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ФИО: Ястребов Олег Александрович
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**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
RUDN University named after Patrice Lumumba**

Institute of Medicine

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

COURSE SYLLABUS

Biological chemistry – oral biochemistry

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 goal of the course "Biological chemistry – oral biochemistry" is to equip students with the systematic knowledge of the molecular mechanisms of functioning of biological systems; to ensure the creation of a theoretical basis for further study of biomedical and clinical disciplines.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) "Biological chemistry – oral biochemistry" 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 descriptor	Competence formation indicators (within this course)
GPC-9	Able to assess morphological and functional states and pathological processes in the human body to solve professional issues	GPC-9.1. Being able to use the algorithm of clinical, laboratory and functional diagnosis in dealing with professional tasks.
		GPC-9.2. Evaluating the results of clinical, laboratory and functional diagnosis in dealing with professional tasks.
		GPC-9.3. Determining morpho-functional, 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*
General Professional Competences-9 (GPC-9)	Able to assess morphological and functional states and pathological processes in the human body to	Human Anatomy - Anatomy of the head and neck Biology 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 Forensic medicine

	solve professional issues	Chemistry	
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4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Biological chemistry – oral biochemistry" is 6 credits (216 academic hours).

Table 4.1. Types of academic activities during the periods of higher education programme mastering

Type of academic activities		Total academic hours	Semesters/training modules	
			3	4
Classroom learning, <i>ac.h.</i>		140	68	72
including:				
Lectures (LC)		35	17	18
Lab work (LW)		105	51	54
Practical/seminar classes (S)				
Self-studies, academic hours		31	22	18
Evaluation and assessment (exam or pass/fail grading)		45	18	18
Total workload of the discipline		Academic hours	108	108
		credits	3	3
		216	108	108

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Course 1. Basic molecules - components of living systems	Topic 1.1. Introduction to biochemistry. Proteins: structure, properties, functions	LC, LW
	Topic 1.2. Complex proteins, nucleic acids, lipids	LC, LW
	Topic 1.3. Enzymes	LC, LW
	Topic 1.4. Vitamins	LC, LW
	Topic 1.5. Hormones	LC, LW
Course 2 Metabolism and energy	Topic 2.1. Introduction to metabolism. Biological oxidation	LC
	Topic 2.2. Metabolism of carbohydrates	LC, LW
	Topic 2.3. Lipid metabolism	LC, LW
	Topic 2.4. Metabolism of amino acids and proteins. Complex protein metabolism.	LC, LW
Course 3 Biochemistry of body fluids	Topic 3.1. Biochemistry of blood and urine	LC, LW
	Topic 3.2. Biochemistry of oral fluids	LC, LW
	Topic 3.3. Biochemistry of inflammation	LC

	Topic 3.4. Biochemistry of digestion	LC, LW
Course 4 Biochemistry of connective tissue	Topic 4.1. Biochemistry of the main proteins of connective tissue	LC, LW
	Topic 4.2. Biochemistry of the main non-protein components of the connective	LC
	Topic 4.3. Biochemistry of mineralized tissues	LC, 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)
Lab-work	A classroom for laboratory work, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment. (The classroom 334)	Classrooms with a set of specialized furniture, equipped with multimedia projectors and motorized screens NEC V 260X Projector, Motorized Screen for Master Control Projector 203X203. laboratory equipment: Fume hood, CENTRIFUGE ОПН-8, KFK-3-01 photoelectrocolorimeter, Electric drying cabinet SNOL 67/350, Thermoblock ПЭ-4030 36 ГН. d-23*45mm, Spectrophotometer Specord M -40, Electrophoretic chamber, 1mm, Analytical balance EP214C, Laboratory washing table 985*610*900. Corporate Licensing Program (Microsoft Subscription) Enrollment for Education Solutions 90-07-001-00599-8 Non-exclusive Right (2016) Registration Key (2016) *Windows 10 Education Desktop Education ALNG LicSAPk MVL A Faculty EES •Win Pro SP1 x64 7, License № 1620000996000270, issue date 3.5.2014. CFX Manager Software Office Pro Plus 2016 Desktop Education ALNG LicSAPk MVL A Faculty EES 90-07-012-00604-5 Registration Key (2016) Non-exclusive right (2016) MyTestXPro 11.0 is a software system for creating and conducting computer testing of knowledge, collecting and analyzing results. Electronic license/ key (for higher education – university). Symantec Endpoint Protection 11.0 BNDL STD LIC ACAD BAND A BASIC 12 MO 90-07-010-00211-7

