

## REQUIREMENTS

**Semmelweis University, Faculty of General Medicine – single, long-cycle medical training programme**

**Name of the host institution (and any contributing institutions):**

Institute of Digital Health Sciences of the Faculty of Health and Public Services of Semmelweis University

**Name of the subject:** INTRODUCTION TO MEDICAL INFORMATICS

**in English:** Introduction to Medical Informatics

**in German:** Medizinische Informatik

**Credit value:** 1

**Semester:** Spring semester

*(as defined in the curriculum)*

<b>Total number of classes per week:</b> 1	<b>lectures:</b> –	<b>practical lessons:</b> 1	<b>seminars:</b> –
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**Type of subject:** compulsory      optional      elective

(PLEASE UNDERLINE AS APPLICABLE)

**Academic year:** 2022/2023

**Language of instruction, for optional or elective subjects:** English

**Course code:** AOVINF244\_1A

*(In the case of a new subject, this cell is filled in by the Dean's Office, following approval)*

**Course coordinator:** Dr. Miklós Szócska

**Place of work, phone number:** titkarsag.dei@semmelweis-univ.hu

**Position:** professor, PhD

**Date and number of habilitation:**

**Objectives of the course and its place in the medical curriculum:**

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. Medical informatics leans on methods of mathematics, statistics and computer sciences and it also includes different engineering, management and informatics procedures.

**Place of instruction (address of lecture hall or seminar room etc.):**

Informatics laboratories in the NET building

**Competencies acquired through the completion of the course:**

- The course introduces to paper-based and oral publications and presentations. The students have to find a medical problem (a topic) to work out during the course.
- The course introduces structuring and retrieving data using databases. The students perform practical examples of data management and query using a current software solution.

- The students learn about the basics of biomedical signals, their acquisition, digital storage and processing. They perform practical analysis of selected signal examples.
- The course provides an overview of the visual representation of medical information for various audiences. The students learn the use of several related tools and work up a selected topic.

**Prerequisites for course registration and completion:**

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**Conditions for concurrent course registration and permission thereof in the case of a multi-semester subject:**

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**Student headcount conditions for starting the course (minimum, maximum) and method of student selection:**

Min. 8 and max. 20 students per group

**Detailed course description:**

*(Theoretical and practical instruction must be broken down into lessons (weeks), numbered separately. Please provide the names of lecturers in both types of lessons, indicating guest lecturers. This information is not to be attached separately. CVs of guest lecturers, however, must be attached.)*

**I. SCIENTIFIC COMMUNICATION 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 a paper and a presentation on the selected topic.

**II. DATABASES COURSE**

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**

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 COURSE**

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

**Teachers:**

Dr. Tamás Iváncsy (PhD, lecturer)  
 Dr. Ádám Zoltán Tamus (PhD, associate professor)  
 Dr. Tamás Tóth (PhD, senior lecturer)



Dr. Zoltán Sándor (PhD, senior lecturer)  
Dr. Zoltán Tóth (PhD, senior lecturer)

**Related subjects due to interdisciplinary fields (both compulsory and elective) and potential overlaps between subjects:**

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**Attendance requirements; conditions under which students can make up for absences and the method of absence justification:**

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

**Form of assessment in the study period:**

(including the number, topics and scheduling of oral and written tests, their share in the overall evaluation, make-up tests and improvement tests)

Attendance on at least 3 of the 4 practices is mandatory

**Number and type of assignments for individual work and the deadline for submission:**

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**Requirements to obtain the teacher's signature:**

Attendance on at least 3 of the 4 practices is mandatory

**Type of assessment:** (comprehensive examination, end-term examination, term-grade, term-grade on a three-grade rating scale, coursework project, no examination)

practical grade

**Examination requirements:**

(list of examination topics, subject areas of tests / examinations, lists of mandatory parameters, figures, concepts and calculations, practical skills and the optional topics for exam-equivalent coursework projects, their criteria of completion and assessment)

**Method and type of grading:**

(Share of theoretical and practical examinations in the overall evaluation. Inclusion of the results of the end-of-term assessment. Possibilities of and conditions for offered grades.)

practical grade

**List of course books, textbooks, study aids and literature facilitating the acquisition of knowledge to complete the course and included in the assessment, precisely indicating which requirement each item is related to (e.g., topic by topic) as well as a list of important technical and other applicable study aids:**

The educational materials are available in the Moodle system

**Signature of habilitated instructor (course coordinator) announcing the course:**

**Signature of the director of the host institution:**

Dr. Hermann Péter  
oktatási rektorhelyettes

**Date of submission: 2023.07.31.**

