REQUIREMENTS

Semmelweis University, Faculty of Medicine
Name of the managing institute (and any contributing institutes):
Heart and Vascular Center
Institute of Translational Medicine

Name of the subject: Az EKG klinikuma

in English: Clinical ECG

in German: Klinische Elektrokardiographie

Credit value: 3

Weeks 1–7: Total number of lessons/week: 4 lecture: 2 practical course: 2 seminar: 0

Weeks 8–14: Total number of lessons/week: 2 lecture: 0 practical course: 2 seminar: 0

Subject type: **compulsory course** **elective course** **optional course**

Academic year: 2021/2022

Subject code: AOKKAR680_1A

Name of the course leader: Zoltán Benyó MD, PhD, DSc (weeks 1-7)

His/her workplace, phone number: Institute of Translational Medicine, 210-0306

Position: director, professor

Date and registration number of their habilitation: 2008, 259

Name of the course leader: Dávid Becker MD, PhD, (weeks 8-14)

His/her workplace, phone number: Heart and Vascular Center, +36-1-458-10

Position: deputy director

Date and registration number of their habilitation: 2020, 02

Objectives of the subject, its place in the medical curriculum:

The aim of the subject is to prepare students for the courses in cardiology and internal medicine.
The student should be able to recognize the conditions requiring immediate cardiac intervention and the most important arrhythmias.

Place where the subject is taught (address of the auditorium, seminar room, etc.):
Nagyvárad square Building, 1089 Bp. Nagyvárad tér 4. (weeks 1–7: lectures and practicals)
Heart and Vascular Center, 1122 Budapest, Városmajor u. 68. (weeks 8–14: practicals)

Successful completion of the subject results in the acquisition of the following competencies:
The student will be able to independently record an ECG and give a professionally correct description of a 12-lead ECG at rest. He/she will be able to estimate basic parameters, identify abnormalities and list clinical conditions that may cause the abnormalities described. Of particular importance is the ability to recognize ST-elevation myocardial infarction, atrial fibrillation and arrhythmias requiring acute intervention.

Course prerequisites:
biophysics, physiology

Number of students required for the course (minimum, maximum) and method of selecting students:

Based on the registration in the Neptun system

How to apply for the course:
Through the Neptun system

Detailed curriculum:

Weeks 1–7, lectures (2·45 min):

Week	Translational Medicine (45 min)	Cardiovascular Center (45 min)
1	The concept and classification of arrhythmias. Mechanisms of origin of tachyarrhythmias.	Examination of a patient with supraventricular tachycardia. Differential diagnosis of narrow QRS tachycardias.
2	Classification of conduction disorders, mechanisms of bradyarrhythmias	The practical significance of impulse formation and conduction disorders
3	Repolarization disorders. ECG signs of different forms of ischaemic heart disease.	The role of ECG in the investigation of chest pain pathologies and its role in risk stratification.
4	Ventricular arrhythmias	Differential diagnosis of wide QRS tachycardias. Detection of ventricular tachycardias, ECG criteria.
5	Basics of pacemaker systems	ECG of a patient with pacemaker
6	Cases with multiple abnormalities	Description of complex ECGs, ECG differential diagnostics.
7	Cases to learn from	Revision

Weeks 1-7, practicals:

1. ECG lead systems, nomenclature. Analysis of normal ECG tracings. Estimation of frequency and heart axis. The ladder diagram.
2. Recognition of nomotopic and heterotopic pacemaker disturbances, supraventricular and ventricular tachycardias on ECG tracings.
3. Recognition of SA, AV and intraventricular conduction disturbances. Aberrant conduction.
4. Angina and NSTEMI. Localization and staging of ST-elevation infarcts.
5. Recognition of electrolyte abnormalities, atrial and ventricular strain and hypertrophy.
6. Recognition and practice of multiple abnormalities.
7. **Mid term exam**

Weeks 8-14, practicals:

During the practicals, theoretical knowledge is correlated with clinical practice at the bedside of the wards of the Heart and Vascular Center, and ECG curves of patients are analyzed.

From week 14 – end of the exam period: **Examination (written)**

Other subjects concerning the border issues of the given subject (both compulsory and optional courses!). Possible overlaps of themes:
biophysics, physiology, cardiology

Special study work required to successfully complete the course: none
Requirements for participation in classes and the possibility to make up for absences: Students can miss two practices, above that they have to make up. It is not possible to make up lectures, but you can make up the practicals in another group in the same week.
Methods to assess knowledge acquisition during term time: An oral mid term of the material from the basic course (first 6 weeks) in week 7 (analysis of ECG tracings. Attendance is compulsory.
Requirements for signature: Successful (at least satisfactory) oral demonstration (as the subject is taught by two different departments).
Type of examination: Written MCQ test
Requirements of the examination: Recognition of attendance
Method and type of evaluation: Grading is based on performance in the written test.
How to register for the examination: through the Neptun system
Possibilities for exam retake: In accordance with the study and examination regulations
Printed, electronic and online notes, textbooks, guides and literature (URL address for online material) to aid the acquisition of the material: Thaler, Malcolm S.: Az egyetlen EKG-könyv, amire szükséged lehet, Medicina Kiadó, 2019 Malcolm S. Thaler: The Only EKG Book You'll Ever Need, Wolters Kluver, 2019 Trappe, Hans-Joachim, Schuster Hans-Peter: EKG-Kurs für Isabel, Thieme, 2013 Simon András–Tornóci László: EKG érthetően (munkafüzet), Semmelweis Kiadó, 2015 Simon András–Tornóci László: Understanding ECG (workbook), Semmelweis Kiadó, 2016
Signature of the habilitated instructor (course leader) who announced the subject:
Signature of the Director of the Managing Institute:
Hand-in date: June 3, 2021

Opinion of the competent committee(s):
Comments of the Dean's Office:
Dean's signature: