné Dr. Telkes Ildikó</td>
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<tr>
<td>23</td>
<td>Liver functions.</td>
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<td>24</td>
<td>Secretion and absorption in the large intestine. Formation of the feces.</td>
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<td>25</td>
<td>Humoral and neural control of the gastrointestinal system.</td>
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<td>27</td>
<td>Renal circulation. The renin-angiotensin system.</td>
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<td>29</td>
<td>Fluid volume regulation of the body. The mechanisms of urination.</td>
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<td>30</td>
<td>Acid-base regulation.</td>
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<td>32</td>
<td>Body temperature of man. Hyperthermia, fever.</td>
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<tr>
<td>33</td>
<td>Peripheral control of body temperature. Central control mechanisms of body temperature.</td>
<td>Dr. Vértes Zsuzsanna</td>
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</tbody>
</table>
34 The hypothalamo-hypophyseal system.
Dr. Ábrahám István Miklós

35 Anterior pituitary hormones.
Dr. Ábrahám István Miklós

36 Cellular mechanisms of hormone action.
Dr. Ábrahám István Miklós

37 Hormonal regulation of female sexual functions.
Dr. Lengyel Ferenc

38 Pregnancy. Lactation.
Dr. Lengyel Ferenc

Kóbor Péter

40 Humoral and central neural control of sexual behavior.
Kóbor Péter

41 Functions of posterior lobe of pituitary gland.
Dr. Vértes Zsuzsanna

42 Thyroid physiology.
Dr. Vértes Zsuzsanna

Practices
1 Getting acquainted with the laboratory. General information, schedules. Personal- and equipment safety rules. Animal care regulations.


3 Blood I.
4 Blood I.
5 Blood II.
6 Blood II.
7 Blood III.
8 Blood III.

9 Seminar: Blood (Discussion of the topics covered by the lectures and student labs)

10 Test on the chapter

11 The heart and circulation I.

12 The heart and circulation I.

13 The heart and circulation II.

14 The heart and circulation II.

15 The heart and circulation III.

16 The heart and circulation III.

17 The heart and circulation IV.

18 The heart and circulation IV.

19 Seminar: The heart and circulation

20 Test on the chapter

21 Respiration

22 Respiration

23 Gastrointestinal tract

24 Gastrointestinal tract

25 Examination of the urine

26 Examination of the urine

27 Measurement of the actual metabolic rate in human

28 Measurement of the actual metabolic rate in human. Test on the chapters.

Seminars

Exam topics/questions

Topics of questions for the theoretical examination

1. Describe the body fluid compartments and explain the methods used for measurement of body fluid volumes

2. Describe the major plasma proteins and the other non-electrolytic constituents of blood and explain their function in the body

3. Describe the intra- and extracellular ionic components and explain their physiological functions

4. The structure, function and origin of erythrocytes

5. Characterize the various leukocytes indicating their origins and functions
6. Origin and function of blood platelets
7. The basic structure and metabolism of haemoglobin and the metabolism of iron
8. Describe the two pathways involved in the initiation of blood coagulation
9. Specific mechanism of clot formation
10. Describe the mechanism of fibrinolysis. Explain the significance of anticlotting mechanism
11. Regulation of H+ ion concentration in the blood
12. A-B-0 blood groups. The Rh blood types
13. The role of leukocytes in the defence mechanism
14. Mechanical activity of the heart and the three-component model of heart muscle. Calcium ion movements within the cardiac muscle cell
15. Generators and conductors of impulses in the heart. Refractory periods
16. The sequence of events in the cardiac cycle
17. The human electrocardiogram (ECG). Electrocardiography: bipolar and unipolar leads
18. The heart sounds. Phonocardiography (PCG)
19. Cardiac output: measurement, normal standards and physiological variations
20. Metabolism and energetics of cardiac muscle
21. Ventricular wall tension and the Laplace relationship
22. The heart-lung preparation (Starling’s laws)
23. Arterial blood pressure: determinants of normal arterial blood pressure
24. The arterial and the venous pulse. Basic principles of hemodynamics.
25. Circulation through the capillaries
26. The properties, production and the movement of lymph
27. Circulation in the vein. Effect of gravity on circulation
28. The pulmonary circulation. Control of lung vessels
29. The coronary circulation
30. Cerebral circulation. The concept of blood-brain barrier.
31. Splanchnic circulation
32. Skeletal muscle circulation. Cutaneous circulation
33. Nervous control of the heart
34. Control mechanisms of the circulatory system: general considerations
35. Local control of the vascular smooth muscle
36. Autoregulation of blood flow in tissues and organs
37. The function and importance of baroreceptors in the regulation of circulation
38. Reflex control mechanisms of circulation
39. Mechanisms of vasoconstriction and vasodilatation
40. Mechanics of respiration (functions of respiratory muscles, compliance, intrathoracic pressures, respiratory volumes)
41. Alveolar air, alveolar ventilation, dead spaces. Function of the respiratory passageways
42. Gaseous exchange in the lungs and tissues
43. O2 and CO2 transport in the body
44. Peripheral and central regulatory mechanisms of respiration. Respiratory reflexes
45. Chemical control of respiration. Acidosis, alkalosis
47. Describe the origin, composition, function and control of salivary secretion
48. Describe the origin, nature and function of gastric secretion indicating the mechanisms of regulation
49. Mechanism and regulation of gastrointestinal movements
50. Identify the pancreatic secretions, their components, their action and the substrates on which they act. Control mechanism of pancreatic secretion
51. Describe the basic ingredients and functions of the bile indicating the origin and fate of the components and the factors controlling bile secretions and gall bladder functions
52. Identify the components and functions of the intestinal system
53. Describe how carbohydrate is digested and absorbed indicating the enzymes involved
54. Describe how fat is digested and absorbed indicating the enzymes and secretions involved
55. Describe how protein is digested and absorbed indicating the enzymes and secretions involved
56. Dynamics of glomerular filtration. Glomerular filtration rate. Plasma clearance
57. Renal blood flow. Clearance of PAH. Extraction ratio. Filtration fraction
58. Regulation of renal blood flow and pressure. Renin-angiotensin system
59. Reabsorption and secretion of different substances in the renal tubule. Methods for their investigation
60. Concentrating and diluting mechanisms of the kidney
61. Fluid volume regulation of the body
62. Regulation of concentrations of ions in the extracellular fluid. Regulation of osmolality of body fluids
63. Basal metabolic rate. Describe factors influencing the basal metabolism
64. Define metabolic rate explaining those factors influencing the total expenditure of energy by the body
65. Describe the necessary elements of normal diet
66. The normal body temperature and its physiological variations. Hyperthermia, fever, hypothermia
67. Chemical regulation of body temperature, changes of regulation at low and high environmental temperature
68. Physical regulation of body temperature, changes of regulation at low and high environmental temperature
69. Central regulatory mechanisms of heat production and heat loss
70. Mechanisms of hormone action (receptors, intracellular mediators, cAMP, Ca2+ and diacylglycerol, protein kinases)
71. Mechanism of hormonal regulation. Negative and positive feedback controls in the endocrine system
72. The anterior pituitary hormones. Regulation of pituitary hormone secretions. Pituitary dysfunction
73. Function of growth hormone during development and after adolescence
74. Abnormalities of thyroid secretion. Goitrogens
75. Function of the thyroid gland. Iodine metabolism in the body
76. Hormonal changes during menstrual cycle
77. Hormonal changes during pregnancy. Role of placenta in pregnancy. Foeto-placental unit
78. Hormones of lactation
79. Mechanism of erection and ejaculation. The sexual act (coitus)
80. The function of testis, epididymis, seminal vesicle and prostate
81. Regulation of the sexual behaviour. Maternal behaviour
82. Physiological changes at puberty and climacteric
83. Vasopressin and oxytocin. Function of ANH (atrionatriuretic hormone)
84. The effects of prostaglandins

Questions for the student lab report:
1. Hematocrit
2. Red blood cell counting
3. White blood cell counting
4. Differential leukocyte count
5. Determination of osmotic resistance.
6. Determination of hemoglobin concentration
7. MCV, MCH, MCHC values
8. Prothrombin time
9. Blood group determination (AB0 and Rh typing)
10. Examination of hemoglobin spectra
11. How to use work stations for electrophysiological registrations
12. Recording of heart beats of the frog „in situ”
13. Electric stimulation of heart (demonstr. of extrasystole)
14. Effect of thermal stimulations of frog’s heart.
15. Ligatures of Stannius
16. Investigation of Bowditch’s „All or nothing” law
17. Investigation of summation
18. Electrocardiography (ECG)
19. Examination of the arterial pulse
20. Measurement of blood pressure in human
21. Isolated frog’s heart preparing by Straub cannula
22. Effect of acetylcholin on isolated frog’s heart
23. Effect of adrenalin on isolated frog’s heart
24. Effect of ions on the isolated heart
25. Direct measurement of blood pressure in cat
26. The circulation through capillaries of frog’s tongue.
27. Pulse wave registration.
28. Spirometry, dynamic parameters of respiration
29. Volumes and capacities of the lungs.
30. Measurement of maximal respiratory pressures (The experiments of Müller and Valsalva)
31. Demonstration of basic respiratory movements and pressure/volume changes (Donders model)
32. Gastric juice: Determination of BAO, MAO, PAO
33. Bile: detection of bile pigments
34. Feces: Detection of blood (Guajac-, benzidin-, Hematest)
35. Measurement of the actual metabolic rate in human
36. Measurement of the oxygen consumption in rat.
37. Specific gravity of urine.
38. Examination of the urine sediment
39. Urine examination with reagent strip methodology
40. Examination of pathological urine components with tests in tubes: protein, glucose, keton bodies, blood, ubg, bilirubin, pus detections

Study material for the semester exam is the sum total of information covered in the obligatory textbook, on the homepage of the Institute, as well as knowledge given at the lectures and lab practices.

Participants
Csetényi Bettina Rőka (CSBOABT.PTE), Homray Edina Emőke (HOENAAT.PTE)
OSA-FAN  DENTAL ANATOMY

Course director:  
DR. ATTILA BALÁZS SÁNDOR, assistant lecturer
Department of Dentistry, Oral and Maxillofacial Surgery

<table>
<thead>
<tr>
<th>3 credit</th>
<th>midsemester grade</th>
<th>Basic subject</th>
<th>autumn semester</th>
<th>recommended semester: 3</th>
</tr>
</thead>
</table>

Number of hours/semester:  
14 lectures + 0 practices + 28 seminars = total of 42 hours

Course headcount limitations (min.-max.):  
2 – 25

Prerequisites:  
OSA-B2A completed + OSA-FV2 completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

**Topic**

Detailed dental anatomy, histology and development. Morphology knowledge with wax modelling.

