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**Federal State Autonomous Educational Institution of Higher Education  
Peoples' Friendship University of Russia  
named after Patrice Lumumba  
RUDN University**

**Institute of Medicine**

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

**COURSE SYLLABUS**

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**Pathophysiology – pathophysiology of head and neck**

course title

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

**31.05.03 Dentistry**

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field of studies / speciality code and title

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

**Dentistry**

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higher education programme profile/specialisation title

## 1. COURSE GOAL(s)

The goal of the course «Pathophysiology – pathophysiology of head and neck» is to gain an understanding of the reasons, mechanisms of development and outcomes of standard pathological processes and diseases of separate bodies and systems which basis they make, including:

- studying of molecular, cellular, fabric, organ, system and intersystem mechanisms of standard pathological processes;
- studying of the reasons, mechanisms of development and outcomes of the concrete diseases developing in separate bodies and systems;
- analysis of the nature of clinical manifestations of the main pathological processes;
- acquaintance with the principles of pathogenic therapy of diseases of separate bodies and systems.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The course «Pathophysiology – pathophysiology of head and neck» is designed for students to acquire following competences: GC-1; GPC-9; PC-1.

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

Competence code	Competence descriptor	Competence formation indicators (within this course)
GC-1	Being able to implement critical analysis of problem situations based on systems approach, develop an action strategy.	GC-1.1. Analysing the problem situation as a system identifying its components and links between them.
GPC-9.	Being able to assess morpho-functional, physiological conditions and pathological processes in the human body to solve professional tasks	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.
PC-1.	Being able to make an examination of a patient in order to determine a diagnosis.	PC-1.4. Detecting if patients have risk factors for oncopathology (including various background processes, precancerous conditions) based on laboratory, instrumental and additional examinations in order to make a preliminary/final diagnosis.

## 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*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules*</b>	<b>Subsequent courses/modules*</b>
GC-1	Being able to implement critical analysis of problem situations based on systems approach, develop an action strategy.	Human Anatomy - Heads and Necks; Immunology, Clinical Immunology; Mathematics; Psychology, Pedagogy; Physics; Philosophy; Chemistry of Biogenic Elements; Dental Modeling of Teeth; History of Medicine; Bioelements in Medicine; Medical Elementology.	Gnatology and functional diagnostics of the temporal mandibular joint; Pediatric Dentistry; Pediatric Maxillofacial surgery; Medical genetics in dentistry; Orthodontics and pediatric prosthetics; Otorhinolaryngology; Dental prosthetics (complex prosthetics); Maxillofacial prosthetics; Obstetrics; Medical rehabilitation; Dental Assistant (therapist); Dental Assistant (orthopedist);
GPC-9.	Being able to assess morpho-functional, physiological conditions and pathological processes in the human body to solve professional tasks	Histology, embryology, cytology - Histology of the cavity mouth; Microbiology, virology - Microbiology of the oral cavity; Normal physiology, physiology of the maxillofacial region; Biological Chemistry - Biochemistry oral cavity; Human Anatomy - Anatomy heads and necks; Topographic anatomy and operative surgery of the head and neck;	Pediatric Dentistry; Diseases of the Head and Neck; Implantology and Reconstructive Surgery of the Oral Cavity; Orthodontics and Pediatric Prosthetics; Oral Surgery; Maxillofacial and Gnathic Surgery; Obstetrics; Forensic Medicine; Medical Rehabilitation; Ophthalmology.
PC-1.	Being able to make an examination of a patient in order to determine a diagnosis.	Immunology, clinical immunology; Cariesology and diseases hard tooth tissues; Propaedeutics of dental diseases; The basics of military training. Life safety; Three-dimensional X-ray diagnostic methods in	Dental Assistant (therapist); Dental Assistant (surgeon); Dentist's Assistant (children's); Dental Assistant (orthopedist); Assistant to a dentist (general practitioner), including research work; Gnatology and functional diagnostics of the temporal

		dentistry**; Three-dimensional-computer modeling of teeth**; Chemistry of biogenic elements**; Dental modeling of teeth**;	mandibular joint; Pediatric Dentistry; Pediatric Maxillofacial surgery; Diseases of the head and neck; Implantology and reconstructive surgery oral cavity; Medical genetics in dentistry; Orthodontics and pediatric prosthetics; Otorhinolaryngology; Dental prosthetics (complex prosthetics); Oral Surgery; Maxillofacial and gnatic surgery; Maxillofacial prosthetics; Obstetrics; Gerontostomatology and diseases of the oral mucosa; Periodontics; Modern endodontics**; Aesthetic restoration of teeth**; Medical rehabilitation; Ophthalmology; Cone-beam computed tomography in the diagnosis, planning and evaluation of the effectiveness of dental solutions; Oncostomatology and radiation therapy;
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\* 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 «**Pathophysiology – pathophysiology of head and neck**» is **5** 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			
		5	6		
<i>Contact academic hours</i>	<b>122</b>	<b>68</b>	<b>54</b>		
including:					
Lectures (LC)					
Lab work (LW)	122	68	54		
Seminars (workshops/tutorials) (S)	22	22	0		
<i>Self-studies</i>	22	22	0		
<i>Evaluation and assessment (exam/passing/failing grade)</i>	36	18	18		
<b>Course workload</b>	academic hours	<b>180</b>	<b>108</b>	<b>72</b>	
	credits	<b>5</b>	<b>3</b>	<b>2</b>	

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

## 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> General nosology.	<b>Topic 1.1.</b> Conceptions of health and disease. Sano- и pathogenesis.	LC, LW
	<b>Topic 1.2.</b> Pathology of cellular biomembranes and organells. Types and mechanisms of cell death. Disorders of biorhythms of a cell.	LW
<b>Module 2</b> Non-specific pathological processes	<b>Topic 2.1.</b> Disorders of local blood circulation.	LW
	<b>Topic 2.2.</b> Inflammation. Features of inflammatory processes in the maxillofacial region. Traumatic lesions of oral tissues. Wound process and regeneration in dentistry.	LC, LW
	<b>Topic 2.3.</b> Pathogenesis of inflammatory diseases of the oral cavity. Pulpitis. Periodontitis. Gingivitis. Periodontitis. Rapidly progressive and juvenile periodontitis. Sialadenitis. Cheilitis. Glossites.	LW
	<b>Topic 2.4.</b> The microflora of the oral cavity and its influence on the development of systemic and local pathological processes. Caries.	LW
	<b>Topic 2.5.</b> Mechanisms of immune protection. Pathology of the immune system. Immunity of the oral cavity and mechanisms of its damage.	LC, LW
	<b>Topic 2.6.</b> Allergy. Features of allergic reactions in dentistry.	LC, LW
	<b>Topic 2.7.</b> Pathophysiology of tumor growth. Typical pathological processes of the salivary glands; tumor and non-tumor diseases of the salivary glands (sialadenitis, etc.).	LW
<b>Module 3</b> Non-specific metabolic disorders	<b>Topic 3.1.</b> Hypoxia. Pathogenesis of periodontal diseases against the background of oxygen deficiency in tissues.	LC, LW
	<b>Topic 3.2.</b> Pathology of body thermoregulation. Fever.	LW
	<b>Topic 3.3.</b> Pathophysiology of carbohydrate metabolism. Diabetes. Manifestations of diabetes in the oral cavity.	LC, LW
	<b>Topic 3.4.</b> Pathology of water-salt metabolism. Edema. Pathophysiology of the acid-base state of the body. Acid-base disorders in the oral	LW

