REQUIREMENTS

Semmelweis University, Faculty of Dentistry

Department of Physiology

Name of the course: Medical and Dental Physiology I.

Credit value: 9

Lessons *(in hours)*: 8.5 lectures: 5 practicals: 3.5 seminars: -

Type of the course: compulsory obligatory elective elective

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

Academic year: 2022/2023 academic year, I. semester

Subject code[1]: FOKOELT349_1A

Lecturer of the course: Dr. András Balla

Contact: Semmelweis University, Department of Physiology; phone: +36-1-459-1500/60450

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

Location of the course *(address of lecture hall, seminar room etc.)*:
Semmelweis University; Department of Physiology; H-1094 Budapest, Tűzoltó u. 37-47.

Competences acquired by completion of the course:
Understanding of the human physiology which is foundation of medical and dental practice.

Pre-study requirements and prerequisites of course registration and completion:
(see Curriculum, NEPTUN)

Number of students required for announcement of course *(min., max.)*:
Maximum 100 students based on the registration in the NEPTUN system.

Method of course registration:
Registration must be recorded through the NEPTUN system.

Detailed course/lecture description[2]: *(to facilitate credit recognition in other institutions)*
Lectures

1. Introduction, body fluids. Functions of cellular membranes, transport across membranes. Transepithelial transports.
2. Signal transduction: receptors, G proteins, second messengers. Cellular calcium metabolism, receptors of growth factors and cytokines. Membrane trafficking and vesicular transport.
3. Ion channels and resting membrane potential. Action potential. Physiology of nerve cells, synaptic transmission in the central nervous system.
4. Neuromuscular junction and physiology of skeletal muscle. Autonomic neurotransmitters and physiology of smooth muscle.
5. Physiology of the blood.
6. Physiology of the heart I.: origin and spread of cardiac excitation Cardiac cycle. Regulation of cardiac output.
7. Electrocardiography (ECG). Physiology of blood circulation: introduction.

8. Hemodynamics, systemic circulation. Microcirculation.
9. Venous circulation and lymph flow. Local control of circulation. Reflex control of circulation.
10. Circulation of blood in the brain and coronary circulation. Splanchnic circulation, circulation of skin and skeletal muscle.
11. Respiration: pulmonary ventilation. Gas exchange in the lungs. Pulmonary circulation, ventilation-perfusion relationship.
12. Gas transport, hypoxias. Regulation of respiration. Adaptation of cardiovascular and respiratory system.
13. Renal function: renal circulation, glomerular filtration. Tubular functions. Concentration, dilution.
14. Regulation of body fluids and osmotic concentration. Introduction to acid-base balance. Acid-base balance: role of lungs and kidneys.

Practices

- Typing of Blood Groups, Blood Coagulation Test
- Blood cell counting, determination of hemoglobin concentration and hematocrit.
- Leukocyte differential count on peripheral blood smear
- Recording and analyzing the human ECG
- Blood pressure measurement in humans
- Computer simulation: Skeletal and smooth muscle
- Evaluation of acid-base parameters with the Siggaard-Andersen nomogram

Courses *(obligatory and elective)* which in part or entirely overlap the topics of above course: -

Special academic work required for completion of the course[3]: -

Attendance on practices and lectures, replacement in case of missed sessions:
The attendance in minimum 75% of practices (including "seminars") is necessary for the end-term signature. Students must write a lab report for each practice using the Practical Book. The Practical Book should be signed by the teacher not later than one week after the practice. Participation in the practices is compulsory. No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. There are no extra practices and missed practices cannot be retaken. Absence from the exam must be certified at the Head of the Department or Course Director within 3 working days.

Consequences of absence from sessions and exams:
No more than three absences from practices are allowed for any reason; otherwise the semester will not be credited. There are no extra practices and missed practices cannot be retaken. Failing to certify absence from an exam causes registering "absence" = "nem jelent meg" in the NEPTUN system.

Method of checking acquired knowledge during the study period[4]:
The knowledge of the students is tested in a written form on a weekly base. The written short tests cover the material of lectures of the previous week. Missed tests cannot be repeated. The evaluation of the weekly written test will be expressed as a percentage. The average of percentages of the nine best written tests results in a five-point scale:
0-50% = 1, 51-60% = 2; 61-70% = 3, 71-80% = 4, 81-100% = 5.
This grade is taken into account in the exams.

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

Type of the exam:
In the examination period the students have to give semi-final exam in the first semester.

Requirements of the exam[5]:
Requirements of the semi-final exam: material of the Medical and Dental Physiology I.

The semi-final exam is oral exam. The students need to bring ID card and the laboratory report book to participate in the exam. The oral exam consists of two theoretical questions (I-II). The overall result of the oral exam is based on the two theoretical grades; a failed (1) theoretical question results in an overall failed (1) exam.
Lists of the theoretical questions can be found in the webpage of the Department of Physiology. The following rules will be enforced during the exams: electronic devices must be kept in the baggage; baggage and coats should be placed next to the wall of the exam place; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Grading of courses[6]:

The semi-final exam is oral exam. The exam starts at 8:45 by showing up in the selected exam place. The exam place and examiners are announced at 8:40. The oral exam consists of two theoretical questions (I-II). Grouping of questions, the topics of the semifinal exam can be found in http://semmelweis.hu/elettan/teaching/first-semester.

I: 1 and 2 topics of the semifinal exam
II: 3, 4 and 5 topics of the semifinal exam

The overall result of the oral exam is based on the lab grade and two theoretical grades but a failed (1) theoretical question results in an overall failed (1) exam. The mathematical average of three partial grades (lab grade and two oral exam grades) gives the grade of the semi-final exam:

Excellent (5):	4.51 - 5.00
Good (4):	3.51 - 4.50
Satisfactory (3):	2.51 - 3.50
Pass (2):	2.00 - 2.50
Fail (1):	below 2.00 or in case of failed (1) theoretical question.

The following rules will be enforced during the exam: electronic devices must be kept in the baggage; baggage and coats should be placed next to the wall of the lecture halls or the practice rooms; any form of communication is disallowed; students not complying with these rules will be disqualified immediately.

Failing to certify absence causes registering “absence” = “nem jelent meg” in the NEPTUN system.

Exam registration:

Registration for the exam must be recorded through the NEPTUN system.

Rules of repeating exams:

Repetition of the exam is possible at least three days after the unsuccessful trial.

List of textbooks, lecture notes and recommended textbooks:

Textbook: Koeppen-Bruce M- Stanton- Bruce A: Berne & Levy Physiology (7th edition). 2017. ISBN: 9780323393942
Practice book: Practices in Medical Physiology (Edited by: Péter Enyedi and Levente Kiss). 2017. ISBN: 9789633314159.

Signature of course lecturer:

Signature of head of department:

Date of submission:
2022.05.15.

Opinion of OKB:

Notes from the Dean’s Office:

Signature of Dean:

[1] Filled out by the Dean's Office following approval
[2] Detailed and numbered for each week of theoretical and practical lessons one by one, indicating the names of lecturers and instructors
[3] Eg. field practice, medical chart analysis, survey conducting, etc.
[4] Eg. homework, report, midterm exam etc. Topics, dates, method of retake and replacement.
[5] List of topics in case of theoretical exam, thematic and method in case of practical exam.
[6] Method of inclusion of theoretical and practical exams. Method of inclusion of midterm assessments.