**Conditions for acceptance of the semester**

Fulfilling the practical requirements is compulsory

**Mid-term exams**

None

**Making up for missed classes**

None

**Reading material**

- **Obligatory literature**
- **Literature developed by the Department**
  - PowerPoint presentation lectures
- **Notes**
- **Recommended literature**
  - W. Sadler: Langman’s Medical Embryology
  - Nanaci A: Ten Cate’s Oral Histology Development, Structure and Function
  - Fuller JL, Denehy GE, Hall SA: Concise Dental Anatomy and Morphology

**Lectures**

1. Development of face, jaws, and oral cavity  
   Dr. Orsi Enikő
2. General morphology of the oral cavity. Planes and directions.  
   Dr. Orsi Enikő
3. Maxillofacial developmental disorders.  
   Dr. Orsi Enikő
   Dr. Sándor Balázs Attila
5. Histology of dental hard tissues.  
   Dr. Sándor Balázs Attila
6. Histology of the pulp.  
   Dr. Sándor Balázs Attila
7. Histology of the tongue and salivary glands.  
   Dr. Rajnics Zsolt
8. Descriptive anatomy of the maxilla and the mandible.  
   Dr. Marada Gyula
9. the basics of gnathology.  
   Dr. Marada Gyula
10. Anatomy of the jaws on CBCT.  
    Dr. Marada Gyula
11. Tooth development.  
    Dr. Sándor Balázs Attila
12. Anatomy of the TMJ.  
    Dr. Markovics Dóra
13. Comparative dental anatomy.  
    Dr. Sándor Balázs Attila
Morphological differences between deciduous and permanent teeth.
Dr. Sándor Balázs Attila

Practices

Seminars
1. Tooth modelling from wax: upper central incisor
2. Tooth modelling from wax: upper central incisors
3. Tooth modelling from wax: upper lateral incisor
4. Tooth modelling from wax: upper lateral incisors
5. Tooth modelling from wax: lower incisors
6. Tooth modelling from wax: lower incisors
7. Tooth modelling from wax: upper canine
8. Tooth modelling from wax: upper canine
9. Tooth modelling from wax: lower canine
10. Tooth modelling from wax: lower canine
11. Tooth modelling from wax: upper first premolar
12. Tooth modelling from wax: upper first premolar
13. Tooth modelling from wax: upper second premolar
14. Tooth modelling from wax: upper second premolar
15. Tooth modelling from wax: lower first premolar
16. Tooth modelling from wax: lower first premolar
17. Tooth modelling from wax: lower second premolar
18. Tooth modelling from wax: lower second premolar
19. Tooth modelling from wax: upper first molar
20. Tooth modelling from wax: upper first molar
21. Tooth modelling from wax: upper second molar
22. Tooth modelling from wax: upper second molar
23. Tooth modelling from wax: lower first molar
24. Tooth modelling from wax: lower first molar
25. Tooth modelling from wax: lower second molar
26. Tooth modelling from wax: lower second molar
27. Tooth identification practice
28. Tooth identification practice

Exam topics/questions
Written exam.

Participants
Dr. Rajnics Zsolt (RAZNAO.PTE), Dr. Sándor Balázs Attila (SABFAA.T.JPTE)
**OSA-FAT**  
**DENTAL MATERIALS AND TECHNOLOGY**  

**Course director:**  
Dr. Márta Mária Radnai, professor  
Department of Dentistry, Oral and Maxillofacial Surgery

<table>
<thead>
<tr>
<th>3 credit • semester exam • Basic subject • autumn semester • recommended semester: 3</th>
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</thead>
<tbody>
<tr>
<td><strong>Number of hours/semester:</strong> 28 lectures + 14 practices + 0 seminars = total of 42 hours</td>
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<tr>
<td><strong>Course headcount limitations (min.-max.):</strong> 1 – 40</td>
</tr>
<tr>
<td><strong>Prerequisites:</strong> OSA-BZ2 completed + OSA-AA2 completed + OSA-BEF completed</td>
</tr>
</tbody>
</table>

The subject can only be registered in case of a PASSED and valid health aptitude test!

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**Topic**

Students should learn the materials and measuring methods used in dentistry and dental technology. Standards, physical, chemical and mechanical properties are also under review.

**Conditions for acceptance of the semester**

Attendance on lectures is obligatory. No make up for missed classes. Missing more than 20% will automatically reject semester acceptance and the semester has to be repeated.

**Mid-term exams**

- None

**Reading material**

- **Obligatory literature**
  
  W. J. O’Brien: Dental Materials and Their Selection  
  J.F. McCabe W.G. Walls: Applied Dental Materials

- **Literature developed by the Department**
  
  Lecture notes

- **Notes**

- **Recommended literature**

**Lectures**

1. General properties used for classification of dental materials (mechanical, physical, chemical and biological properties, adhesion, importance of surface).  
   Dr. Rajnics Zsolt
2. General properties of polymers  
   Dr. Rajnics Zsolt
   Dr. Sándor Balázs Attila
4. Elastomers II.: Condensational and additional silicone impression materials.  
   Dr. Rajnics Zsolt
5. Reversible and irreversible hydrocolloid impression materials. Zinc oxide-eugenol impression material.  
   Dr. Sándor Balázs Attila
6. Thermoplastic impression materials (waxes, compound materials)  
   Dr. Rajnics Zsolt
   Dr. Rajnics Zsolt
   Dr. Rajnics Zsolt
9. Classification, properties and use of noble alloys.  
   Dr. Rajnics Zsolt
    Dr. Rajnics Zsolt
| 11 | Ceramics I. | Dr. Marada Gyula |
| 12 | Ceramics II. | Dr. Marada Gyula |
| 13 | Plastics used in prosthodontics: acrylics | Dr. Rajnics Zsolt |
| 14 | Materials of dental digital technologies | Dr. Marada Gyula |
| 15 | Dental cements I | Dr. Lempel Edina |
| 16 | Dental cements II | Dr. Lempel Edina |
| 17 | Dental cements III | Dr. Lempel Edina |
| 18 | Dental amalgam I. | Dr. Lempel Edina |
| 19 | Dental amalgam II | Dr. Lempel Edina |
| 20 | Dental adhesives | Dr. Lempel Edina |
| 21 | Resin based composites I. | Dr. Lempel Edina |
| 22 | Resin based composites II | Dr. Lempel Edina |
| 23 | Compomers, ormocers | Dr. Lempel Edina |
| 24 | Material for root canal treatment and filling I. | Dr. Lempel Edina |
| 25 | Material for root canal treatment and filling II. | Dr. Schreindorfer Károly |
| 26 | Provisional filling materials | Dr. Lempel Edina |
| 27 | Parapulpal pins and intraradiculal posts | Dr. Lempel Edina |
| 28 | Consultation | Dr. Lempel Edina |

Practices

1. Carving a premolar and an upper central incisor tooth in plaster
2. Impression materials in practice (impression gypsum products in practice, take impression from a coin, demonstration and use putty and wash materials)
3. Making impression with alginate on manikin, casting impression with gypsum. Basing the cast, five pointed trimming
4. The use of burs, cutting and polishing instruments
5. Dental polymers in practice (Pattern resin, preparing different forms: cube and cone, etc.)
6. Waxes (bite registration on manikin, demonstration of waxes).
7. Carving a central incisor and a molar in wax
10. Amalgam.
11. Adhesives.

Seminars
Exam topics/questions

1. Calcium hydroxide cements
2. ZnO eugenol cements
3. Zinc phosphate cements
4. Zinc polycarboxylate cements
5. Glass ionomer cements (1-3 rd generations)
6. Glass ionomer cements (4th generation)
7. Bioceramics
8. Gutta-percha
9. Sealers for root canal filling
10. Chemicals for root canal treatment
11. Composition of enamel, dentin adhesives
12. Properties of different generations of adhesives
13. Composition of resin based composites
14. Physical and chemical properties of resin based composites
15. Composition and classification of dental amalgams
16. Setting reactions and toxicological properties of dental amalgams
17. Physical and chemical properties of dental amalgams
18. Composites
19. Ormocers
20. Provisional filling materials, types and properties
21. Parapulpal pins
22. Intrapulpal posts
23. Properties used to characterise materials, physical and chemical properties
24. General properties of polymers
25. Reversible and irreversible hydrocolloids
26. Thermoplastic impression materials. Compounds
27. Classification of rigid impression materials. Zinc-oxide eugenol impression materials
28. General properties of dental waxes. Usage of wax in dentistry
29. Standards in dentistry
30. General properties of elastomers
31. Clinical application of elastomers
32. Polyether and polysulfide impression materials
33. Condensational silicone impression materials
34. Additional silicone impression materials
35. Dental gypsum, stones, die stones
36. General properties of dental alloys (especially: Au, Ag, Ti) Structures, Basic metallurgical principles
37. General principles of dental non-noble alloys. Corrosion, welding, sintering
38. PFM alloys. Metal-ceramic bonding theories.
39. Gold and alloys of noble metals
40. Silver-palladium alloys. Steel and wrought alloys. Titanium
41. Base metal casting alloys. Ni-Cr and Co-Cr
42. Investments and refractory dies
43. Classification of dental ceramics according to composition.
44. Classification of dental ceramics according to odontotechnology.
45. Classification of acrylcs. Physical and chemical properties.
46. Cold curing acrylics and usage in dental office
47. Denture base materials. Artificial teeth.
48. Dental materials of digital technologies

Participants

Dr. Muzsek Zsófia (MUZFACO.PTE), Dr. Rajnics Zsolt (RAZNABO.PTE), Dr. Schreindorfer Károly (SCKPABO.PTE)
OSA-IMF  BASIC IMMUNOLOGY
Course director: DR. FERENC BOLDIZSÁR, associate professor
Department of Immunology and Biotechnology

2 credit • semester exam • Basic subject • autumn semester • recommended semester: 3

Number of hours/semester: 28 lectures + 0 practices + 0 seminars = total of 28 hours
Course headcount limitations (min.-max.): 5 – 200
Prerequisites: OFAEF1 parallel + OFAMF2 completed + OFAZT1 completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic

Conditions for acceptance of the semester
Maximum of 25 % absence allowed

Mid-term exams
-
Making up for missed classes
-

Reading material
- Obligatory literature
- Literature developed by the Department
  See on web site www.immbio.hu.
- Notes
- Recommended literature
  Abul K. Abbas: Cellular and Molecular Immunology
  Janis Kuby: Immunology
  Jan Klein: Immunology

Lectures
1  Introduction, phylogenesis of the immune system (innate-, adaptive- and natural immunity).
   Dr. Boldizsár Ferenc
2  Composition of the immune system. Organs, tissues, cells, molecular components.
   Dr. Boldizsár Ferenc
3  Mechanisms of innate immunity. Molecular and cellular components of inflammation (migration, phagocytosis, citokines, chemokines, adhesion molecules).
   Dr. Engelmann Péter András
4  The complement system.
   Dr. Berki Timea
5  Molecular components of the adaptive immune system.. Antigen recognition molecules: immunglobulins, B cell receptor, T cell receptor.
   Dr. Németh Péter
6  MHC and antigen presentation.
   Dr. Németh Péter
7  Communication among the cells of the immune system. Co-receptors and adhesion molecules.
   Dr. Németh Péter
8  The role of cytokines and cytokine receptors in the differentiation and function of immune cells.
   Dr. Berki Timea
9  Primary lymphocyte differentiation in the bone marrow.
   Dr. Balogh Péter
10 T cell maturation and selection in the thymus.
   Dr. Boldizsár Ferenc
Beginning of the specific immune response: T- and B cell activation, T-dependent and T-independent antigens.
Dr. Boldizsár Ferenc

T cell polarization: differentiation of TH1/Th2, Treg/Th17, Tfh cells and their role in the physiological- and pathological immune response.
Dr. Boldizsár Ferenc

The central phase of the specific immune response: Extrafollicular reaction and processes in the germinal center (affinity maturation, isotype switch), antibody production.
Dr. Balogh Péter

Development and maintenance of the immunological memory, role in th immunological regulation. Comparison of the primary- and secondary immune response.
Dr. Boldizsár Ferenc

Immunoglobulin-mediated effector functions.
Dr. Berki Timea

Participants of the cellular immune response (NK-, gamma/delta- and cytotoxic T cells, macrophage activation) and their effector functions.
Dr. Berki Timea

Suppression of the immune response.
Dr. Németh Péter

Local and systemic immunity. SALT, MALT.
Dr. Németh Péter

Allergy and hypersensitivity.
Dr. Boldizsár Ferenc

Immunological tolerance and autoimmunity.
Dr. Németh Péter

Immunodeficiencies. HIV infection and AIDS, Ebola.
Dr. Najbauer József

Vaccinations and their mechanism of action.
Dr. Boldizsár Ferenc

Specific lymphatic tissue components of the oral cavity. Molecular and cellular elements of the oral defence system.
Dr. Boldizsár Ferenc

Immunological aspects of caries.
Dr. Boldizsár Ferenc

Immunology of periodontitis.
Dr. Boldizsár Ferenc

Immunological mechanisms of oral mucosa diseases. Tumor immunology.
Dr. Boldizsár Ferenc

Symptoms of congenital- and acquired immunodeficiencies in the oral cavity.
Dr. Boldizsár Ferenc

Transplantation. Immunological aspects of oral implantations.
Dr. Boldizsár Ferenc

Practices

Seminars

Exam topics/questions
See on web site www.immbio.hu.

Participants
**OSA-ZT2**  
**Histology for Students of Dentistry 2**

Course director: **DR. JUDIT HORVÁTH**, associate professor  
Department of Anatomy

<table>
<thead>
<tr>
<th>3 credit</th>
<th>semester exam</th>
<th>Basic subject</th>
<th>autumn semester</th>
<th>recommended semester: 3</th>
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Number of hours/semester:  
16 lectures + 28 practices + 0 seminars = total of 44 hours

Course headcount limitations (min.-max.):  
5 – 260  
Prerequisites: OSA-ZT1 completed + OSA-AA2 parallel

**Topic**

Histology of the organs. This is the second part of a two-semester subject.  
Histology is important to understand normal physiological processes on microscopic level and to explain pathological changes in diseases.

**Conditions for acceptance of the semester**

In the histology practices, the students must prepare a histology notebook (Histology-2 notebook) with the drawings of every slide studied during the semester. The notebook will be double-checked and signed by the practice leader at the end of the semester. Presence on at least 85% of course hours is required. Absence (for any reason) is max. 7 teaching hours (= 7x45 min.) including max. 5 practice hours.

**Mid-term exams**

There is no midterm test.

**Making up for missed classes**

Exceptionally, students may attend the lab of another group on the same week (maximum twice in a semester).

**Reading material**

- **Obligatory literature**  
  [http://an-server.pote.hu/INFO/eIrod.htm](http://an-server.pote.hu/INFO/eIrod.htm)
- **Literature developed by the Department**  
  [http://an-server.pote.hu/](http://an-server.pote.hu/)
- **Notes**
- **Recommended literature**

**Lectures**

1. Histology of the oral cavity, tongue and salivary glands.  
   Dr. Rékási Zoltán
2. Histology and development of the teeth.  
   Dr. Tóth Pál
3. Lymphatic tissues and their functions.  
   Dr. Gaszner Balázs
4. Histology of lymphatic organs.  
   Dr. Gaszner Balázs
5. Histology of the respiratory system.  
   Dr. Rékási Zoltán
6. Histology of the esophagus and the stomach.  
   Dr. Pethöné Dr. Lubics Andrea
7. Histology of the intestines.  
   Dr. Pethöné Dr. Lubics Andrea
8. Histology of the liver and pancreas.  
   Dr. Csernus Valér
   Dr. Csernus Valér
    Dr. Csernus Valér
11. Histology of the ovary. Follicular development.  
    Dr. Reglodi Dóra
12. The uterine tube, uterus, and vagina. Cyclic changes of the endometrium.  
    Dr. Reglodi Dóra
<table>
<thead>
<tr>
<th>Subject</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>The pregnant uterus, the placenta and the mammary gland.</td>
<td>Dr. Reglődi Dóra</td>
</tr>
<tr>
<td>Histology of the male reproductive system I.</td>
<td>Dr. Rékási Zoltán</td>
</tr>
<tr>
<td>Histology of the male reproductive system II.</td>
<td>Dr. Rékási Zoltán</td>
</tr>
<tr>
<td>Recapitulation of organ histology. Recognition of histological slides.</td>
<td>Dr. Tóth Pál</td>
</tr>
</tbody>
</table>

**Practices**

1. Histology of the lip and the salivary glands.
2. Histology of the lip and the salivary glands.
3. Histology and development of the teeth.
4. Histology and development of the teeth.
5. Histology of the tongue. Tonsils.
7. Histology of the lymphatic organs.
8. Histology of the lymphatic organs.
9. Histology of the respiratory system.
10. Histology of the respiratory system.
11. The esophagus and the stomach.
12. The esophagus and the stomach.
13. Small and large intestine.
15. Histology of the rectum, liver, gall bladder and pancreas.
16. Histology of the rectum, liver, gall bladder and pancreas.
17. Histology of the kidney, ureter, and urinary bladder.
21. Histology of the female reproductive organs II. (Uterus prolif./secr., cervix, vagina).
22. Histology of the female reproductive organs II. (Uterus prolif./secr., cervix, vagina).
23. Histology of the pregnant uterus, the placenta, the umbilical cord and the mammary gland.
24. Histology of the pregnant uterus, the placenta, the umbilical cord and the mammary gland.
25. Histology of the male reproductive organs I.
26. Histology of the male reproductive organs I.
27. Histology of the male reproductive organs II.
28. Histology of the male reproductive organs II.

**Seminars**

**Exam topics/questions**

http://an-server.pote.hu/

**Participants**

Dr. Csernus Valér (CSVGAAO.PTE), Dr. Farkas Boglárka Anett (FABFADO.PTE), Dr. Farkas József (FAJHAAO.PTE), Dr. Gaszner Balázs (GABFADO.PTE), Dr. Hollósy Tibor (HOTFAAO.PTE), Dr. Horváth Judit (HOJIAAO.PTE), Dr. Horváth-Oppe Gabriella (HOGFAFO.PTE), Dr. Jüngling Adél (JUARAAO.PTE), Dr. Kiss Péter (KIPFABO.PTE), Dr. Kvárik Timea (KVTOAA-O.PTE), Dr. Nagy András Dávid (NAFAFO.PTE), Dr. Pethőné Dr. Lubics Andrea (PELMAAO.PTE), Dr. Reglődi Dóra (REDMAAO.PTE), Dr. Rékási Zoltán (REZMAAO.PTE), Dr. Sétáló György (SEGGAAO.PTE), Dr. Tamás Andrea (TAAFAAO.PTE), Dr. Tima Lajos (TILGAAO.PTE), Dr. Tóth Pál (TOPMAAO.PTE), Fábián Eszter (FAEGAAT.PTE), Gaszner Tamás (GATRAAO.PTE), Kovács László Ákos (KOLQAAO.PTE), Opper Balázs (OPBFAB.T.JPTE)
ATT3 PHYSICAL EDUCATION 3
Course director: TAMÁS TÉČZELEY, physical education teacher
UP MS Sports Facilities

0 credit • signature • Criterion requirement subject • both semesters semester • recommended semester: 3
Number of hours/semester: 0 lectures + 28 practices + 0 seminars = total of 28 hours
Course headcount limitations (min.-max.): 2 – 50 Prerequisites: ATT2 completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
This subject provides theoretical and practical information for the students to maintain and improve their physical condition and helps to deepen the knowledge in the field of healthy lifestyle.
Theoretical and practical knowledge during different types of exercises e.g. how to improve endurance, muscle force, motor skills and how to prevent the body from injuries.

Conditions for acceptance of the semester
Active participation at least 20 practical lessons provided by the Institute of Human Movement Sciences or regular participation of the trainings of the Medikus Sport Club or PEAC.

Mid-term exams
-

Making up for missed classes
We provide opportunities to attend extra lessons in the first week of the exam period in that case the requirements are not fulfilled till the end of the teaching weeks with agreement of the PE Teacher.