	cavity.	
	<b>Topic 3.5.</b> Typical pathological processes in the maxillofacial region.	<b>LC</b>
	<b>Topic 3.6.</b> Pathophysiology of fat, protein and purine metabolism. Protein metabolism disorders in the pathogenesis of caries.	<b>LW</b>
<b>Module 4</b> Extreme states	<b>Topic 4.1.</b> Pathophysiology of extreme states.	<b>LC</b>
	<b>Topic 4.2.</b> Pathophysiology of pain. Odontogenic pain. Changes in the maxillofacial apparatus in neuralgia and neuritis of the facial and trigeminal nerves. Paresis, paralysis, trismus. Stress. Shock. Collapse. Coma. Dying and revival of the body. Clinical and biological death. principles of resuscitation.	<b>LW</b>
	<b>Topic 4.3.</b> Pain and dental stress. Pathogenesis of myofascial pain in the maxillary fossa.	<b>LC</b>
<b>Module 5</b> Pathophysiology of the hematopoietic system	<b>Topic 5.1.</b> Anemias. Hemoblobonosis. Hemoglobinopathies.	<b>LW</b>
	<b>Topic 5.2.</b> Leukocytosis. Leukopenia. Leukemias. Changes in the oral mucosa in diseases of the hematopoietic system.	<b>LW</b>
	<b>Тема 5.3.</b> Clinical tasks in the pathophysiology of the hematopoietic system.	<b>LW</b>
	<b>Topic 5.4.</b> Hemorrhagic diathesis. Dental manifestations and their pathogenesis.	<b>LC</b>
<b>Module 6</b> Pathophysiology of the cardiovascular and respiratory systems.	<b>Topic 6.1.</b> Arrhythmias.	<b>LW</b>
	<b>Topic 6.2.</b> Coronary heart disease. Coronarogenic and noncoronarogenic necrosis of the myocardium. Complications of myocardial infarction.	<b>LW</b>
	<b>Topic 6.3.</b> Acute coronary syndrome.	<b>LC</b>
	<b>Topic 6.4.</b> Heart defects. Cardiomyopathies. Myocarditis. Endocarditis. Pericarditis.	<b>LW</b>
	<b>Topic 6.5.</b> Heart failure. Pathophysiology of respiration.	<b>LW</b>
	<b>Topic 6.6.</b> Pathophysiology of bronchial obstruction syndromes.	<b>LC</b>
	<b>Topic 6.7.</b> Pathophysiology of vascular tonus.	<b>LW</b>
	<b>Topic 6.8.</b> Pathophysiology of the vascular wall. Atherosclerosis.	<b>LW</b>

<b>Module 7</b> Pathophysiology of the gastrointestinal tract	<b>Topic 7.1.</b> Pathophysiology of the chewing apparatus. Pathogenesis of diseases of the temporomandibular joint.	LC
	<b>Topic 7.2.</b> Non-specific dysfunctions of the gastrointestinal tract.	LC
	<b>Topic 7.3.</b> Acute and chronic gastritis. Peptic ulcer. Diseases of the operated GIT.	LW
	<b>Topic 7.4.</b> Pathophysiology of the liver and bile ducts. Jaundice. Hepatic failure. Pathophysiology of cholecystitis. Pathophysiology of the pancreas. Intestinal obstruction.	LW
<b>Module 8</b> Pathophysiology of the excretory system	<b>Topic 8.1.</b> Non-specific disorders of the excretory function of the kidneys.	LC
	<b>Topic 8.2.</b> Nephrotic syndrome. Nephritic syndrome. Acute and chronic diffuse glomerulonephritis. Pyelonephritis. Urolithiasis. Acute and chronic renal failure. Uremia. Renal coma.	LW
<b>Module 9</b> Pathophysiology of the endocrine system	<b>Topic 9.1.</b> General mechanisms of endocrine disorders. Pathophysiology of the hypothalamic, pituitary and adrenal systems.	LW
	<b>Topic 9.2.</b> Pathophysiology of thyroid, parathyroid glands, thymus, epiphysis and gonads.	LW
	<b>Topic 9.3.</b> Dental manifestations of endocrine pathology.	LC
<b>Module 10</b> Pathophysiology of the nervous system and higher nervous activity	<b>Topic 10.1.</b> Pathophysiology of functional neuroses. Pathological reflexes. Pathophysiology of drug addiction. Pathophysiology of alcoholism.	LW
	<b>Topic 10.2.</b> Pathophysiology of CNS and neuroses.	LC

\* - to be filled in only for full-time training: LC - lectures; LW - lab work; S - seminars.

## 6. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom Equipment and Technology Support Requirements

<b>Type of academic activities</b>	<b>Classroom equipment</b>	<b>Specialised educational / laboratory equipment, software, and materials for course study (if necessary)</b>
Lab-work	Classroom for seminars, workshops, lab works, group and individual consultations, evaluation and assessment, equipped with a set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector, laptop, projection screen, stable wireless Internet connection. (rooms: 214, 215)	Metabolic chamber for rats, AE0906 (3 pcs.) Metabolic chamber for rats (2 pcs.) Operating light ALFA-734 Cage for keeping rodents (6 pcs.) Exhaust module Lab-1500 ShV Projector Epson EB-X03 LCD 2700Lm (1024x768) Notebook Dell Vostro 5581 Electric screen Projecta Elpro Electrol 200x200cm Matte White S
Seminar	Classroom for seminars, workshops, lab works, group and individual consultations, evaluation and assessment, equipped with a set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector, laptop, projection screen, stable wireless Internet connection. (room: 212)	ViewSonic PA503S Projector + Digis DSM-2 Ceiling Mount Adjustable Ceiling Mount  Notebook Dell Vostro 5581  LMC-100109, Lumien Master Control Screen LMC-100109 183x244 cm Matte White FiberGlass, Motorized  Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams, Skype)
Computer Lab	Computer Lab for seminars, workshops, group and individual consultations, evaluation and assessment, equipped with a set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector, laptop, 9 sets of computer + system unit, projection screen, stable wireless Internet connection. (room: 213)	ViewSonic PA503S Projector + Digis DSM-2 Ceiling Mount Adjustable Ceiling Mount Computer MATX Super Power QM 104A11500WP4 USB/AV, Internet access. Screen with electric wire Draper198X264  Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams, Skype)

