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Информация о владельце:
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Должность: Ректор
Дата подписания: 14.10.2025 17:39:02
Уникальный программный ключ:
ca953a0120d891083f939673078ef1a989dae18a

**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

Microbiology, Virology - Oral Microbiology

course title

Recommended by the Didactic Council for the Education Field of:

31.05.03 Dentistry

field of studies / speciality code and title

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

Dentistry

higher education programme profile/specialisation title

1. COURSE GOAL(s)

The discipline "Microbiology, Virology - Oral Microbiology" is included in the program of the specialist program "Dentistry" in the direction of 31.05.03 "Dentistry" and is studied in the 3rd and 4th semesters of the 2nd year. The discipline is implemented by the Department of Microbiology named after V.S. Kiktenko. The discipline consists of 9 sections and 29 topics and is aimed at studying general and specific microbiology and virology, as well as pathogens of the main human infectious diseases that cause pathological manifestations in the oral cavity.

The goal of the course is to acquire knowledge about the diversity of the world of microorganisms, about their role in human pathology, the theoretical foundations for diagnosing infectious diseases, the principles of microbiological research, about opportunistic infections of the oral cavity.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course "Microbiology, Virology - Oral Microbiology" is aimed at the development of the following competences /competences in part: GPC-9

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

Competence code	Competence	Indicators of Competence Formation (within the framework of this discipline)
GPC-9	Able to assess morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems	GPC-9.1. Owns the algorithm of clinical, laboratory and functional diagnostics in solving professional tasks.
		GPC-9.2. Evaluates the results of clinical, laboratory and functional diagnostics in solving professional tasks.
		GPC-9.3. Determines morphofunctional physiological states and pathological processes of the human body.

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-9	Able to assess morphofunctional, physiological conditions and pathological processes in the human body to solve professional problems	Human Anatomy - Head and Neck Anatomy Histology, Embryology, Cytology - Oral Histology Normal physiology, physiology of the maxillofacial region	Pathological anatomy - Pathanatomy of the head and neck Pathophysiology - Pathophysiology of the head and neck Ophthalmology Forensic medicine Obstetrics Oral surgery Maxillofacial and gnathic surgery Diseases of the head and neck Pediatric dentistry Orthodontics and children's prosthetics Medical rehabilitation Implantology and reconstructive surgery of the oral cavity

* To be filled in according to the competence matrix of the higher education programme.

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course is «**Microbiology, Virology - Oral Microbiology**» 6 credits (216 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	
			3	4
<i>Contact academic hours</i>		123	51	72
including:				
Lectures (LC)		35	17	18
Lab work (LW)		88	34	54
Seminars (workshops/tutorials) (S)		-	-	-
<i>Self-studies</i>		48	30	18
<i>Evaluation and assessment (exam/passing/failing grade)</i>		45	27	18
Course workload	academic hours	216	108	108
	credits	6	3	3

* To be filled in regarding the higher education programme correspondence training mode.