Reading material
- Obligatory literature
- Literature developed by the Department
  Not available.
- Notes

Recommended literature Lectures Practices
1-28 For the list of actual courses please turn to the end of this document

Seminars
Exam topics/questions
Participants
Farkas György (FAGMAAO.PTE), Lipcsik Zoltán (LIZIAAT.PTE), Németh Attila Miklós (NEAGAET.PTE), Téczely Tamás (PETLAAT.PTE)
UP MS Dentistry major – subjects of the Basic module - Course descriptions – academic year of 2017/2018

**OSA-EF2**

**HUMAN PHYSIOLOGY 2 FOR DENTISTRY STUDENTS**

**Course director:**  
**DR. ZOLTÁN KARÁDI, professor**  
**Institute of Physiology**

<table>
<thead>
<tr>
<th>Credit • Final exam • Basic subject • Spring semester • Recommended semester: 4</th>
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</table>
| **Number of hours/semester:**  
42 lectures + 28 practices + 0 seminars = total of 70 hours |

**Course headcount limitations (min.-max.):**  
1 – 200  
**Prerequisites:** OSA-EF1 completed + OSA-MAX parallel

The subject can only be registered in case of a PASSED and valid health aptitude test!

**Topic**

The most important mission of the Physiology Course in medical education is to familiarize students with the attributes of healthy functions of the living organism. While acquiring knowledge about the most important functional characteristics of the human body the students can rely on their prior studies in biology, biophysics, chemistry-biochemistry and anatomy.

During the semester we introduce the most important elements of functioning of the organs and organ systems, as well as their cooperation also required to adapting to the environment, and the factors affecting these processes. Special emphasis is placed on the neural and humoral regulatory processes of these life-functions, which are vital to maintain and preserve the homeostasis of the organism.

With the transfer of all this knowledge we would like to mould a holistic attitude and thinking of students, which will enable them to better understand the functions of the now healthy, however, later dysfunctional human organism.

**Conditions for acceptance of the semester**

Maximum of 15 % absence allowed

**Mid-term exams**

Written test on the 11th week Friday at 16:00.

**Making up for missed classes**

The missed lab practice is advised to be covered by joining another group while the same topic is on schedule.

**Reading material**

- **Obligatory literature**
  

- **Literature developed by the Department**

  Figures of the lectures given are available on the homepage of Institute of Physiology and on the Neptun Meet Street.

  Important messages on new information will be announced at the lectures and will be sent to you by course mails.

  Please always find the current updated information and study materials on the homepage of the Institute of Physiology (physiology.aok.pte.hu).

- **Notes**

  Homepage of PTE ÁOK Institute of Physiology: Physiology Lab Practices 2, internet study material, printable notebook, 2015

  Homepage of PTE ÁOK Institute of Physiology: Physiology Lab Practice Worksheets 2, internet study material, printable notebook, 2015

- **Recommended literature**


  Fonyó: Principles of Medical Physiology, Medicina Publishing, 2002

  J.B. West (ed.): Best and Taylor’s Physiological Basis of Medical Practice, Williams and Wilkins, 1998

**Lectures**

1. Endocrinology of the adrenal cortex. I.  
   Dr. László Kristóf

2. Endocrinology of the adrenal cortex. II.  
   Dr. László Kristóf

3. The adrenal medulla. Endocrinology of stress  
   Dr. László Kristóf

4. Hormonal control of intermediary metabolism.  
   Dr. Zelena Dóra
Hormonal control of calcium homeostasis
Dr. Zelena Dóra

The endocrine pancreas
Dr. Lengyel Ferenc

Special problems of neonatal physiology. Physiology of ageing
Dr. Lengyel Ferenc

Dr. Buzás Péter

Dr. Buzás Péter

Molecular mechanism of muscle contraction. Mechanics, energetics and heat production of muscle contraction.
Dr. Környei József László

Electric characteristics of muscle contraction, muscle tone, fatigue. Contraction of smooth muscle.
Dr. Környei József László

The motor unit. Peripheral neural mechanism of muscle control.
Dr. Buzásné Dr. Telkes Ildikó

Functional importance of mechanoreceptors
Dr. Buzás Péter

General properties of spinal cord reflexes. Integrative functions of the spinal cord.
Dr. Buzásné Dr. Telkes Ildikó

The spinal shock. Decerebrate rigidity.
Péczely László Zoltán

Postural coordination, Locomotion.
Péczely László Zoltán

Extrapyramidal system.
Kertes Erika

Physiology of the vestibular system.
Dr. Ollmann Tamás

Cerebellar control of motor functions.
Dr. Ollmann Tamás

Cortical control of motor functions. The pyramidal system.

Somaesthetic mechanisms. Somatotopic representations in the sensory systems.
Dr. Buzás Péter

Thalamocortical somatosensory functions. The sensory cortex.
Dr. Buzás Péter

Pain mechanism.
Dr. Buzás Péter

Optics of vision, refractory errors of the eye. Retinal mechanisms.
Dr. Nemes Vanda

Dr. Nemes Vanda

Eye movements and their control.
Dr. Nemes Vanda

Physiology of hearing. Central auditory mechanisms.
Dr. Buzásné Dr. Telkes Ildikó

The chemical senses. Olfaction. Taste.
Dr. Szabó István

The autonomic nervous system.
Dr. Környei József László

Electroencephalography.
Dr. László Kristóf

Neural control mechanism of sleep. Clinical importance of the evoked potential technique.
Dr. László Kristóf

The diencephalon (hypothalamus). Its motor, autonomic and hormonal regulatory functions.
Dr. Ollmann Tamás

The concept of drive and motivation. Homeostatic drives.
Dr. Ollmann Tamás
UP MS Dentistry major – subjects of the Basic module - Course descriptions – academic year of 2017/2018

34 Central neural regulation of hunger and thirst. Control of biological rhythms.  
   Dr. Szabó István

35 The limbic system.  
   Dr. László Kristóf

36 Monoaminergic systems and their functions.  
   Péczely László Zoltán

37 Emotions and their central nervous mechanism.  
   Dr. Ollmann Tamás

38 Mecha

39 Types and disorders of memory functions.  
   Péczely László Zoltán

40 Plasticity of the peripheral and central nervous system. Functions of the frontal lobe.  
   Dr. Varga Csaba

41 The parieto-temporal lobe.  
   Dr. László Kristóf

42 Cerebral hemisphere dominance. Neurophysiological mechanisms of speech. Speech disorders.  
   Dr. László Kristóf

Practices

1 The endocrine pancreas.
2 The endocrine pancreas.
3 Reproduction.
4 Reproduction.
5 Peripheral nervous system I.
6 Peripheral nervous system I.
7 Peripheral nervous system II.
8 Peripheral nervous system II.
9 Seminar: Endocrinology, Peripheral nerve, Membrane potential, Action potential, Synaptic transmission.
10 Student report (test).
11 Experiments on muscles.
12 Experiments on muscles.
13 Electromyography, Examination of fatigue.
14 Electromyography, Examination of fatigue.
15 Examination of reflexes.
16 Examination of reflexes.
17 Central nervous system.
18 Central nervous system.
19 Seminar: Muscle and reflexes.
20 Student report (test).
21 Sensory organs I.
22 Sensory organs I.
23 Sensory organs II.
24 Sensory organs II.
25 Electroencephalography in humans.
26 Electroencephalography in humans.
27 Student lab report.
28 Student lab report.

