

INTRODUCTION TO MEDICAL INFORMATICS

Name of the educational organizational unit: SE EKK

Type of the subject: 1 practice / week

code: AOVINF244_1A

credit value: 1

Name of the lecturer of the subject:

Dr. Miklós Szócska

Teachers:

Dr. Tamás Iváncsy (PhD, lecturer)

Dr. Ádám Zoltán Tamus (PhD, associate professor)

Tamás Tóth (assistant lecturer)

Zoltán Sándor (PhD, senior lecturer)

Zoltán Tóth (PhD, senior lecturer)

Administrator: Ms Petra Rác

Term: spring

The exercise of the subject in the realization of the aim of the education:

To introduce the students to the medical application of informatics, the characteristics of modern, integrated information systems with respect to quantitative aspects and to decision demands of the modern sciences. The medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes from the different engineering, management and informatics procedures.

Select the desired course in Neptun when registering to the subject! Changing topics/groups is possible only according to the rules of the registration in Neptun! You must attend the course you have selected in Neptun!

OPTIONAL courses:

I. SCIENTIFIC COMMUNICATION COURSE

The course gives an introduction to the paper based and oral publications and presentations. The students have to find a medical problem (a topic) to work out during the course.

1. **Creation and retrieval of medical knowledge. Finding and studying scientific publications via the electronic library of the university.**
2. **Structure of a scientific publication. The importance and meaning of the sections of the paper. Structure of an oral presentation.**
3. **Scientific publication in practice: finding and evaluating information and creating paper and presentation on the selected topic.**

II. DATABASES COURSE

The course gives an introduction to structuring and retrieving data using databases. The students perform practical examples of data management and query using a current software solution.

1. **Introduction to database theory and data modelling principles (the application, logical and physical models, basic concepts and objects).**
2. **Data handling in practice: planning a relational database, managing tables and fields**
3. **Information retrieval from databases: the role and structure of queries, performing basic queries**
4. **Data management via user interfaces – basic concepts and principles**

III. BIOMEDICAL SIGNAL PROCESSING COURSE

The students learn about the basics of biomedical signals, their acquisition, digital storage and processing. They perform practical analysis of selected signal examples.

1. **Introduction to biomedical signal processing, objectives of signal analysis, Components of human-instrument system**
2. **Examples of biomedical signals (electrical and mechanical signals), and transducers.**
3. **The basics of signal processing, the digitalizing (sampling, Shannon-theory, quantization).**
4. **Analysis of a phonocardiogram (heart sound, calculation of the pulse, murmurs). Spectral analysis.**
5. **Analysis of ECG signal. Basics of removing noise and artefacts.**

IV. PRESENTATION TOOLS

The course provides an overview of visual representation of medical information for various audience. The students learn the use of several related tools, and work up a selected topic.

1. **Introduction to presentation techniques: How to make a good presentation? – technical and non-technical skills, best practices**
2. **Types of medical information, online information sources**
3. **Visual representation of information: word cloud, infographic etc.**

4. Online tools for creating and sharing presentations

Requirements of participation of the lessons and the possibility of substitution of the absence:

According to rules of the Studies and Exam Code. Attendance on at least 3 of the 4 practices is mandatory.

The mode of the certificate in case of absence from the lessons:

According to rules of the Studies and Exam Code. No certificate accepted.

The requirements of signature at the end of the term (including also the number and the type of the students' exercises which are solved individual by them)

Attendance on at least 3 of the 4 practices is mandatory

The mode of acquisition of the mark:

Practical exercise

List of lecture notes, course books, study-aids and literature which can be used to acquisition of the syllabus:

The educational materials are available at <http://dei-cloud.semmelweis.hu>

Username and password is announced at the first practice.