COURSE SYLLABUS

Semmelweis University Faculty of Dentistry, Dentistry

Name of the course: Oral biology

Credit value: 4

Lessons *(in hours in the whole semester)*: 4 from this, lectures: 2 practicals: 2

Type of the course: compulsory

Semester in which it is announced according to the curriculum: 6th semester

Frequency of announcement *(per semester or year)*: yearly

The responsible educational and research organizational unit for teaching the subject:

Department of Oral Biology

Academic year: 2023/24 (2nd semester)

Subject (Neptun) code: FOKOOBT249_1A

Lecturer of the course: Dr. Zsembery Ákos
Academic position: associate professor
Contact: Orálbiológiai Tanszék, +36-1-210-4415

The goals and place of the course in regards to the education of dental students:
The discipline of oral biology deals with the structure, development, functions and regulatory mechanisms of oral tissues, their interrelationships, and their relation to other organ systems in both health and disease. The rationale for this program is to provide (1) a focus for the traditional basic health sciences (e.g. anatomy, chemistry, biochemistry, cell biology, physiology, immunology, pathophysiology, microbiology and pathology) and (2) a base of oral biological knowledge upon which clinical subjects of the dental curriculum can rest upon. Thus, oral biology interrelates with all the clinical disciplines of dentistry and builds on and applies the traditional basic sciences to the study of orally related problems.

Location of the course *(address of lecture hall, seminar room etc.)*:
NET Building according to the semesters's schedule

Competences acquired by completion of the course: Upon completion of the program, students would be able to understand the mechanisms involved in the most common oral/dental disorders and acquire the relevant biological/physiological knowledge to understand the therapeutic and diagnostic methods in dentistry.

Pre-study requirements and prerequisites of course registration and completion: General and Oral Pathophysiologyy, Pathology, Medical and Dental Physiology II, Public Health

Number of students required for announcement of course *(min., max.),* method of selection: N/A

Method of course registration: Neptun system

Detailed course/lecture description[1]:

Lecture topics:

1. Mineralisation and bioapatites
2. Osteogenesis, bone resorption
3. Development of the tooth germ
4. Dentinogenesis, cementogenesis. Dentin permeability.
5. Amelogenesis
6. Bleeding disorders. Pathophysiology and relevance in everyday dentistry.
7. Hemopoietic stem cell transplantation
8. Morphology and function of salivary glands. Saliva, disorders of salivary secretion.
9. Tooth eruption and tooth movement.
10. Pathomechanisms in oral cancer.
11. Oral sensation, olfaction and deglutition.
12. Structural and functional characteristic of dental pulp, circulation of the oral cavity. Pulpitis and dental pain.
13. Inflammation - general characteristics, types, pathomechanism
14. Wound healing. Ionizing radiation, oral consequences of therapeutic irradiation

Practical topics:

1. Ca2+ homeostasis
2. Hard tissue investigation methods. Fluoride metabolism
3. Chewing and the temporomandibular joint movements
4. Hematology – basics, hemopoiesis
5. Hematology – proliferative diseases
6. Hematology – anemias
7. Hemostasis
8. Measurement of salivary flow and salivary diagnostics
9. Case presentation – periodontal diseases and systemic conditions
10. Oral defence mechanisms.
11. Dental plaque
12. Oral clearance
13. Gingival sulcus and the crevicular fluid
14. Molecular diagnostic in dentistry, gene polimorphisms

Courses *(compulsory and obligatory elective)* which in part or entirely overlap the topics of above course: Dental Biochemistry, Molecular Cell Biology, Medical and Dental Physiology, Pathology, Oral Biology, Pharmacology, courses of the clinical module

Special academic work required for completion of the course[2]:
N/A

Attendance on practices and lectures, replacement in case of missed sessions: according to the Study and Examination Regulations. Replacement of missed practical session only possible on the paralellel group's sessions of the same topic. Lecture material is made available on the Moodle.

~~**Consequences of absence from sessions and exams: törölve**~~

Method of checking acquired knowledge during the study period[3]:
Midterm exam on the 12th week qualifies to participate on the study competition on the 14th week. Exam privileges of three different levels can be earned at the competition.

