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

**Institute of Medicine**

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

**COURSE SYLLABUS**

**MEDICAL INFORMATICS**

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**Recommended by the Didactic Council for the Education Field of:**

**31.05.03 Dentistry**

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

**Dentistry**

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**2022-2023**

## 1. COURSE GOAL(s)

The goal of the course “Medical Informatics” is to equip students with the basic 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: General Professional Competences- (GPC)-13 (GPC-13.1, GPC-13.2).

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

Competence code	Competence descriptor	Competence formation indicators (within this course)
GPC-13	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-13.1 Be able to use modern information and communication tools and technologies in professional activities
		GPC-13.2 Be able to follow the rules of information security in professional activities

## 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*

Code	Competence	Previous Disciplines (Modules)*	Subsequent Disciplines (Modules)*
GPC-13	Able to solve standard tasks of professional activity using information,		Public health and health care Telemedicine

Code	Competence	Previous Disciplines (Modules)*	Subsequent Disciplines (Modules)*
	bibliographic resources, biomedical terminology, information and communication technologies, taking into account the basic requirements of information security		

#### 4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course 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			
		1			
<i>Contact academic hours</i>	51	51			
including:					
Lectures (LC)	72	18			
Lab work (LW)	51	51			
Seminars (workshops/tutorials) (S)	144	36			
<i>Self-studies</i>	57	57			
<i>Evaluation and assessment (exam/passing/failing grade)</i>					
<b>Course workload</b>	academic hours_	<b>108</b>	<b>108</b>		
	credits	<b>3</b>	<b>3</b>		

#### 5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
<b>Module 1</b> Introduction to Medical Informatics	<b>Topic 1.1.</b> Basic concepts of medical informatics	LC, LW, S
	<b>Topic 1.2.</b> Medical Informatics Hardware	LC, LW, S
	<b>Topic 1.2.</b> Software tools for the implementation of information processes	LC, LW, S
<b>Module 2</b>	<b>Topic 2.1.</b> Introduction to word processors	LC, LW, S

Course module title	Course module contents (topics)	Academic activities types
Technology for processing medical data using word processors	Microsoft Word, Open Office Writer	
	<b>Topic 2.2.</b> Document formatting, special functions.	LC, LW, S
	<b>Topic 2.3.</b> Word processor: tables	LC, LW, S
<b>Module 3</b> Medical data processing technologies using spreadsheets	<b>Topic 3.1.</b> Introduction to spreadsheet processors Microsoft Excel, OpenOffice Calc	LC, LW, S
	<b>Topic 3.2.</b> Using math functions in Microsoft Excel, Open Office Calc	LC, LW, S
	<b>Topic 3.3.</b> Medical data visualization in a spreadsheet	LC, LW, S
<b>Module 4</b> Technologies for storing and processing medical data using Database Management Systems	<b>Topic 4.1.</b> Introduction to data base Microsoft Access and OpenOffice Base	LC, LW, S
	<b>Topic 4.2.</b> Working in a DBMS with medical data.	LC, LW, S
<b>Module 5</b> Computer networks in medicine	<b>Topic 5.1.</b> Network technologies	LC, LW, S
	<b>Topic 5.2.</b> Internal electronic resources of RUDN University	LC, LW, S
<b>Module 6</b> Medical Information Systems (MIS)	<b>Topic 6.1.</b> Introduction to MIS	LC, LW, S
	<b>Topic 6.2.</b> Information model of the treatment and diagnostic process	LC, LW, S

\* - to be filled in only for **full**-time training: 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)
Computer Lab	Computer Lab Classroom can be used for seminars, lab works and consulting. Equipped with a set of specialized furniture, computers with access to electronic information and educational environment (EIEE)	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)

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Self-studies	Classroom for self-study (can be used for seminars and consulting. Equipped with a set of specialized furniture, computers with access to electronic information and educational environment (EIEE))	Set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector Epson EB-965H, 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 laptop, projection screen, stable wireless Internet connection. Software: Microsoft Windows, MS Office / Office 365, MS Teams, Chrome (latest stable release)

## 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 (Dentistry)  
(<http://esystem.pfur.ru/course/view.php?id=9961>)

### 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](http://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* \*:

1. The set of lectures on the course "Medical Informatics"
2. The laboratory workshop (if any).on the course "Medical Informatics"
3. The guidelines for writing a course paper / project (if any) on the course "Medical Informatics".
4. ....

\* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

## **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-13.1, GPC-13.2) 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

position, department

signature

E.M. Shimkevich

name and surname

Associate Professor,

Department of Medical  
Informatics and telemedicine

position, department

signature

T.V. Lyapunova

name and surname

Associate Professor,

Department of Medical  
Informatics and telemedicine

position, department

signature

E.A. Lukyanova

name and surname

### **HEAD OF EDUCATIONAL DEPARTMENT:**

of Medical Informatics and  
telemedicine

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name of department

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signature

V.L. Stolyar

---

name and surname

**HEAD  
OF HIGHER EDUCATION PROGRAMME:**

First Deputy Director of MI  
for Academic Affairs

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position, department

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signature

Iv.V.Radysch

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name and surname