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**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

2022-2023

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			
<i>Contact academic hours</i>	68	68			
including:					
Lectures (LC)	34	34			
Lab work (LW)	34	34			
Seminars (workshops/tutorials) (S)					
<i>Self-studies</i>	40	40			
<i>Evaluation and assessment (exam/passing/failing grade)</i>					
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-s- self-study.

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:

Senior Lecturer,
Department of Medical Informatics
and telemedicine

E.M. Shimkevich

position, department

signature

name and surname

Associate Professor,
Department of Medical Informatics
and telemedicine

T.V. Lyapunova

position, department	signature	name and surname
Associate Professor, Department of Medical Informatics and telemedicine		E.A. Lukyanova

position, department	signature	name and surname
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HEAD OF EDUCATIONAL DEPARTMENT:
of Medical Informatics and

telemedicine

name of department	signature	name and surname
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V.L. Stolyar

HEAD
OF HIGHER EDUCATION PROGRAMME:

First Deputy Director of MI for

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position, department	signature	name and surname
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Iv.V.Radysh