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

Institute of Medicine

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

COURSE SYLLABUS

Modern Methods of Medical Statistics

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 "Modern methods of medical statistics" is to equip students with the basic knowledge and concepts of Modern methods of Medical statistics and the concept of evidence in medicine, the clinical and statistical significance of research results, to acquire knowledge about modern information technologies, their development trends, to develop skills in building information models, analysis of the results obtained in pharmacological, biomedical, experimental and clinical studies. Development of skills in presenting data and analyzing the results of their own research using the methods of descriptive and analytical statistics, knowledge of statistical terminology.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) "Modern methods of medical statistics" is aimed at the development of the following competences /competences in part: General Professional Competences- 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 requirements of information security	Biology Normal Physiology, Mathematics, Medical informatics	Public health and health care Clinical Pharmacology

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course amounts to 2 credits (72 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	
			11	
Classroom learning , *ac.h.*		**36**	**36**	
Including:				
Lectures (LC)				
Lab work (LW)		36	36	
Seminars (workshops/tutorials) (S)				
Self-studies		**36**	**36**	
Evaluation and assessment (exam/passing/failing grade)				
Course workload	academic hours	**72**	**72**	
	credits	**2**	**2**	

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1 STATISTICAL BASICS	**Topic 1.1.** SAMPLING METHODS AND EXPERIMENTAL DESIGN	LW
	Topic 1.2. GRAPHICAL DESCRIPTIONS OF DATA (QUALITATIVE DATA; QUANTITATIVE DATA; OTHER GRAPHICAL REPRESENTATIONS OF DATA)	LW

Module 2 DESCRIPTIVE STATISTIC	Topic 2.1. MEASURES OF CENTER, MEASURES OF SPREAD, RANKING	LW
	Topic 2.2. ESTIMATES OF DISTRIBUTION PARAMETERS	LW
Module 3 STATISTICAL ANALYSIS	Topic 3.1 ONE-SAMPLE INFERENCE AND ESTIMATION	LW
	Topic 3.2 TWO-SAMPLE INTERFERENCE	LW
	Topic 3.3 REGRESSION AND CORRELATION	LW
	Topic 3.4 ANALYSIS OF CONTINGENCY TABLES. CHI-SQUARE AND ANOVA TESTS	LW
	Topic 3.5 STATISTICS WHICH TEST DIFFERENCE	LW
	Topic 3.6 STATISTICS WHICH COMPARE RISK	LW
	Topic 3.7 SURVIVAL ANALYSIS	LW
	Topic 3.8 STATISTICS WHICH ANALYSE CLINICAL INVESTIGATIONS AND SCREENING	LW

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,	Set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector Epson EB-965H, laptop, Monoblock Acer Aspire C24-865, projection screen,

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
	computers with access to electronic information and educational environment (EIEE)	stable wireless Internet connection. Software: Microsoft Windows, MS Office / Office 365, MS Teams, Chrome (latest stable release)
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, laptop, Monoblock Acer Aspire C24-865, 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

- Kathryn Kozak. Statistics Using Technology. Third Edition. 2021, 329 p. LibreTexts Project (https://LibreTexts.org).
  Download: https://www.opentextbookstore.com/details.php?id=21#tabs-3

Additional readings

- Lukyanova E.A., Lyapunova T.V., Shimkevich E.M. Modern methods of Medical statistics. Research planning. Description of the data. M .: RUDN. 2020, 32 p.

- A.A. Khalafyan, V.P. Borovikov, G.V. Kalaidin. Probability theory, mathematical statistics and data analysis. Fundamentals of theory and practice on a computer. Statistica. Excel [Text]: more than 150 examples of problem solving: a textbook for bachelors of non-mathematical specialties studying higher mathematics - economic,

legal, information technology, technical, natural science, humanitarian / - Moscow: URSS, cop. 2016 .-- 317 p. : ill., table; 22 cm; ISBN 978-5-9710-3040-9

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 *:*

1. The set of lectures on the course "Modern methods of medical statistics"

* 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-10.1, GPC-10.2, GPC-10.3) 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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