

<b>BIOMEDICAL INFORMATICS AND LABORATORY DATA PROCESSING</b>	
<b>GENERAL INFORMATIONS</b>	
Course coordinator	Assoc. Prof. Krešimir Šolić, MEng, PhD
Assistant/Associate	Asst. Prof. Mirko Pešić, MEcon, PhD
Study Programme	Undergraduate University Study of Medical Laboratory Diagnostics
Status of the course	mandatory
Year of study, semester	3 <sup>rd</sup> year, 6 <sup>th</sup> semester
ECTS	<b>2</b>
Workload (hours)	Lectures: 5; Seminars: 5; Practicals: 20
Expected number of students	30-35
<b>COURSE DESCRIPTION</b>	
<b>Course objectives</b>	
<p>To get students familiar with the historical development and the current state of health computerization in the Republic of Croatia, the concept of e-health, the health information system, health data, and basic quality indicators and norms in the quality control of work in the laboratory. To explain students about electronic file formats for storing different types of data, about health data and information. To develop skills for working with data in electronic form (organization, control, change of record format, data exchange between different programs, data protection). To acquaint students with the structure, functioning and role of the laboratory information system (LIS).</p>	
<b>Enrolment requirements and entry competencies</b>	
None required.	
<b>Learning outcomes at the Programme level</b>	
<b>2.3, 2.6, 2.7</b>	
<b>Learning outcomes at the course level</b>	
<p>After completing lectures, seminars and exercises, independent study and passing the exam, students will be able to:</p> <ol style="list-style-type: none"> <li>1. explain the basics of the structure and functioning of information systems in the health care of the Republic of Croatia with a special focus on the laboratory information system (LIS).</li> <li>2. explain the importance of monitoring the quality of work in the laboratory and the role of norms in quality control of work in the laboratory.</li> <li>3. correctly interpret health data and information.</li> <li>4. organize data in electronic form, describe them and carry out control.</li> <li>5. adjust the data record format for use in a given program (advanced word processing).</li> <li>6. create interactive tables, graphic data reports and a high-quality digital presentation.</li> <li>7. self-assess the riskiness of your behavior in terms of data protection and privacy protection.</li> </ol>	
<b>Course content</b>	
<p><b>Lectures:</b> L1. Definition of the area, basic terms, historical development. L2. Organization and structure of data in medicine and healthcare, databases and data preparation. L3. Standardization in biomedical and health informatics. L4. Information systems in healthcare (LIS as part of integrated IS in the institution and at the national level). L5. Medical health record, electronic storage and data protection.</p> <p><b>Seminars:</b> S1. Privacy protection in healthcare systems. S2. Laboratory information systems. S3. Presentation of student seminars and directed discussion.</p> <p><b>Exercises:</b> E1. Preparation of data for processing (classification, collection, encryption, conversion into electronic form). E2. Advanced functions of the program for formatting the document.</p>	

E3. Advanced use of a spreadsheet program. E4. Creating a quality digital presentation. E5. Data processing and obtaining information (organization, control, change of record format, data exchange between different programs, data protection).

#### Mode of teaching

Lectures, Problem solving seminars, Laboratory exercises

#### Student obligations

Attendance at all forms of teaching is mandatory. A student can excuse himself from not more than 30% of classes.

#### Monitoring student work (*Connectivity of learning outcomes, teaching methods and grading*)

Teaching activity	ECTS	Learning outcome	Student activity	Assessment methods	Grade points	
					Min.	Max.
Attending classes	0.2	1 - 7	Class attendance	Attendance record	5	10
Seminars	0.6	5 - 7	Preparation of seminars preparation and presentation of reports	Seminar presentation as partial exam	15	30
Final exam	1.2	1 - 4	Studying for the final exam	Written exam	30	60
<b>Total</b>	<b>2</b>				<b>50</b>	<b>100</b>

#### Calculation of final grade:

Students who have obtained a minimum of 30 points on the final exam are joined by the grade points obtained during classes. Grading is done by absolute distribution, i.e. based on the final achievement and is compared with the numerical system as follows:

A - excellent (5): 90-100 grade points; B - very good (4): 80-89.99 rating points; C - good (3): 70-79.99 grade points; D - sufficient (2): 50-69.99 grade points.

In the event that the student does not pass the exam at the end of the tour and takes the regular exam, only the Written exam is scored, where instead of grade points, the percentage of correct answers is looked at according to the same distribution:

A - excellent (5): 90-100%; B - very good (4): 80-89.99%; C - good (3): 70-79.99%; D - sufficient (2): 50-69.99 %.

#### Required reading (available in the library and through other media)

Title	Number of copies in the library	Availability through other media
Kern J, Petrovečki M, editors. Medicinska informatika. Zagreb: Medicinska Naklada; 2009.	12	
Velki T, Šolić K, editors. Izazovi digitalnog svijeta, Fakultet za odgojne i obrazovne znanosti; 2019.		University's digital repository
Teaching materials of the course leader		Merlin e-learning system

#### Additional reading

Štefanović, M, editor. Laboratorijska informatika s odabranim područjima medicinske informatike, Hrvatska komora medicinskih biokemičara; 2017.

Coiera E. Guide to Health Informatics. London: Arnold; 2003.  
Shortliffe E, Cimino JJ, urednici. Biomedical Informatics: Computer Applications in Health Care and Biomedicine. New York: Springer; 2006.

**Course evaluation procedures**

Anonymous, quantitative, standardised student survey on the course and the teacher's work implemented by the Quality improvement office of the Faculty of Medicine Osijek.

**Note /Other**

E-learning is not included in the norm of course hours, but is used in teaching and contains teaching materials of the course leader, links to various pages, video and audio materials available on the Internet.