Requirements of an accepted semester *(signature of the lecturer)*: according to the Study and Examination Regulations

Type of the exam: semifinal, oral

Requirements of the exam[3]:
Topic list:
A1. Matrix components of hard tissues

A2. Mineral components of the hard tissues. Bioapatites.
A3. Development of the hard tissues - mineralization process
A4. Development of the tooth germ, developmental stages
A5. Histological structure of the bones, forms of osteogenesis
A6. Bone resorption and the osteoclasts
A7. Amelogenesis
A8. Dentinogenesis
A9. Dentinpermeability and dentin sensitivity
A10. Cementogenesis
A11. Mechanism of tooth eruption
A12. Tooth movement
A13. Calcium metabolism and homeostasis, role in tooth and bone development
A14. Fluoride metabolism. Fluoride and the hard tissues
A15. Systemic and dental fluorosis, acut and chronic poisoning

B1. Functional morphology of the salivary glands
B2. Protein secretion in the salivary glands, regulation and mechanism
B3. Ion and water secretion in the salivary glands, regulation and mechanism
B4. Oral consequences of therapeutic irradiation
B5. Inflammation types, phases, and general characteristics
B6. Mediators in the inflammation
B7. Wound healing
B8. Oral cancer – epidemiology, etiology and molecular factors
B9. Structural and functional morphology of the dental pulp
B10. Inflammation of the dental pulp, tooth derived pain
B11. Oral sensation, taste
B12. Olfaction
B13. Deglutition
B14. Gingival sulcus and the crevicular fluid

C1. Bleeding disorders, pathomechanism and clinical symptoms
C2. Thrombotic disorders, pathomechanism, symptoms and consequences
C3. Laboratory parameters of the hemostasis. Special aspects of dental treatment for patients with bleeding disorders
C4. Hemopoiesis. Reactive blood changes. Hemopoetic stem cell transplantation
C5. Leukemias and their oral consquences
C6. Anemias, leukopenias, thrombocytopenias and their oral consequences
C7. Periodontitis and systemic diseases
C8. Mastication and the temporomandibular joint
C9. Investigation methods for dentin and enamel
C10. Saliva as a protective agent in the oral cavity. Salivary components and their role
C11. Saliva collection methods. Xerostomia and hyposalivation. Salivary biomarkers
C12. Oral defense mechanisms
C13. Development and maturation of the dental plaque
C14. Oral clearance
C15. Molecular diagnostics in dentistry – diseases of the oral cavity: genetics and genomics

Oral presentation of 3 topics (1 A topic, 1 B and 1 C topic). All topics should be passed for the successful completion of the exam.

On the competition the following privileges may be earned:
I. exemption from answering two topics of the student’s choice. The topics will be accepted with mark 5.
II. exemption from answering one topic of of the student’s choice. The topic will be accepted with mark 5.

III. exemption from answering one topic of the examiner's choice. The topic will be accepted with mark 5.
Grading of courses[4]. according to the result of the oral exam.
Exam registration: in the Neptun system, according to the Study and Examination Regulations
Rules of repeating exams: according to the Study and Examination Regulations
List of textbooks, lecture notes and recommended textbooks, online material: D.B. Ferguson: Oral Bioscience. Churchill Livingstone, 1999. Nagy, Ákos (editor) Digital method and content development of the Hungarian higher education in dentistry in Hungarian, German and English. Budapest, Magyarország : Dialóg Campus Kiadó, Nordex Kft. (2014) http://dtk.tankonyvtar.hu/xmlui/handle/123456789/12092 Lecture and practical materials available online in the Moodle.
Signature of course lecturer:
Signature of head of department:
Date of submission:
Opinion of OKB:
Notes from the Dean's Office:
Signature of Dean:

[1] Detailed and numbered for each week of theoretical and practical lessons one by one. In an annex, cannot be attached appendix!
[2] Eg. homework, report, midterm exam etc. Topics, dates, method of retake and replacement
[3] List of topics in case of theoretical exam, thematic and method in case of practical exam
[4] Method of inclusion of theoretical and practical exams. Method of inclusion of midterm assessments.