Seminars

Exam topics/questions

Topics of questions for the theoretical examination
1. Describe the body fluid compartments and explain the methods used for measurement of body fluid volumes
2. Describe the major plasma proteins and the other non-electrolytic constituents of blood and explain their function in the body
3. Describe the intra- and extracellular ionic components and explain their physiological functions
4. The structure, function and origin of erythrocytes
5. Characterize the various leukocytes indicating their origins and functions
6. Origin and function of blood platelets
7. The basic structure and metabolism of haemoglobin and the metabolism of iron
8. Describe the two pathways involved in the initiation of blood coagulation
9. Specific mechanism of clot formation
10. Describe the mechanism of fibrinolysis. Explain the significance of anticoagulating mechanism
11. Regulation of H+ ion concentration in the blood
12. A-B-O blood groups. The Rh blood types
13. The role of leukocytes in the defence mechanism
14. Mechanical activity of the heart and the three-component model of heart muscle. Calcium ion movements within the cardiac muscle cell
15. Generators and conductors of impulses in the heart. Refractory periods
16. The sequence of events in the cardiac cycle
17. The human electrocardiogram (ECG). Electrocardiography: bipolar and unipolar leads
18. The heart sounds. Phonocardiography (PCG)
19. Cardiac output: measurement, normal standards and physiological variations
20. Metabolism and energetics of cardiac muscle
21. Ventricular wall tension and the Laplace relationship
22. The heart-lung preparation (Starling’s laws)
23. Arterial blood pressure: determinants of normal arterial blood pressure
24. The arterial and the venous pulse. Basic principles of hemodynamics.
25. Circulation through the capillaries
26. The properties, production and the movement of lymph
27. Circulation in the vein. Effect of gravity on circulation
28. The pulmonary circulation. Control of lung vessels
29. The coronary circulation
30. Cerebral circulation. The concept of blood-brain barrier
31. Splanchnic circulation
32. Skeletal muscle circulation. Cutaneous circulation
33. Nervous control of the heart
34. Control mechanisms of the circulatory system: general considerations
35. Local control of the vascular smooth muscle
36. Autoregulation of blood flow in tissues and organs
37. The function and importance of baroreceptors in the regulation of circulation
38. Reflex control mechanisms of circulation
39. Mechanisms of vasoconstriction and vasodilatation
40. Mechanics of respiration (functions of respiratory muscles, compliance, intrathoracic pressures, respiratory volumes)
41. Alveolar air, alveolar ventilation, dead spaces. Function of the respiratory passageways
42. Gaseous exchange in the lungs and tissues
43. O2 and CO2 transport in the body
44. Peripheral and central regulatory mechanisms of respiration. Respiratory reflexes
45. Chemical control of respiration. Acidosis, alkalosis
47. Describe the origin, composition, function and control of salivary secretion
48. Describe the origin, nature and function of gastric secretion indicating the mechanisms of regulation
49. Mechanism and regulation of gastrointestinal movements
50. Identify the pancreatic secretions, their components, their action and the substrates on which they act. Control mechanism of pancreatic secretion
51. Describe the basic ingredients and functions of the bile indicating the origin and fate of the components and the factors controlling bile secretions and gall bladder functions
52. Identify the components and functions of the intestinal system
53. Describe how carbohydrate is digested and absorbed indicating the enzymes involved
54. Describe how fat is digested and absorbed indicating the enzymes and secretions involved
55. Describe how protein is digested and absorbed indicating the enzymes and secretions involved
56. Dynamics of glomerular filtration. Glomerular filtration rate. Plasma clearance
57. Renal blood flow. Clearance of PAH. Extraction ratio. Filtration fraction
58. Regulation of renal blood flow and pressure. Renin-angiotensin system
59. Reabsorption and secretion of different substances in the renal tubule. Methods for their investigation
60. Concentrating and diluting mechanisms of the kidney
61. Fluid volume regulation of the body
62. Regulation of concentrations of ions in the extracellular fluid. Regulation of osmolality of body fluids
63. Basal metabolic rate. Describe factors influencing the basal metabolism
64. Define metabolic rate explaining those factors influencing the total expenditure of energy by the body
65. Describe the necessary elements of normal diet
66. The normal body temperature and its physiological variations. Hyperthermia, fever, hypothermia
67. Chemical regulation of body temperature, changes of regulation at low and high environmental temperature
68. Physical regulation of body temperature, changes of regulation at low and high environmental temperature
69. Central regulatory mechanisms of heat production and heat loss
70. Mechanisms of hormone action (receptors, intracellular mediators, cAMP, Ca2+ and diacylglycerol, protein kinases)
71. Mechanism of hormonal regulation. Negative and positive feedback controls in the endocrine system
72. The anterior pituitary hormones. Regulation of pituitary hormone secretions. Pituitary dysfunction
73. Function of growth hormone during development and after adolescence
74. Abnormalities of thyroid secretion. Goitrogens
75. Function of the thyroid gland. Iodine metabolism in the body
76. Hormonal changes during menstrual cycle
77. Hormonal changes during pregnancy. Role of placenta in pregnancy. Foeto-placental unit
78. Hormones of lactation
79. Mechanism of erection and ejaculation. The sexual act (coitus)
80. The function of testis, epididymis, seminal vesicle and prostate
81. Regulation of the sexual behaviour. Maternal behaviour
82. Physiological changes at puberty and climacteric
83. Vasopressin and oxytocin. Function of ANH (atrionatriuretic hormone)
84. The effects of prostaglandins
85. The endocrine pancreas
86. Function of insulin in the body. Diabetes mellitus
87. Hormonal control of carbohydrate metabolism
88. Hormonal control of calcium and phosphor homeostasis
89. Hormonal function of the adrenocortical system. Hypophyseal regulation of the adrenocortical system. Stress and the adaptation syndrome
90. Function and regulation of mineralocorticoids
91. Function and regulation of glucocorticoids
92. Consequences of hypo- and hyperfunction of the adrenal cortex. Androgens and oestrogens of the adrenal cortex.
93. Hormones of the adrenal medulla. Importance of the sympathoadrenal system
94. Physiology of ontogenesis and ageing.
95. Molecular mechanism of muscle contraction. The regulatory role of calcium ion
96. Mechanical characteristics of muscle. Differentiation of fast and slow twitch muscle fibres. Role of the connective tissue in the function of muscles
97. Mechanism of fatigue
98. Electromyography (EMG)
99. The source of energy for muscle contraction (aerobe and anaerobe processes). Heat production during contraction-relaxation cycle
100. The neuromuscular junction
101. Structural and functional differences between skeletal and smooth muscles. Mechanism of smooth muscle contraction
102. Membrane potential and action potential: explain their ionic mechanisms. Membrane properties of CNS neurons
103. The compound action potential. Conductive properties of various nerve fibres
104. Neurochemistry of synapses, neurotransmitters, postsynaptic receptors and neuromodulators. EPSP, IPSP
105. The myotatic (stretch) reflex. Gamma motoneurons
106. The motor units. Central control of muscle contractions
107. Types of mechanoreceptors and their role in motor control
108. How do cutaneous mechanoreceptors help to explore, learn and know our environment?
109. Somatosensory mechanisms of spinal cord and brain stem
110. Pain mechanisms, central and peripheral components
111. Descendent control (gating) of nociception and of pain reactions
112. Organisation of primary somatosensory cortex, thalamocortical projection and somatotopy
113. The human electroencephalogram (EEG). Evoked potential (EP) technique
114. Neural mechanisms of sleep and correlated somatic, autonomic and bioelectrical phenomena. The role of reticular formation in the sleep-wakefulness cycle
115. The diencephalon (hypothalamus), its motor, autonomic and hormonal regulatory function
116. Hunger and thirst. Central regulatory processes of food and water intake
117. Central mechanisms of locomotion
118. Decerebration rigidity and spinal shock (symptoms and mechanisms)
119. Postural and righting reflexes, their central mechanisms and localisation within the spinal cord, brain stem and neocortex
120. Structure and function of the extrapyramidal system
121. Symptoms after damages of different extrapyramidal structures. Role of neurotransmitters in the extrapyramidal functions
122. Importance of the cerebellum in co-ordination of movements
123. Cerebellar cortical mechanisms
124. Structure and function of the vestibular system
125. Functions of the autonomic nervous system. Autonomic reflexes
126. Humoral mediators in the autonomic nervous system. Adrenergic, cholinergic and opioid receptors
127. Structures, connections and functions of the limbic system
128. Functions of the motor cortex. Symptoms following its damage
129. Corticospinal (pyramidal) system. Consequences of lesions of the pyramidal pathways and the peripheral motoneuron
130. The concept of drive and motivation. Their integrated neural mechanisms. Reticular activating system
131. Emotions and their central nervous mechanisms
132. The phenomena of operant (instrumental) and classical (Pavlovian) conditioning. Mechanism of reinforcement
133. Electrical and chemical self-stimulation. Rewarding (positive) and punishing (negative) reinforcement. Simple learning processes. Exceptional forms of conditioning
134. Types and disorders of memory functions
135. Cerebral dominance. Laterisation of functions in the hemispheres. Split-brain examinations
136. Functions of the parietal and temporal association (intrinsic) areas of the neocortex. Symptoms after damages (apraxia, agnosia)
137. Neurophysiological mechanisms of speech. Speech disorders
138. Functions of the frontal lobe (prefrontal intrinsic area)
139. Functions of the temporal lobe (Kluver-Bucy syndrome)
140. Central monoaminergic systems and their functional significance
141. Peripheral auditory mechanisms (conductive apparatus and cochlea)
142. Central auditory pathways, acoustic cortex and related mechanisms
143. Physiological optics
144. The retina. Photoreceptors and neuronal functions in the retina
145. Central visual pathways, the visual cortex and their functions
146. Colour vision. Stereoscopic vision
147. Peripheral and central mechanisms of olfaction
148. Peripheral and central mechanisms of sensation of taste
149. Plasticity in the nervous system. Consequences of sensory deprivation in the visual cortex. Ageing. Transplantation

Questions for the student lab report:
1. Examination of oestrus cycle in rat
2. Different tests of pregnancy
3. Determination of human blood glucose level
4. Direct and indirect stimulation of nerve-muscle preparation;
5. Recording of a twitch contraction; Effects of repetitive stimulation muscles (complete and incomplete tetanus)
6. Effect of load on muscular contraction
7. Examination of fatigue in nerve-muscle preparation and on humans
8. Electromyographic registration methods (EMG)
9. Measurement of conduction velocity
10. Recording of a compound action potential of peripheral nerve trunks
11. The law of polar excitation
12. Demonstration of the Pflüger’s law
13. Measurement of rheobase and chronaxy
14. Effect of narcosis on peripheral nerves
15. Examination of reflexes in a frog (intact and spinal animal)
16. Examination of reflexes in the human
17. Stereotaxic technique
18. Reflex time, reaction time and action time
19. Electroencephalogram (EEG)
20. Measurement of visual acuity
21. Refractive errors and their corrections
22. Measurement of astigmatia
23. Examination of pupil reactions
24. Perimetry
25. Examination of colour weakness and colour blindness
26. Audiometry
Study material for the final exam is the sum total of information covered in the obligatory textbook, on the homepage of the Institute, as well as knowledge given at the lectures and lab practices.

Participants

Csetényi Bettina Réka (CSBOABT.PTE), Homray Edina Emőke (HOENAAT.PTE)
UP MS Dentistry major – subjects of the Basic module - Course descriptions – academic year of 2017/2018

OSA-K1K OPERATIVE DENTISTRY 1 - CARIOLOGY
Course director: DR. EDINA LEMPEL, assistant professor
Department of Dentistry, Oral and Maxillofacial Surgery

2 credit • semester exam • Basic subject • spring semester • recommended semester: 4
Number of hours/semester: 14 lectures + 14 practices + 0 seminars = total of 28 hours
Course headcount limitations (min.-max.): 3 – 20
Prerequisites: OSA-BKD completed + OSA-IMF completed + OSA-FV2 completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
Basic information about the etiology, types, progression, diagnosis, prevention and treatment of carious lesions.

Conditions for acceptance of the semester
Maximum of 15 % absence allowed

Mid-term exams
2 tests will be written during the semester and the results will influence the exam grade.