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Type of academic activities	Total academic hours	Semesters/training modules
Section 1 Morphology of microorganisms	1.1 A microbe as a living system. Classification and nomenclature of microorganisms. Morphology and structure of bacteria, viruses, fungi and protozoa	LC, LW
	1.2 Simple and complex methods of staining microbes. Microscopy methods.	LW
Section 2 Physiology of microorganisms	2.1 Culture media. Sterilization and disinfection methods. Aerobic cultivation methods. Isolation of pure aerobic cultures.	LC, LW
	2.2 Methods for Identification of Pure Microbial Cultures. Study of the biochemical properties of microbes.	LC, LW
	2.3 Methods of cultivating anaerobes. Isolation of pure cultures of anaerobes and their identification.	LC, LW
Section 3 Genetics of microorganisms	3.1 Genetic material of bacteria. Features of structure and functioning. IS - elements. Transposons. Bacterial plasmids, their functions and properties. Use of plasmids in genetic engineering.	LC
	3.2 Microbial variability, its species and significance.	LC, LW
Section 4 Relationships of microbial populations in the body	4.1 Normal human microflora.	LC, LW
	4.2 The phenomenon of microbial antagonism. Antibiotics. Classification, mechanism of action of antibacterial drugs. Complications of antibiotic therapy (dysbacteriosis, candidomycosis, etc.).	LC, LW
	4.3 Methods for determining the sensitivity of bacteria to antibiotics. Mechanisms of drug resistance of pathogens infectious diseases. Ways to overcome drug resistance.	LC, LW
Section 5 General Virology	5.1 Methods of virus cultivation. Types of interaction between the virus and the host cell. Phases of viral reproduction.	LC, LW
	5.2 Bacteriophages. Interaction of a phage with a bacterial cell. Moderate and virulent bacteriophages. Lysogeny. Detection. Practical application.	LC, LW
Section 6 The Doctrine of Infection	6.1 Experimental contamination and bacteriological studies of animal corpses. Methods of Laboratory Diagnostics of Infectious Diseases.	LC, LW
Section 7 Medical Bacteriology	7.1 Pathogenic and resident cocci. Staphylococci, streptococci, neisseria. Laboratory diagnosis of coccal infections.	LC, LW
	7.2 Pathogens of airborne infections. The causative agent of diphtheria. Pathogenic mycobacteria. Tuberculosis pathogens and Leprosy.	LC, LW

	7.3 Pathogenic and resident anaerobic bacteria. Pathogens of gas gangrene and tetanus.	LC, LW
	7.4 Pathogenic spirochetes. The causative agent of syphilis. Manifestation of syphilis in the oral cavity. Fusospirochetosis.	LC, LW
	7.5 Pathogenic rickettsiae and chlamydia. Pathogens of epidemic typhus, Pathogens of chlamydia.	LC, LW
Section 8 Medical Virology	8.1 Herpes infection. Taxonomy and characterization of pathogens. Herpetic stomatitis. Laboratory diagnostics. Methods of prevention.	LC, LW
	8.2 Pathogens of hepatitis (enteral and parenteral). Taxonomy. Characteristics of pathogens. Laboratory diagnostics. Prophylaxis.	LC, LW
	8.3 Human immunodeficiency viruses. Taxonomy. Characteristics of pathogens. Laboratory diagnostics. Prophylaxis.	LC, LW
	8.4 Enterovirus infections. Coxsackievirus. Rhabdoviruses. Vesiculovirus. Taxonomy. Characteristics of pathogens. Laboratory diagnostics. Prophylaxis.	LC, LW
	8.5 Pathogens of measles, papillomavirus infection and foot-and-mouth disease. Taxonomy. Characteristics of pathogens. Laboratory diagnostics. Prophylaxis.	LC, LW
Section 9 Oral microbiology	9.1 Normal oral microflora. Non-specific resistance of the oral cavity. Specific mechanisms of protection of oral mucous membranes.	LC, LW
	9.2 Opportunistic processes in the oral cavity. Candidiasis, recurrent aphthous stomatitis, glossitis, gingivitis.	LC, LW
	9.3 Microflora in odontogenic inflammation: pulpitis, periodontitis, abscess, phlegmon, osteomyelitis, sepsis.	LC, LW
	9.4 The role of oral cavity microflora in the pathogenesis of caries and in inflammatory processes in the periodontium.	LC, LW
	9.5 Age-related changes in the microbial flora of the oral cavity.	LC, LW
	9.6 Effect of prostheses, filling materials, medications on the microbial flora of the oral cavity.	LC, LW

