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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**

(Name of a discipline/module)

#### **Recommended MSSN For directions training/specialty:**

#### **31.05.01 GENERAL MEDICINE**

(code and name of the area of training/specialty)

**Mastering the discipline is carried out within the framework of the implementation of the main professional educational program of higher education (MP HE):**

#### **GENERAL MEDICINE**

(Name (profile/specialization) MP HE)

## 1. COURSE GOAL(s)

The discipline “Medical Informatics” is included in the specialty program “General Medicine” in the direction of 31.05.01 “General Medicine” and is studied in the 2nd semester of the 1st year. The discipline is implemented by the Department of Medical Informatics and Telemedicine. The discipline consists of 6 sections and 15 topics and is aimed at studying the foundations of modern information technologies, with trends in their development. The purpose of mastering the discipline is to teach students the basics of medical informatics, methods of informatization of medical practice, principles of constructing information models, analyzing the results obtained, and the use of modern information technologies in professional activities.

## 2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

Mastering the discipline “Medical informatics” is aimed at developing the following competencies (parts of competencies) in students:

*Table 2.1. List of competencies formed in students when mastering the discipline (results of mastering the discipline)*

<b>Cipher</b>	<b>Competence</b>	<b>Indicators achievements competencies</b> (within the given disciplines)
UK -1	Capable to critically analyze problem situations based on a systematic approach and develop an action strategy.	UK-1.1 Analyzes scientific and technical literature and regulatory documentation of medical organizations; UK-1.2 Critically evaluates the reliability of information sources, works with conflicting information from different sources;
OPK- 10	Capable to solve standard problems of professional activity using information, bibliographic resources, medical biological terminology, information, and communication technologies, considering the basic requirements of information security.	OPC-10.1 Able to use modern information and communication tools and technologies in professional activities; OPC-10.2 Able to comply with information security rules in professional activities; OPK-10.3 Able to use information and communication technologies, including general and special-purpose application software when solving professional problems;

## 3. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF MP HE

The discipline “Medical Informatics” belongs to the mandatory part of block 1 “Disciplines (modules)” of the higher education program.

As part of the educational program of higher education, students also master other disciplines and/or practices that contribute to achieving the planned results of mastering the discipline “Medical Informatics”.

*Table 3.1. List of components of EP HE that contribute to achieving the planned results of mastering the discipline*

<b>Cipher</b>	<b>Name of competency</b>	<b>Previous disciplines/modules, practices*</b>	<b>Subsequent disciplines/modules, practices*</b>
UK -1	Able to critically analyze problem situations based on a systematic approach and develop	Philosophy; Mathematics;	Hygiene; Public health and healthcare, health economics; Epidemiology;

<b>Cipher</b>	<b>Name of competency</b>	<b>Previous disciplines/modules, practices*</b>	<b>Subsequent disciplines/modules, practices*</b>
	an action strategy	Chemistry; Physics;	Propaedeutics internal diseases; Evidence-based medicine; History of Medicine; Clinical pharmacology; <i>Economy**</i> ;
OPK- 10	Able to solve standard problems of professional activity using information, bibliographic resources, medical and biological terminology, information, and communication technologies, considering the basic requirements of information security.		Anesthesiology, resuscitation, intensive care; Biostatistics; Telemedicine; Modern methods medical statistics; Data analysis and visualization; Evidence-based medicine; Fundamentals of research work; Technologies and practice of programming in Python for humanities;

\* - to be filled out in accordance with the competency matrix and MP HE

\*\* - elective disciplines/practices

#### 4. SCOPE OF DISCIPLINE AND TYPES OF STUDY WORK

General labor intensity disciplines "Medical Informatics" amounts to "2" credit units.

Table 4.1. Types of academic work by periods of mastering the educational program of higher education for full-time study.

Type of educational work	TOTAL, ac.h.		Semester(s)
			2
<i>Contact Job, ac.h.</i>	51		51
Lectures (LC)	0		0
Laboratory work (LW)	51		51
Practical/seminar classes (SC)	0		0
<i>Independent work of students, ac.h.</i>	12		12
<i>Control (exam/test with assessment), ac.h.</i>	9		9
<b>Total labor intensity of the discipline</b>	<b>ac.h.</b>	72	72
	<b>credit units</b>	2	2

## 5. CONTENT OF DISCIPLINE

Table 5.1. Contents of the discipline (module) by type of academic work

Section number	Name discipline section	Content section (Topics)		Type of educational work*
Section 1	Introduction to medical informatics.	1.1	Basic concepts of medical informatics.	LW
		1.2	Medical informatics hardware.	LW
		1.3	Software tools for implementing information processes.	LW
Section 2	Technology for processing medical data using text processors.	2.1	Introduction to word processors Microsoft Word, Open Office Writer.	LW
		2.2	Complex document formatting, special functions.	LW
		2.3	Working with tables in a text processor.	LW
Section 3	Technologies for processing medical data using spreadsheet processors.	3.1	Introduction to spreadsheet processors Microsoft Excel, Open Office Calc. Visualization of medical data in a spreadsheet processor.	LW
		3.2	Using mathematical functions of Microsoft Excel, Open Office Calc.	LW
		3.3	Point and interval estimate of distribution parameters. Calculation in MS Excel	LW
Section 4	Technologies for storing and processing medical data using Database Management Systems.	4.1	Introduction to Microsoft Access and Open Office Base databases.	LW
		4.2	Working in a DBMS with medical data.	LW
Section 5	Medical information systems (MIS)	5.1	Introduction to MIS.	LW
		5.2	Information model of the treatment and diagnostic process.	LW
Section 6	Network technologies. Computer networks in medicine.	6.1	Network technologies	LW
		6.2	Internal electronic resources of RUDN University.	LW

