Sveučilište u Rijeci • Fakultet dentalne medicine
University of Rijeka • Faculty of Dental Medicine

Course: Medical Informatics
Course Coordinator: Lidija Bilić-Zulle, Full Prof
Department: Medical Informatics
Study program: Integrated Undergraduate and Graduate University Study of Dental Medicine
Study year: 2nd
Academic year 2021/2022

SYLLABUS

Course description (a brief description of the course, general instructions, where and in what form the lessons are organized, necessary equipment, instructions for attendance and preparation for classes, student obligations, etc.):

The course "Medical Informatics" is attended during the 1st turn of the 2nd year of study of dental medicine, with a total duration of 20 school hours. Students are in 1 group for all classes. Teaching is held in online form. If students do not have the appropriate equipment at home, they can use the computer classroom at the Medical Faculty in Rijeka. The student computer classroom is equipped with fifteen personal computers, and the practical cover work with programs running in the Windows 10 operating environment. All computers are networked and connected to the Internet and equipped with headphones. During the practical each student is working independently on the computer.

Course content:
Basic IT concepts, medical data management, theory and information processing and communication. Application of medical informatics procedures. Importance, organization and use of medical language, coding, and classification. The structure and importance of electronic health records. Computer analysis of biological signals and medical images. The construction and use of medical databases and databases with biomedical scientific papers. Strategies of Management and Classification of Medical Knowledge. Evidence-Based Medicine. Health Information Systems in Primary and Hospital Health Care. Clinical decision support system and their use in treating patients and in acquiring, processing, and displaying medical knowledge. The role and role of medical models, modeling, and simulations. Safety and confidentiality of medical data.

Assessment method:
Students are evaluated during each class at each seminar and practical unit. During the seminars, each student is assessed on the basis content from the textbooks and selected online content. Students prepare final seminar work on the given topics and present them in the lesson. The content, scope, and knowledge of the topic of the final seminar, the presentation and the quality of the presentation are evaluated. The total number of score points for seminars is 30 points. Practicals are organized in 5 units. Accuracy and quality of the practical assignment are evaluated on each practical.
A maximum of 40 score points is achieved on the practicals.

The maximum number of score points achieved in online class is 70, and maximum number of score points achieved in final exam is 30.

	Topics	Credits
S1	Introductory seminar	-
S2	Structure of medical data	5
S3	Basic concepts and medical classifications	5
S4/5	Application of information technology in dental medicine, student presentations	15
S6	Concluding Considerations on Medical Informatics and Information Security	5
P1	Electronic health record in primary care	5
P2	Medical content and network communication	10
P3	Evidence-based medical decision making	10
P4	Hospital Information System (HIS)	5
P5	Management and display of medical data - final exercise	10
	Total score:	70

Assigned reading:

- Coiera E. Guide to health informatics. Boca Raton: Taylor & Francis Group, (3rd edition), 2015.

Optional/additional reading:

- Shortlife EH, Perreault LE. Medical Informatics. New York - Tokyo: Springer, (2nd edition), 2001.
- van Bemmel JH, Musen MA.Handbook of Medical informatics. New York - Tokyo: Springer,1997.
- Degoulet P, Fieschi M. Introduction to clinical informatics. New York-Tokyo: Springer, 1997.
- Warner HR, Sorenson DK, Bouhaddou O. Knowledge engineering in health informatics. New York-Tokyo: Springer, 1997.

COURSE TEACHING PLAN:

The list of lectures (with topics and descriptions):

The list of seminars with descriptions:

S1 Introduction to Medical Informatics
Seminar 1 is an introductory course seminar. The students will receive basic information about the course, schedule, teaching and assessment. They are acquainted with the definition and emergence of informatics as a scientific discipline and medical informatics as its derivative. Students are familiarized with the structure and scope of the topics covered by the course.

S2 Structure of medical data
Learning Outcomes: Understand the basic concepts that define the structure of dental medical data. Explain the purpose and use of non-medical data in dental medicine. Describe the basics of communication in computerized systems. Explain the structure and use of basic medical documents. Identify and list the basic standards and quality system in health care.

S3 Basic Terms and Medical Classification
Learning outcomes: Describe the meaning and application of basic IT concepts (information, knowledge, system, medical language, information theory, overwhelming, cybernetics). Classify and describe the most common medical classification (MKB-10, MKB-O, SNOMED, ATK, MeSH, DTS).

S4/5 Application of information technology in medicine
Learning outcomes: Apply IT technology in medicine, especially in the field of collecting and processing biomedical signals, social network in medicine, modeling and simulation, telehealth, and mobile health.

S6 Final Considerations on Medical Informatics and Information Security
The seminar is interactive discussion, students and teacher are gathered at the end of the course, guidance for further learning and development in the application of information technology in medicine are provided.