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Computer lab	Laboratory of Molecular Biological Research Methods (Room 201)	<p>Non-exclusive right (2008, IOP No.1.1.16.3/39)</p> <p>Set of specialized furniture, laboratory medical centrifuge ProfMT, Refrigerator ATLANT XM 6026-031, Freezer Minsk-17, Electronic scales AR0640 Ohaus Europe, Spectrophotometer Hitachi F-2700, Distiller GTL-200, Thermostat, Thermoblock PE-4030 36 gn. d-23*45mm, Bi-beam Spectrophotometer U-2900, Centrifuge L7-55.</p> <p>HP 280 G2 MT V7 Q81E Intel Pentium Dual-Core G4400 Computer</p> <p>There is an Internet connection</p> <p>Corporate Licensing Program (Microsoft Subscription) Enrollment for Education Solutions 90-07-001-00599-8 Non-exclusive right (2016)</p> <p>Registration Key (2016)</p> <p>*Windows 10 Education Desktop Education ALNG LicSAPk MVL A Faculty EES</p> <p>•Win Pro SP1 x64 7, License No. 1620000996000270, issue date 3.5.2014.</p> <p>CFX Manager Software</p> <p>Office Pro Plus 2016 Desktop Education ALNG LicSAPk MVL A Faculty EES 90-07-012-00604-5</p> <p>Registration Key (2016)</p> <p>Non-Exclusive Right (2016)</p> <p>Symantec Endpoint Protection 11.0 BNDL STD LIC ACAD BAND A BASIC 12 MO 90-07-010-00211-7</p> <p>Non-exclusive right (2008, IOP No.1.1.16.3/39)</p>
Self-studies	A classroom for independent work of students (can be used for laboratory classes and consultations), equipped with a set of specialized furniture (The room203)	<p>A set of specialized furniture,</p> <p>HP 15-AC070UR 15.6" Intel Pentium 5 Computers, Refrigerator Biryusa-6, Freezer Minsk-17, Drying Electric Cabinet SNOL 67/350, Thermoblock PE-4030 36 gn. d-23*45 mm, Spectrophotometer Specord M - 40, Electrophoretic chamber, 1mm, Analytical scales EP214C. Products: Microsoft products (OS, office suite, including MS Office/ Office 365, Teams)</p>

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

Printed publications:

1. Berezov T.T. Biochemistry / T.T. Berezov, B.F. Korovkin ; Transl. from the Russian by B.V.Rassadin. – Book on English Language. - Moscow: Mir, 1992. - 515 p.
2. Biochemistry. - 3rd edition. - Philadelphia: Harwal Publishing, 1993. - 584 p. : ill. - (The National Medical Series for Independent Study).
3. Marshall William J. Clinical chemistry / W. J. Marshall. - eighth edition - London: Elsevier, 2017. - 413 p.
4. Meisenberg Gerhard. Principles of Medical Biochemistry / G. Meisenberg, W.H. Simmons. - Fourth Edition. - London: Elsevier, 2017. - 617 p.
5. Baynes John W. Medical Biochemistry / J.W. Baynes, M.H. Dominiczac. - Fifth Edition. - London: Elsevier, 2019. - 682 p.
6. Lehninger Principles of Biochemistry, 5th Ed, David L. Nelson and Michael M. Cox, WH Freeman and Company.
7. Harper`s illustrated biochemistry, 26th edition, Murray R, Granner D, Mayes P, Rodwell V, Lange medical books/McGrow-Hill

Electronic and printed full-text materials:

1. Biochemistry with exercises and tasks: textbook / editors by A. I. Glukhov, V. V. Garin. - Moscow: GEOTAR-Media, 2020. - 296 p.: http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=497894&idb=0

Additional readings:

1. Clinical Biochemistry, 2nd edition. Allan Gaw et. al.
2. Marks' Basic Medical Biochemistry: A Clinical Approach, 2nd Edition; Colleen M. Smith, Allan D. Marks, Michael A. Lieberman
3. Topics in dental biochemistry, Levine M. – Springer Science & Business Media, 2010.

*Training toolkit for self- studies to master the course *:*

The set of lectures on the course ““Biological chemistry – oral biochemistry””

* 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-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).

DEVELOPERS:

Assistant Professor of the T.T.
Berezov Department of
Biochemistry:

position, department

O.Yu. Cherednichenko

signature

name and surname

Assistant Professor of the T.T.
Berezov Department of
Biochemistry;

position, department

signature

E.V. Lukasheva

name and surname

**HEAD OF EDUCATIONAL
DEPARTMENT:**

of T.T. Berezov Department of
Biochemistry;

position, department

signature

V.S. Pokrovsky

name and surname

HEAD of the Higher Education Program:

Deputy Director of MI for
Academic Affairs

position, department

signature

S.N. Razumova

name and surname