\* - - is filled in only By **PERSONAL** form training: *LC* – lectures; *LW* – laboratory work; *SC* – seminar classes.

## 6. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

Table 6.1. Logistics security disciplines

Audience type	Equipment of an audience	Specialized educational laboratory equipment, software and materials for mastering the discipline (if necessary)
Computer class	Computer class for conducting classes, group and individual consultations, ongoing monitoring, and intermediate certifications, equipped with personal computers (15 pcs.), a board (screen) and technical means for multimedia presentations.	A set of specialized furniture; technical means: multimedia Epson EB-965H projector, Acer Aspire C24-865 monoblock (15 pcs.), Internet access available. Software: Microsoft products (OS, office application suite, including MS Office/ Office 365, Teams, Skype)
For independent work	Auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to EIOS	A set of specialized furniture; technical means: multimedia projector Epson EB-965H, Acer Aspire All-in-One C24-865 (15 PC), there is Internet access. Software: Microsoft products (OS, office suite applications, V including MS Office/Office 365, Teams Skype)

\* - the audience for independent work of students is **MANDATORY!**

## 7. EDUCATIONAL-METHODOLOGICAL AND INFORMATIONAL SUPPORT OF DISCIPLINE

### *Main literature:*

1. V.L. Carpenter, E.A. Lukyanova, T.V. Lyapunova [And etc.]. We study computer And programs : educational allowance - Moscow : RUDN University, 2023. - 260 s. : ill.

2. Medical informatics: a textbook for educational institutions implementing educational programs higher education By medical computer science / under total ed. T.V. Zarubina, B.A. Kobrinsky. - 2nd ed., reworked And extra; Moscow: GEOTAR-Media, 2022.

### *Additional literature:*

1. Information technologies V professional activities: textbook / V.P. Omelchenko, A.A. Demidova. - Electronic text data. - Moscow: GEOTAR-Media, 2022. - 416 p.

2. Statistical methods analysis : educational allowance / E.A. Lukyanova, T.V. Lyapunova, EAT. Shimkevich.. - Moscow: RUDN University, 2020. - 117 With. : ill.

### *Resources information and telecommunications networks "Internet":*

1. EBS RUDN University And third party EBS, To which students university have access on basis prisoners contracts

- Electronic library system RUDN University – EBS RUDN University  
<http://lib.rudn.ru/MegaPro/Web>  
- EBS "University library online" <http://www.biblioclub.ru>

- EBS Juright <http://www.biblio-online.ru>
- EBS "Consultant student" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EBS "Trinity bridge"

## 2. Bases data And search engines

- electronic fund legal And regulatory and technical documentation  
<http://docs.cntd.ru/>

- search engine system Yandex <https://www.yandex.ru/>
- search engine system Google <https://www.google.ru/>
- abstract base data SCOPUS

<http://www.elsevierscience.ru/products/scopus/>

*Educational and methodological materials For independent work students at development discipline\*:*

### 1. Well lectures By discipline "Medical Informatics".

\* - all educational and methodological materials for students' independent work are posted in accordance with the current procedure on the discipline page **in TUIS** !

## **8. ASSESSMENT MATERIALS AND SCORE RATING SYSTEM FOR ASSESSING THE LEVEL OF FORMATION OF COMPETENCIES IN A DISCIPLINE**

Evaluation materials and a point rating system\* for assessing the level of development of competencies (part of competencies) based on the results of mastering the discipline "Biostatistics" are presented in the Appendix to this Work Program of the discipline.

\* - OM and PRS are formed on the basis of the requirements of the relevant local regulatory act of RUDN University.

**DEVELOPERS:**

Assistant professor

*Job title, BUP*

*Signature*

Lukyanova Elena  
Anatolyevna

*Full name*

Assistant professor

*Job title, BUP*

*Signature*

Lyapunova Tatyana  
Vladimirovna

*Full name*

Senior Lecturer

*Job title, BUP*

*Signature*

Shimkevich Ekaterina  
Mikhailovna

*Full name*

**SUPERVISOR BUP:**

Head of the department

*Job title, BUP*

*Signature*

Stolyar Valery  
Leonidovich

*Full name*

**SUPERVISOR MP HE:**

Head of the department

*Job title, BUP*

*Signature*

Sturov Nikolai  
Vladimirovich

*Full name*