Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
RUDN University

Institute of Medicine
educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

Medical Informatics
course title

Recommended by the Didactic Council for the Education Field of:

31.05.01 General Medicine
field of studies / speciality code and title

The course instruction is implemented within the professional education programme of higher education:

General Medicine
higher education programme profile/specialisation title

2023-2024

1. COURSE GOAL(s)

The goal of the course "Medical Informatics" is to equip students with the basic and topical knowledge of modern computer and information technologies in general medicine, health care and dentistry.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) "Medical Informatics" is aimed at the development of the following competences /competences in part: **(GPC)-10 (GPC-10.1, GPC-10.2, GPC-10.3.**

Table 2.1. List of competences that students acquire through the course study

Competence code	**Competence descriptor**	**Competence formation indicators** (within this course)
GPC-10	Able to solve standard tasks of professional activity using information, bibliographic resources, biomedical terminology, information and communication technologies, taking into account the basic requirements of information security	GPC-10.1 Be able to use modern information and communication tools and technologies in professional activities
		GPC-10.2 Be able to follow the rules of information security in professional activities
		GPC-10.3 Able to use information and communication technologies, including application software for general and special purposes in solving problems of professional activity

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective* component of (B1) block of the higher educational programme curriculum.

* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	**Competence descriptor**	**Previous courses/modules***	**Subsequent courses/modules***
GPC-10	Able to solve standard tasks of professional activity using information, bibliographic resources, biomedical terminology, information and communication technologies, taking into account the basic	Biology Mathematics	Biostatistics Public health and health care Health care economics Telemedicine

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
	requirements of information security		

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Medical Informatics" is 3 credits (108 academic hours)

*Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)**

Type of academic activities		Total academic hours	Semesters/training modules			
			2			
Contact academic hours		**68**	**68**			
including:						
Lectures (LC)		34	34			
Lab work (LW)		34	34			
Seminars (workshops/tutorials) (S)						
Self-studies		40	40			
Evaluation and assessment (exam/passing/failing grade)						
Course workload	academic hours	**108**	**108**			
	credits	**3**	**3**			

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1 Introduction to Medical Informatics	**Topic 1.1.** Basic concepts of medical informatics	**LC**
	Topic 1.2. Medical Informatics Hardware	**LC, S-s**
	Topic 1.2. Software tools for the implementation of information processes	**LC, S-s**
Module 2 Technology for processing medical data using word processors	**Topic 2.1.** Introduction to word processors Microsoft Word, Open Office Writer	**LC**
	Topic 2.2. Document formatting, special functions.	**LW, S-s**
	Topic 2.3. Word processor: tables	**LW, S-s**

Course module title	Course module contents (topics)	Academic activities types
Module 3 Medical data processing technologies using spreadsheets	**Topic 3.1.** Introduction to spreadsheet processors Microsoft Excel, OpenOffice Calc	**LC**
	Topic 3.2. Using math functions in Microsoft Excel, Open Office Calc	**LW, S-s**
	Topic 3.3. Medical data visualization in a spreadsheet	**LW, S-s**
Module 4 Technologies for storing and processing medical data using Database Management Systems	**Topic 4.1.** Introduction to data base Microsoft Access and OpenOffice Base	**LC**
	Topic 4.2. Working in a DBMS with medical data**.**	**LW, S-s**
Module 5 Computer networks in medicine	**Topic 5.1.** Network technologies	**LC**
	Topic 5.2. Internal electronic resources of RUDN University	**LC, S-s**
Module 6 Medical Information Systems (MIS)	**Topic 6.1.** Introduction to MIS	**LC**
	Topic 6.2. Information model of the treatment and diagnostic process	**LC, S-s**
Module 7 Application of mathematical models (methods) to describe biomedical processes	**Topic 7.1.** Application of probability theory for processing the results of biomedical experiments	**LC, LW, S-s**
	Topic 7.2. Basic of statistical analysis of biomedical data	**LC, S-s**

* LC- Lectures; LW -Lab work, S- seminars.

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lecture	A lecture hall for lecture-type classes, equipped with a set of specialised furniture; board (screen) and technical means of multimedia presentations.	

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Computer Lab	A classroom for conducting classes, group and individual consultations, current and mid-term assessment, equipped with personal computers (in the amount of ____pcs), a board (screen) and technical means of multimedia presentations.	Set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector TOSHIBA X200, laptop ASUS F9E Core 2 DUO T5750, Monoblocks Acer Aspire C24-865, Lenovo V30a-24IML All-In-One 23,8", Acer Z3-615. projection screen, stable wireless Internet connection. Software: Microsoft Windows, MS Office / Office 365, MS Teams, Chrome (latest stable release)
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment.	

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

- Protsenko V.D., Lukyanova E.A., Lyapunova T.V., Shimkevich EM. MEDICAL INFORMATICS. Laboratory workshop: Study guide. - M., 2018.
- Medical informatics: textbook / T.V. Zarubina [and others]; under total. ed. T.V. Zarubina, B.A. Kobrinsky. - M .: GEOTAR-Media, 2016 .-- 512 p.
- Lukyanova E.A., Lyapunova T.V., Shimkevich E.M. [and etc.]. Medical Informatics. Laboratory Practice. M .: RUDN. 2020, 32 p.
- Course: Medical Informatics (http://esystem.pfur.ru/course/view.php?id=4974)

Additional readings:

- Medical informatics: textbook / V. P. Omelchenko, A. A. Demidova. - M .: GEOTAR-Media, 2016 .-- 528 p.

- Information biology: textbook of institutions / M.A. Kamenskaya - M: Academy Publishing Center, 2009.

Internet-(based) sources:

1. EBS of RUDN University and third-party EBS to which students have access on the basis of concluded agreements:

- RUDN University Library System http://lib.rudn.ru/MegaPro/Web
- EBS "University Library Online" http://www.biblioclub.ru
- EBS “Yurayt” http://www.biblio-online.ru
- EBS "Student Consultant" www.studentlibrary.ru
- EBS "Lan" http://e.lanbook.com/
- TUIS: http://esystem.rudn.ru/

2. Database of medical and biological publications:

- - Yandex search engine https://www.yandex.ru/
- Google search engine https://www.google.ru/
- SCOPUS abstract database http://www.elsevierscience.ru/products/scopus/

*Training toolkit for self- studies to master the course *:*

The set of lectures on the course “Medical Informatics”

8. ASSESSMENT TOOLKIT AND GRADING SYSTEM* FOR EVALUATION OF STUDENTS’ COMPETENCES LEVEL UPON COURSE COMPLETION

The assessment toolkit and the grading system* to evaluate the competences formation level (GPC-10) upon the course study completion are specified in the Appendix to the course syllabus.

* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

DEVELOPERS:

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