Making up for missed classes
None

Reading material
- Obligatory literature
- Literature developed by the Department
  Topics of the oral presentations
- Notes
- Recommended literature
  Ole Fejerskov: Dental Caries

Lectures
1 Etiology and epidemiology of caries
   Dr. Lempel Edina
2 Chemical interactions between teeth and oral fluids (demineralization, remineralization, erosion)
   Dr. Lempel Edina
3 Physiological role of saliva in caries development and protection
   Dr. Lempel Edina
4 Development, composition and features of dental plaque
   Dr. Lempel Edina
5 Features of cariogenic microorganisms
   Dr. Lempel Edina
6 Clinical and radiological diagnosis of caries
   Dr. Lempel Edina
7 Classification of caries according to localization and progression
   Dr. Lempel Edina
8 Development, progression, histological manifestation of enamel caries
   Dr. Lempel Edina
9 Caries progression in dentin, histological manifestation
   Dr. Lempel Edina
10 Features of root caries and treatment
   Dr. Lempel Edina
11 Removing of caries; Reactions of pulp-dentin complex
   Dr. Lempel Edina
12 Caries management
   Dr. Lempel Edina
13 Caries prevention; importance of fluoride
   Dr. Lempel Edina
14 Fissure sealing
   Dr. Lempel Edina
Practices
1. Classification of caries
2. Classification of caries
3. Cariological status taking
4. Cariological status taking
5. Cariological indices
6. Cariological indices
7. Cariological diagnostic methods
8. Cariological diagnostic methods
9. Radiological diagnosis of caries
10. Radiological diagnosis of caries
11. Cariological quick tests
12. Cariological risk assessment
13. Prevention of caries
14. Consultation

Seminars
Exam topics/questions
1. Etiological factors of caries
2. Epidemiological changes of caries, importance of caries activity tests
3. Process of demineralization
4. Process of remineralization
5. Development of acquired pellicule and connection with saliva
6. Positive and negative effects of saliva in caries development
7. Development of dental plaque and its maturation
8. Biochemical processes in dental plaque
9. Features of cariogenic bacteria
10. Clinical diagnosis of caries
11. Radiological diagnosis of caries
12. Morphology of enamel caries
13. Morphology of dentin caries
14. Morphology of root surface caries
15. Reaction of pulp-dentin complex to progression and treatment of caries
16. Evaluation and treatment of caries risk groups
17. Treatment of different stages of caries
18. Fissure sealing
19. Importance of fluoride in caries prevention
20. Differences in development and treatment of caries and erosion

Participants
Dr. Lempel Edina (LEEFABO.PTE), Dr. Schreindorfer Károly (SCKPABO.PTE)
OSA-K2K Operative Dentistry 2 - Operative Dentistry Propedeutics

Course director: Dr. Edina Lempel, assistant professor
Department of Dentistry, Oral and Maxillofacial Surgery

1 credit • semester exam • Basic subject • spring semester • recommended semester: 4

Number of hours/semester: 14 lectures + 0 practices + 0 seminars = total of 14 hours
Course headcount limitations (min.-max.): 3 – 20
Prerequisites: OSA-FAT completed + OSA-FAN completed + OSA-AFG completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
The students should learn the basic terms and methods of operative dentistry. Within the framework of the practice the student should get ready for operative interventions on real patients.

Conditions for acceptance of the semester
Maximum of 15 % absence allowed

Mid-term exams
Making up for missed classes
None

Reading material
- Obligatory literature
- Literature developed by the Department
- Notes
- Recommended literature
  - Theodor M. Roberson (szerk.): Art and Science of Operative Dentistry, DDS Mosby
  - R G Craig: Restorative Dental Material

Lectures
   Dr. Lempel Edina
2  Class I., class II. cavity preparation for amalgam filling
   Dr. Lempel Edina
   Dr. Lempel Edina
4  Class III., class IV. cavity preparation for composite filling. Cavity preparation for glass-ionomer filling
   Dr. Lempel Edina
5  Instruments for cavity preparation
   Dr. Lempel Edina
6  Matrix and matrix retainer. Isolation
   Dr. Lempel Edina
7  Class V. cavity preparation and the filling procedure
   Dr. Lempel Edina
8  Amalgam restorations
   Dr. Schreindorfer Károly
9  Composite restoration
   Dr. Lempel Edina
10 Minimal invasive cavity preparations
   Dr. Lempel Edina
11 Cavity preparation for cast inlay/onlay
   Dr. Lempel Edina
12 Cavity preparation for ceramic and composite inlay/onlay
   Dr. Lempel Edina
13 Direct inlay modeling. Impressions for inlay
   Dr. Lempel Edina
14 Instruments, materials and methods of polishing.
   Dr. Lempel Edina
Practices

Seminars

Exam topics/questions

1. Units and instruments of a dental practice
2. Position of the patient and the dentist, dental unit
3. General rules of cavity preparation, classification of the cavities, nomenclature
4. Hand instruments
5. Rotary instruments
6. Isolation, matrices
7. I. class cavity preparation for plastic filling
8. II. class cavity preparation for amalgam filling
9. II. class cavity preparation for composite filling
10. III. class cavity preparation for composite filling
11. IV. class cavity preparation for composite filling
12. V. class cavity preparation for plastic filling
13. Steps of amalgam filling
14. Steps of composite filling
15. Steps of glass-ionomer cement filling
16. Special cavity preparation, parapulpal posts
17. Cavity preparation for I. class metal (cast) inlay
18. Cavity preparation for II. class metal (cast) inlay
19. Cavity preparation for composite inlay

Participants
OSA-K3K OPERATIVE DENTISTRY 3 - OPERATIVE DENTISTRY PROPEDEUTICS PRACTICE

Course director: DR. EDINA LEMPEL, assistant professor
Department of Dentistry, Oral and Maxillofacial Surgery

6 credit • midterm grade • Basic subject • spring semester • recommended semester: 4
Number of hours/semester: 0 lectures + 84 practices + 0 seminars = total of 84 hours
Course headcount limitations (min.-max.): 3 – 20
Prerequisites: OSA-FAT completed + OSA-FAN completed + OSR-AFG completed

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
The students should learn the basic terms and methods of operative dentistry. Within the framework of the practice the student should get ready for operative interventions on real patients.

Conditions for acceptance of the semester
Maximum of 15 % absence allowed

Mid-term exams
The practical work will be qualified and creates the final grade. During the semester the students write min. 3 tests. The results influence the semester grade. At the end of the semester a practical/operative exam should be performed.

Making up for missed classes
None

Reading material
- Obligatory literature
- Literature developed by the Department
  Contents of the lectures (Operative Dentistry 2 - Operative Dentistry Propedeutics)
- Notes
- Recommended literature
  Sturdevant: Art and Science of Operative Dentistry

Lectures

Practices
1. I. class cavity preparation (occlusal and buccal) in lower 6 tooth for amalgam filling; making of amalgam filling
2. I. class cavity preparation (occlusal and buccal) in lower 6 tooth for amalgam filling; making of amalgam filling
3. I. class cavity preparation (occlusal and buccal) in lower 6 tooth for amalgam filling; making of amalgam filling
4. I. class cavity preparation (occlusal and buccal) in lower 6 tooth for amalgam filling; making of amalgam filling
5. I. class cavity preparation (occlusal and buccal) in lower 6 tooth for amalgam filling; making of amalgam filling
6. I. class cavity preparation (occlusal and buccal) in lower 6 tooth for amalgam filling; making of amalgam filling
7. II. class MO cavity preparation in lower 5 tooth for amalgam filling; making of amalgam filling
8. II. class MO cavity preparation in upper 4 tooth for composite filling; making of composite filling
9. II. class MD cavity preparation in upper 4 tooth for composite filling; making of composite filling
10. II. class MO cavity preparation in lower 5 tooth for amalgam filling; making of amalgam filling
11. II. class MO cavity preparation in upper 4 tooth for composite filling; making of composite filling
12. II. class MO cavity preparation in lower 5 tooth for amalgam filling; making of amalgam filling
13. II. class MD cavity preparation in upper 4 and 6 tooth for composite filling; making of composite filling
14. II. class MD cavity preparation in upper 4 and 6 tooth for composite filling; making of composite filling
15. II. class MD cavity preparation in upper 4 and 6 tooth for composite filling; making of composite filling
16. II. class MD cavity preparation in upper 4 and 6 tooth for composite filling; making of composite filling
17. II. class MD cavity preparation in upper 4 and 6 tooth for composite filling; making of composite filling
18. II. class MD cavity preparation in upper 4 and 6 tooth for composite filling; making of composite filling
I. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of direct composite inlay.

III. and IV. Class cavity preparation for composite filling in upper anterior teeth; making of the filling.

V. Class cavity preparation for composite filling in upper 3 and lower 6 teeth; making of the filling.

III. and IV. Class cavity preparation for composite filling in upper anterior teeth; making of the filling.

V. Class cavity preparation for composite filling in upper 3 and lower 6 teeth; making of the filling.

III. and IV. Class cavity preparation for composite filling in upper anterior teeth; making of the filling.

V. Class cavity preparation for composite filling in upper 3 and lower 6 teeth; making of the filling.

III. and IV. Class cavity preparation for composite filling in upper anterior teeth; making of the filling.

V. Class cavity preparation for composite filling in upper 3 and lower 6 teeth; making of the filling.

III. and IV. Class cavity preparation for composite filling in upper anterior teeth; making of the filling.

V. Class cavity preparation for composite filling in upper 3 and lower 6 teeth; making of the filling.

Test

Cavity preparation for glass-ionomer filling, making of the filling.

Cavity preparation for glass-ionomer filling, making of the filling.

Cavity preparation for glass-ionomer filling, making of the filling.

Cavity preparation for glass-ionomer filling, making of the filling.

I. Class cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of composite inlay in upper 7 tooth; making of direct composite inlay.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in upper 7 tooth; making of direct composite inlay.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in upper 7 tooth; making of direct composite inlay.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in upper 7 tooth; making of direct composite inlay.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 4 tooth; making of wax pattern.

II. Class MOD cavity preparation for metal inlay in lower 7 tooth; making of wax pattern.
66 Minimal invasive cavity preparation, making of the fillings
67 Preparation for direct veneer; making of direct veneer with layering technique
68 Preparation for direct veneer; making of direct veneer with layering technique
69 Preparation for direct veneer; making of direct veneer with layering technique
70 Preparation for direct veneer; making of direct veneer with layering technique
71 Preparation for direct veneer; making of direct veneer with layering technique
72 Preparation for direct veneer; making of direct veneer with layering technique
73 Preparation for direct veneer; making of direct veneer with layering technique
74 Preparation for direct veneer; making of direct veneer with layering technique
75 Preparation for direct veneer; making of direct veneer with layering technique
76 Preparation for direct veneer; making of direct veneer with layering technique
77 Preparation for direct veneer; making of direct veneer with layering technique
78 Preparation for direct veneer; making of direct veneer with layering technique
79 Exercise and evaluation
80 Exercise and evaluation
81 Exercise and evaluation
82 Exercise and evaluation
83 Exercise and evaluation
84 Exercise and evaluation

Seminars

Exam topics/questions

Practical exam topics:
1. I. class cavity preparation (occlusal and buccal) in molar tooth for amalgam filling; making of amalgam filling
2. I. class cavity preparation (occlusal and buccal) in molar tooth for composite filling; making of composite filling
3. II. class MO cavity preparation in molar or in premolar for amalgam filling; making of the filling
4. II. Class OD cavity preparation in molar or in premolar for amalgam filling; making of the filling
5. II. class MOD cavity preparation in molar or in premolar for amalgam filling; making of the filling
6. II. class MO cavity preparation in molar or in premolar for composite filling; making of the filling
7. II. class OD cavity preparation in molar or in premolar for composite filling; making of the filling
8. II. class MOD cavity preparation in molar or in premolar for composite filling; making of the filling
9. III. Class cavity preparation for composite filling in upper anterior teeth; making of the filling
10. IV. Class cavity preparation for composite filling in upper anterior teeth; making of the filling
11. II. class MO cavity preparation for metal inlay; making of wax pattern
12. II. class OD cavity preparation for metal inlay; making of wax pattern
13. II. class MOD cavity preparation for metal inlay; making of wax pattern
14. II. class MO cavity preparation for direct composite inlay; making of the inlay
15. II. class OD cavity preparation for direct composite inlay; making of the inlay
16. II. class MOD cavity preparation for direct composite inlay; making of the inlay

Participants

Dr. Lempel Edina (LEEFABO.PTE)
## OSA-MAX  
**Maxillofacial Anatomy, Neuroanatomy and Histology**

**Course director:**  
Dr. Pál TÓTH, associate professor  
Department of Anatomy

<table>
<thead>
<tr>
<th>7 credit</th>
<th>semester exam</th>
<th>Basic subject</th>
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<th>recommended semester:</th>
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The subject can only be registered in case of a PASSED and valid health aptitude test!