* - 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)
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Lecture	A classroom equipped with a set of specialized furniture; whiteboard (screen) and technical means of multimedia presentations.	A set of specialized furniture; Technical means: TOSHIBA X200 multimedia projector, ASUS F9E Core 2 DUO T5750 laptop, Internet access. Software: Microsoft products (OS, suite of office applications, including MS Office/ Office 365, Teams, Skype)
Lab-work	A classroom for laboratory work, individual consultations, routine control and intermediate certification, equipped with a set of specialized furniture and equipment.	The laboratory is equipped with specialized laboratory furniture; gas burners, chalk boards; Technical means: electric screen Baronet 3.4 244/96 8 152*203MW, Epson EB-X05 multimedia projector, HP 6715s TL-60 laptop, Biomed-5 microscopes and "BiOptic", dry-air laboratory thermostat TSvL-160, refrigerator Indesit SD 167. Items required for microbiological research: instruments (bacteriological loops and tweezers), laboratory glassware, dye kits, nutrient media, cultures of microorganisms.
Self-studies	Classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the EIOS.	The laboratory is equipped with specialized laboratory furniture; chalk board; microscopes "Biomed-5" and BiOptic.

* - the auditorium for independent work of students is **MANDATORY!**

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

1. Medical Microbiology, Virology, Immunology: textbook. Vol. 1 / V.V. Zverev, M.N. Boichenko. - Книга на английском языке. - Москва: ГЭОТАР-Медиа, 2022. - 384 с. - ISBN 978-5-9704-7072-5.

2. Medical Microbiology, Virology, Immunology: textbook . Vol. 2 / V. V. Zverev, M. N. Boichenko. - Книга на английском языке. - Moscow : GEOTAR-Media, 2020. - 392 p. - ISBN 978-5-9704-5719-1.

Additional readings:

1. Microbiology of the Oral Cavity. Tests for the students, in the discipline 31.05.05 Microbiology, virology, microbiology of the oral cavity : in two parts. Part 1 = Микробиология полости рта. Тестовые задания для обучающихся по дисциплине 31.05.05 Микробиология, вирусология, микробиология полости рта / О.А. Гизингер, Н.П. Сачивкина, А.А. Хисамова [et al.]. - Электронные текстовые данные. - Москва : РУДН, 2023. - 121 с. : ил. - Книга на английском языке. - ISBN 978-5-209-11779-7. - ISBN 978-5-209-11778-0 : 181.47.

2. Laboratory Techniques of Medical Microbiology = Лабораторные методы медицинской микробиологии : tutorial / A.V. Ermolaev. - Электронные текстовые данные. - М. : РУДН, 2018. - 63 с. : ил. - ISBN 978-5-209-08556-0.

3. Environmental Microbiology : Emerging Technologies / Edited by Maulin P. Shah. - Электронные текстовые данные. - De Gruyter, 2022. - 344 с. - ISBN 9783110727210.

Resources of the information and telecommunication network "Internet":

1. RUDN University Electronic Library System (ELS) and third-party ELS to which university students have access on the basis of concluded contracts:

- RUDN University Electronic Library System – ELS RUDN <http://lib.rudn.ru/MegaPro/Web>
- ELS "University Library Online" <http://www.biblioclub.ru>
- ELS Urait <http://www.biblio-online.ru>
- ELS "Student Consultant" www.studentlibrary.ru
- ELS "Troitsky Most"

2. Databases and Search Engines

- Electronic collection of legal, regulatory and technical documentation <http://docs.cntd.ru/>
- Yandex search engine <https://www.yandex.ru/>
- Google search engine <https://www.google.ru/>
- SCOPUS abstract database <http://www.elsevierscience.ru/products/scopus/>

Educational and Methodological Materials for Independent Work of Students at Mastering the discipline/module:*

1. Course of lectures on the discipline "Microbiology, Virology – Oral Microbiology"

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

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-9) 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).

DEVELOPER:

Assistant professor		N.V. Yashina
<i>Position, BEU</i>	<i>Signature</i>	<i>Surname N.P.</i>

HEAD OF BTU:

Head of the Department		I.V. Podoprighora
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