The list of practicals with descriptions:

Practicals from the course Medical Informatics will be held in online mode. Students will acquire knowledge of medical documents management, medical content searches, and presentation of data and hospital information systems.

P1 Electronic health record in primary care
Learning Outcomes: Descibe support program for electronic health records management. Simple functions in application network support for family medicine practitioners will be tought. Students will be able to create health records (anamnesis, referral, prescription, medical report) and browse the electronic health records (history of the disease, prescriptions, referrals, cases, diagnostic-therapeutic procedures (DTP).

P2 Medical Content and Network Communication
Learning Outcomes: Explain basic concepts of online databases and the organization of scientific literature in medicine, independently search the Medical Subject Headings (MeSH) and the Medline bibliographic database through PubMed service (https://www.ncbi.nlm.nih.gov/pubmed/), and other online sources of trusted medical contents will be introduced.

P3 Medical decision-making based on (scientific) evidence

Learning Outcomes: Describe evidence-based medicine and medical decision-making. Analyze UptoDate database - clinical decision support resource associated with improved outcomes. They will learn to set up clinical inquiries via online service under the PICO scheme (P – patient, problem or population, I – intervention, C – comparison, control or comparator, O – outcome).

P4 Hospital Information System (HIS)
Learning Outcomes: Explain the basic functionalities of HIS (medical, financial and business processes management), describe and explain application and independently view patient guidance through HIS (electronic health records management, electronic ordering, electronic therapy) and e with the possibilities of integration with external applications (laboratory and radiological information systems).

P5 Managing and displaying medical data - final practical
Learning Outcomes: self-search Medline database using PubMed (using Thesaurus MeSH), and UpToDate database and compile results.

Students' obligations:

- regular attendance

- project work, presentation of seminar work

Final exam

ECTS Grading System:

Student grading will be conducted according to the current Ordinance on Studies of the University of Rijeka. Student work will be assessed and graded during the course and on the final exam. During the course, a student may achieve up to 70% of the grade, while at the final exam up to 30% of the grade. Students are graded according to the ECTS credit (A-E) and numeric (1-5) system. Students are obliged to attend all forms of teaching during the course and may be absent from 30% of the classes. If a student is absent for more than 30% of the classes, he will not receive a signature and will have to re-enter the course.

I. Assessment and grading in class
The student must collect at least 35 credits in order to gain access to the final exam. A student who collects less than 35 credits during class is classified as E (unsuccessful) meaning that he did not meet the criteria and must re-enroll the course.
The final exam is a written (online) test.
The marks awarded on the final exam are summed up with the points earned in the class and the sum represents the total score.

Grade	Credits
A (excellent, 5)	90-100
B (very good, 4)	75-89,99
C (good, 3)	60-74,99
D (sufficient, 2)	50-59,99
F (unsufficient, 1)	0-49,99

Other important information regarding to the course:

COURSE SCHEDULE (for academic year 2021/22)

Date	Lectures (time and place)	Seminars (time and place)	Practicals (time and place)	Instructor
10.11.2021.		S1 (10:00 – 10:45) webinar Merlin		Lidija Bilić-Zulle, Professor
11.11.2021.			P1 online/Merlin	Lidija Bilić-Zulle, Professor
12.11.2021.			P2 online/Merlin	Martina Mavrinac, Asst Prof
12.11.2021.		S2, S3 online/Merlin		Lidija Bilić-Zulle, Professor
15.11.2021.			P3 online/Merlin	Ksenija Bazdaric, Asst Prof
15.11.2021.			P4 online/Merlin	Ksenija Bazdaric, Asst Prof
16.11.2021.		S4/5 online/Merlin		Lidija Bilić-Zulle, Professor
17.11.2021.		S6 online/Merlin	P5 online/Merlin	Lidija Bilić-Zulle, Professor

List of lectures and seminars:

	SEMINARS (Topics)	Teaching hours	Location/Lecture room
S1	Introduction to Medical Informatics	1	Online/Merlin
S2	Structure of medical data	2	Online/Merlin
S3	Basic Terms and Medical Classification	2	Online/Merlin
S4/5	Application of information technology in dental medicine	4	Online/Merlin
S6	Final Considerations on Medical Informatics and Information Security	1	Online/Merlin
	TOTAL TEACHING HOURS	**10**	

	PRACTICALS (Topics)	Teaching hours	Location/Lecture room
P1	Electronic health record in primary dental care	2	Online/Merlin
P2	Medical Content and Network Communication	2	Online/Merlin
P3	Medical decision-making based on (scientific) evidence	2	Online/Merlin
P4	Hospital Information System (HIS)	2	Online/Merlin
P5	Managing and displaying medical data - final practical	2	Online/Merlin
	TOTAL TEACHING HOURS	**10**	

	FINAL EXAM DATES
1.	19.11.2021.
2.	3.12.2021.
3.	11.01.2022.