### Topic
Macroscopic and microscopic anatomy, and development of the central nervous system. Morphological basis of neuroendocrine integration. Regional anatomy of the head and the neck with special emphasis.

The structure of the central nervous system including functional and developmental aspects. Regions of the head and neck, organs innervated by cranial nerves particularly emphasized. Structure and development of the endocrine and sensory organs. The course is to give basic morphological knowledge to further clinical studies, including neurology, neurosurgery, ophthalmology, especially craniofacial surgery, etc.

### Conditions for acceptance of the semester
Presence on at least 85% of course hours is required. Absence (for any reason) is max. 14 teaching hours (= 14x45 min.) including max. 11 practice hours.

### Mid-term exams
Making up for missed classes
Exceptionally, students may attend the practice of another group (strictly on the same week, maximum three times in a semester). Student must ask the teacher of the other group for the permission to attend the class. In case the class is full, the teacher has the right to refuse the query.

### Reading material
- **Obligatory literature**
  - [http://an-server.pote.hu](http://an-server.pote.hu)
- **Literature developed by the Department**
  - [http://an-server.pote.hu](http://an-server.pote.hu)
- **Notes**
  - [http://an-server.pote.hu](http://an-server.pote.hu)
- **Recommended literature**
  - [http://an-server.pote.hu](http://an-server.pote.hu)

### Lectures
1. The integumentary system.  
  Dr. Rékási Zoltán
2. Basic macroscopic anatomy of the central nervous system. An overview based on embryological aspect.  
  Dr. Gaszner Balázs
  Dr. Tóth Pál
4. Basic neurohistology. The neuron.  
  Dr. Gaszner Balázs
  Dr. Tóth Pál
  Dr. Tóth Pál
7. Basic neurohistology. The glia.  
  Dr. Tóth Pál
8. Blood supply and meninges of the spinal cord, clinical aspects.  
  Dr. Tóth Pál
9. Microscopic organisation of the spinal cord.  
  Dr. Tóth Pál
10 Spinal reflexes.
   Dr. Tóth Pál
11 Ascending pathways of the spinal cord.
   Dr. Reglődi Dóra
12 Descending pathways of the spinal cord.
   Dr. Reglődi Dóra
13 The structural organization of the rhombencephalon and the mesencephalon.
   Dr. Rékási Zoltán
14 Nuclei of the cranial nerves.
   Dr. Rékási Zoltán
15 Anatomical bases of brainstem reflexes.
   Dr. Reglődi Dóra
16 The general structure of the cerebellar cortex.
   Dr. Rékási Zoltán
17 Connections and functions of the cerebellum.
   Dr. Rékási Zoltán
18 The hypothalamus, and the hypothalamo-hypophyseal system.
   Dr. Rékási Zoltán
19 Endocrine organs 1.
   Dr. Nagy András Dávid
20 Endocrine organs 2.
   Dr. Nagy András Dávid
21 The eye.
   Dr. Tóth Pál
22 The eye and its development.
   Dr. Tóth Pál
23 The retina.
   Dr. Lázár Gyula
24 The tympanic cavity, its contents and their development.
   Dr. Tamás Andrea
25 The bony and membranous labyrinth and their development.
   Dr. Tamás Andrea
26 The somato-sensory systems.
   Dr. Csernus Valér
27 Autonomic nervous system 1.
   Dr. Csernus Valér
28 Autonomic nervous system 2.
   Dr. Csernus Valér

Practices
1 Dissecting room: The skull.
2 Dissecting room: The skull.
3 Dissecting room: The skull.
4 Dissecting room: The skull.
5 Histology: The skull.
6 Histology: The skull.
7 Dissecting room: Dissection of the brain.
8 Dissecting room: Dissection of the brain.
9 Histology: The integumentary system.
10 Histology: The integumentary system.
11 Dissecting room: Dissection of the brain.
12 Dissecting room: Dissection of the brain.
13 Dissecting room: Dissection of the brain.
14 Dissecting room: Dissection of the brain.
15 Histology: Neurons, peripheral nerves.
16 Histology: Neurons, peripheral nerves.
17 Dissecting room: Dissection of the brain.
18 Dissecting room: Dissection of the brain.
Histology: Nerve terminals, glia.

Dissecting room: Demonstration of brain slices.

Dissecting room: The spinal cord.

Histology: Histology of the spinal cord. Spinal reflexes.

Dissecting room: Regions of the head and neck (muscles, muscle trigones, fasciae).

Dissecting room: Regions of the head and neck (structures of emphasized topographic importance, e.g. parotid nest, sulcus lat. linguae).

Dissecting room: Nasal cavity, oral cavity, pharynx. Retropharyngeal spaces. (Recapitulation.)

Histology: Histology of the endocrine organs.

Dissecting room: Recapitulation, preparation for the exam.

Histology: Recapitulation, preparation for the exam.

Seminars

Exam topics/questions

http://an-server.pote.hu
Participants

Dr. Czeiter Endre (CZEFAO.PTE), Dr. Farkas Boglárka Anett (FABFADO.PTE), Dr. Gaszner Balázs (GABFADO.PTE), Dr. Hollósy Tibor (HOTFAAO.PTE), Dr. Horváth-Opper Gabriella (HOGFAFO.PTE), Dr. Kardos Dániel József (KADPABO.PTE), Dr. Kiss Péter (KIPFABO.PTE), Dr. Nagy András Dávid (NAAFAO.PTE), Dr. Pethőné Dr. Lubics Andrea (PELMAAO.PTE), Dr. Sétáló György (SEGGAAO.PTE), Dr. Tamás Andrea (TAFAAO.PTE), Dr. Tóth Pál (TOPMAAO.PTE), Fábián Eszter (FAEGAAT.PTE), Gaszner Tamás (GATRAAO.PTE), Kovács László Ákos (KOLQAAO.PTE)
Topic
This subject provides theoretical and practical information for the students to maintain and improve their physical condition and helps to deepen the knowledge in the field of healthy lifestyle.
Theoretical and practical knowledge during different types of exercises e.g. how to improve endurance, muscle force, motor skills and how to prevent the body from injuries.

Conditions for acceptance of the semester
Active participation at least 20 practical lessons provided by the Institute of Human Movement Sciences or regular participation of the trainings of the Medikus Sport Club or PEAC.

Mid-term exams

Making up for missed classes
We provide opportunities to attend extra lessons in the first week of the exam period in that case the requirements are not fulfilled till the end of the teaching weeks with agreement of the PE Teacher.

Reading material
- Obligatory literature
- Literature developed by the Department
  Not available.
- Notes

Recommended literature

Lectures
Practices
1-28 For the list of actual courses please turn to the end of this document

Seminars

Exam topics/questions

Participants
Farkas György (FAGMAAO.PTE), Lipcsik Zoltán (LIZIAAT.PTE), Németh Attila Miklós (NEAGAET.PTE), Téczely Tamás (PETLAAT.PTE)
### ATT1-2-3-4-5 Physical Education Courses 1-2-3-4-5

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<th>max. head-count</th>
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<td>Aerobics</td>
<td>Monday</td>
<td>18:00</td>
<td>19:00</td>
<td>SPO-SOR Sörház 2nd floor (Xavér u. 19.)</td>
<td>2</td>
<td>8</td>
<td>Dr. Szilárdné Kordély Erika</td>
<td>Pajor Marietta</td>
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<tr>
<td>Aerobics</td>
<td>Tuesday</td>
<td>19:00</td>
<td>20:00</td>
<td>SZEAS-EDZ Main Building training room</td>
<td>2</td>
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<td>Pajor Marietta</td>
<td>Dr. Szilárdné Kordély Erika</td>
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<tr>
<td>Aerobics</td>
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<td>18:00</td>
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<td>Aerobics</td>
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<td>Aerobics</td>
<td>Thursday</td>
<td>18:00</td>
<td>19:00</td>
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<td>Aerobics (pompom)</td>
<td>Tuesday</td>
<td>20:00</td>
<td>21:30</td>
<td>SPO-PSM &quot;Pécsi Sasok&quot; Sportscenter (Búza tér 6/b.)</td>
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<td>6</td>
<td>Rill Laura</td>
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<tr>
<td>Athletics</td>
<td>Monday</td>
<td>17:00</td>
<td>18:30</td>
<td>SPO-ATP Faculty of Sciences - Athletics field (Ifjúság út 6.)</td>
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<td>Hajduné Dr. László Zita</td>
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<tr>
<td>Athletics</td>
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<td>SPO-ATP Faculty of Sciences - Athletics field (Ifjúság út 6.)</td>
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<tr>
<td>Badminton (Student Sports Club)</td>
<td>Thursday</td>
<td>16:30</td>
<td>17:45</td>
<td>SPO-TCS Sportshall at Jakabhegyi út (Jakabhegyi út 6.)</td>
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<td>Farkas György, Lipcsik Zoltán</td>
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<td>Basketball (men)</td>
<td>Thursday</td>
<td>22:00</td>
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<td>Németh Attila Miklós</td>
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<td>Basketball (women) (Student Sports Club)</td>
<td>Wednesday</td>
<td>18:00</td>
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<td>Body Slim</td>
<td>Monday</td>
<td>19:00</td>
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<td>SPO-MFK Mecsék Fitness (Ybl Miklós u. 19.)</td>
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<td>Cardio Yoga</td>
<td>Friday</td>
<td>15:00</td>
<td>16:30</td>
<td>SZEAS-EDZ Main Building training room</td>
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<td>Ragács Renáta</td>
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<td>Climbing</td>
<td>Thursday</td>
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<td>Cross Training</td>
<td>Monday</td>
<td>20:00</td>
<td>21:30</td>
<td>SPO-CRF Cross Factory, in the yard of the Professor Gym (Megyeri út 4.)</td>
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<td>Thursday</td>
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<td>Thursday</td>
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<td>Football</td>
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<td>Football</td>
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<td>15</td>
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<td>Handball (men) (Student Sports Club)</td>
<td>Wednesday</td>
<td>19:30</td>
<td>21:00</td>
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<td>Lipcsik Zoltán</td>
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<td>Handball (women) (Student Sports Club)</td>
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<td>Mecsek</td>
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<td>Horse Riding (six times)</td>
<td>Saturday</td>
<td>9:00</td>
<td>13:00</td>
<td>SPO-APL &quot;Apró Páták&quot; Riding School (Siklós, Postaszállás u. 11.) (transportation is provided)</td>
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<td>József Kristóf</td>
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<tr>
<td>Karate advanced (Student Sports Club)</td>
<td>Thursday</td>
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<td>21:30</td>
<td>SZEA-EDZ Main Building training room</td>
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<td>Farkas György</td>
<td>József Kristóf</td>
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<tr>
<td>Kick-box</td>
<td>Friday</td>
<td>19:00</td>
<td>20:30</td>
<td>SZE-EDZ Main Building training room</td>
<td>2</td>
<td>12</td>
<td>Horváth László</td>
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<tr>
<td>Lacross</td>
<td>Friday</td>
<td>19:00</td>
<td>20:30</td>
<td>SPO-V13 UP Sports fields (Verseny u. 13.)</td>
<td>2</td>
<td>10</td>
<td>Dr. Rugási Endre</td>
<td></td>
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<tr>
<td>Nordic Walking</td>
<td>Wednesday</td>
<td>17:30</td>
<td>19:00</td>
<td>SPO-ATP Faculty of Sciences - Athletics field (Ifjúság út 6.)</td>
<td>1</td>
<td>8</td>
<td>Hajduné Dr. László Zita</td>
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<tr>
<td>Operational Medicine Training Program (functional skill development)</td>
<td>Tuesday</td>
<td>16:15</td>
<td>17:30</td>
<td>SZEA-EDZ Main Building training room</td>
<td>1</td>
<td>6</td>
<td>Lipcsik Zoltán</td>
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</table>
### Other sports clubs from Pécs (with permission)

<table>
<thead>
<tr>
<th>Sport</th>
<th>day</th>
<th>from</th>
<th>to</th>
<th>place</th>
<th>min. head-count</th>
<th>max. head-count</th>
<th>supervisor</th>
<th>trainer</th>
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<tbody>
<tr>
<td>Squash</td>
<td>Monday</td>
<td>19:00</td>
<td>20:30</td>
<td>SPO-EP8 Elementary School (Építők u. 8.)</td>
<td>1</td>
<td>4</td>
<td>Bomemissza Gergely</td>
<td>Téczely Tamás</td>
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<tr>
<td>Squash</td>
<td>Friday</td>
<td>18:00</td>
<td></td>
<td>SPO-USZ Main Building swimming pool</td>
<td>1</td>
<td>4</td>
<td>Dr. Karsai István</td>
<td>Téczely Tamás</td>
</tr>
<tr>
<td>Squash</td>
<td>Wednesday</td>
<td>18:30</td>
<td>19:30</td>
<td>SPO-UIF Faculty of Sciences Swimming pool (Ifjúság út 6.)</td>
<td>1</td>
<td>6</td>
<td>Dr. Karsai István</td>
<td>Téczely Tamás</td>
</tr>
<tr>
<td>Swimming</td>
<td>Friday</td>
<td>13:30</td>
<td>15:00</td>
<td>SPO-USZ Main Building swimming pool</td>
<td>3</td>
<td>15</td>
<td>Finak Gáborné Gombosi Eszter Gyöngyi</td>
<td>Téczely Tamás</td>
</tr>
<tr>
<td>Table Tennis</td>
<td>Friday</td>
<td>13:30</td>
<td>15:00</td>
<td>SPO-EDZ Main Building training room</td>
<td>2</td>
<td>8</td>
<td>Finak Gáborné Gombosi Eszter Gyöngyi</td>
<td>Téczely Tamás</td>
</tr>
<tr>
<td>Table Tennis</td>
<td>Thursday</td>
<td>13:30</td>
<td>15:00</td>
<td>SPO-EDZ Main Building training room</td>
<td>4</td>
<td>16</td>
<td>Finak Gáborné Gombosi Eszter Gyöngyi</td>
<td>Téczely Tamás</td>
</tr>
<tr>
<td>Table Tennis</td>
<td>Thursday</td>
<td>15:00</td>
<td>16:15</td>
<td>SPO-EDZ Main Building training room</td>
<td>4</td>
<td>16</td>
<td>Finak Gáborné Gombosi Eszter Gyöngyi</td>
<td>Téczely Tamás</td>
</tr>
<tr>
<td>Tennis</td>
<td>Monday</td>
<td>18:00</td>
<td>19:00</td>
<td>SPO-MAT Makár Tanya (Középmákár dűlő 4.)</td>
<td>2</td>
<td>6</td>
<td>Daróczki Balázs</td>
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<tr>
<td>Tennis</td>
<td>Tuesday</td>
<td>17:00</td>
<td>18:00</td>
<td>SPO-MAT Makár Tanya (Középmákár dűlő 4.)</td>
<td>2</td>
<td>6</td>
<td>Daróczki Balázs</td>
<td></td>
</tr>
<tr>
<td>Track and Field training</td>
<td>Friday</td>
<td>17:00</td>
<td>18:30</td>
<td>SPO-JSK Jakabhegy street outdoor handball field (Jakabhegy út 6.)</td>
<td>1</td>
<td>5</td>
<td>Dr. Karsai István</td>
<td>Téczely Tamás</td>
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<tr>
<td>Training in the Gym</td>
<td>Wednesday</td>
<td>12:00</td>
<td>13:30</td>
<td>SPO-GYM Professors' Gym (Megyéri út 4.)</td>
<td>2</td>
<td>10</td>
<td>Lipcsik Zoltán</td>
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<tr>
<td>Training in the Gym</td>
<td>Friday</td>
<td>12:00</td>
<td>13:30</td>
<td>SPO-GYM Professors' Gym (Megyéri út 4.)</td>
<td>4</td>
<td>20</td>
<td>Lipcsik Zoltán</td>
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<tr>
<td>Training in the Gym</td>
<td>Friday</td>
<td>13:30</td>
<td>15:00</td>
<td>SPO-GYM Professors' Gym (Megyéri út 4.)</td>
<td>4</td>
<td>20</td>
<td>Németh Attila Miklós</td>
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<tr>
<td>VitalFUN</td>
<td>Tuesday</td>
<td>19:15</td>
<td>20:30</td>
<td>SPO-RSG Faculty of Sciences rhythmic gymnastics room (Ifjúság út 6. Building A)</td>
<td>1</td>
<td>2</td>
<td>Dr. Dudás Anna</td>
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<tr>
<td>Volleyball (women) (Student Sports Club)</td>
<td>Tuesday</td>
<td>16:30</td>
<td>18:00</td>
<td>SPO-TCS Sportshall at Jakabhegyi út (Jakabhegyi út 6.)</td>
<td>2</td>
<td>7</td>
<td>Farkas György</td>
<td>Schrauff Júlia</td>
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<tr>
<td>Volleyball (women) (Student Sports Club)</td>
<td>Wednesday</td>
<td>16:30</td>
<td>18:00</td>
<td>SPO-TCS Sportshall at Jakabhegyi út (Jakabhegyi út 6.)</td>
<td>2</td>
<td>7</td>
<td>Farkas György</td>
<td>Balla Robert</td>
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<tr>
<td>Yoga</td>
<td>Sunday</td>
<td>18:00</td>
<td>20:00</td>
<td>SPO-SDR Sórház 2nd floor (Kavér u. 19.)</td>
<td>2</td>
<td>10</td>
<td>Kislövő-Szabó Ágnes</td>
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<tr>
<td>Zumba (fee payment necessary)</td>
<td>Wednesday</td>
<td>18:00</td>
<td>19:00</td>
<td>SPO-FDR Jordan Dance Center (Batthyányi ú. 9/a.)</td>
<td>2</td>
<td>16</td>
<td>Varga Zsuzsanna</td>
<td></td>
</tr>
</tbody>
</table>
Final Examination in Medical Hungarian - Oral

Course director: Dr. Gábor Rébék-Nagy, associate professor
Department of Languages for Specific Purposes

OSR-HUF-O

0 credit • signature • Criterion requirement subject • spring semester • recommended semester: 4
Number of hours/semester: 0 lectures + 0 practices + 0 seminars = total of 0 hours
Course headcount limitations (min.-max.): 1 – 400
Prerequisites: none

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
Exam of Medical Hungarian language skills required for the clinical studies.

Conditions for acceptance of the semester
Maximum of 25% absence allowed

Mid-term exams
-
Making up for missed classes
-

Reading material
- Obligatory literature
- Literature developed by the Department
- Notes
- Recommended literature

Lectures
Practices
Seminars

Exam topics/questions
-

Participants
OSR-HUF-W Final Examination in Medical Hungarian - written

Course director: Dr. Gábor Rébék-Nagy, associate professor
Department of Languages for Specific Purposes

Course description:
- 0 credit • signature • Criterion requirement subject • both semesters
- semester • recommended semester: 4

Number of hours/semester: 0 lectures + 0 practices + 0 seminars = total of 0 hours

Course headcount limitations (min.-max.): 1 – 400

Prerequisites: none

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic
Exam of Medical Hungarian language skills required for the clinical studies.

Conditions for acceptance of the semester
- Mid-term exams
- Making up for missed classes

Reading material
- Obligatory literature
- Literature developed by the Department
- Notes
- Recommended literature

Lectures
Practices
Seminars

Exam topics/questions
- Participants