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
		Complete SPARK system unit (10 pcs.)  Monitor 17" TFT Proview (10 pcs.)
Self-studies	Classroom for self-studies (can be used for seminars, workshops, lab works, group and individual consultations,), equipped with a set of specialized furniture; whiteboard; a set of devices includes portable multimedia projector, laptop, projection screen, stable wireless Internet connection. (room: 212)	ViewSonic PA503S Projector + Digis DSM-2 Ceiling Mount Adjustable Ceiling Mount  Computer MATX Super Power QM 104A11500WP4 USB/AV, Internet access.  Screen with electric wire Draper198X264  Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams, Skype)  Complete SPARK system unit (10 pcs.)  Monitor 17" TFT Proview (10 pcs.)

## 7. RESOURCES RECOMMENDED FOR COURSE

### a) Main readings:

1. Blagonravov M.L., Sklifasovskaya A.P. General pathophysiology. Textbook. - Moscow : PFUR, 2025. - 281 p. : ISBN 978-5-209-12668-3

[https://mega.rudn.ru:443/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=526156&idb=0](https://mega.rudn.ru:443/MegaPro/UserEntry?Action=Rudn_FindDoc&id=526156&idb=0)

2. Blagonravov M.L., Sklifasovskaya A.P. Clinical pathophysiology. Textbook. - Moscow : PFUR, 2025. - 290 p. : ISBN 978-5-209-12667-6

[https://mega.rudn.ru:443/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=526157&idb=0](https://mega.rudn.ru:443/MegaPro/UserEntry?Action=Rudn_FindDoc&id=526157&idb=0)

3. Bryk A.A., Ryabinina A.Yu., Blagonravov M.L. Pathophysiology of oral cavity diseases. Textbook, 2nd edition. – Издательские решения, 2025. – 88 с. ISBN: 978-5-0067-9079-7

[https://mega.rudn.ru:443/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=525267&idb=0](https://mega.rudn.ru:443/MegaPro/UserEntry?Action=Rudn_FindDoc&id=525267&idb=0)

4. Robbins&Cotran Pathologic Basis of Disease/editors V. Kumar, A.K. Abbas, J.C. Aster, J.R. Turner.- 10ed. – Elsevier, 2021. – 1379p.: - ISBN 978-0-323-53113-9: 12184.04.

## **b) Additional readings:**

1. Ходорович Н.А., Величко Э.В. Патопфизиология нарушений кислотно-основного состояния: алгоритм и примеры решения клинических задач = Acid-Base Disorders: Algorithm and Case Studies ; учебно-методическое пособие. — Книга на английском языке. — Москва: РУДН, 2021. — 35 с. — ISBN 978-5-209-10332-5: 64.51

[https://mega.rudn.ru/MegaPro/UserEntry?Action=Link\\_FindDoc&id=495172&idb=0](https://mega.rudn.ru/MegaPro/UserEntry?Action=Link_FindDoc&id=495172&idb=0)

2. Благодравов М.Л., Склифасовская А.П. Патопфизиология иммунной системы = Pathophysiology of the immune system : учебно-методическое пособие. - Москва : РУДН, 2020. - 23 с. — Книга на английском языке. ISBN: 978-5-209-10443-8

[https://mega.rudn.ru/MegaPro/UserEntry?Action=Link\\_FindDoc&id=497587&idb=0](https://mega.rudn.ru/MegaPro/UserEntry?Action=Link_FindDoc&id=497587&idb=0)

3. Благодравов М.Л., Склифасовская А.П. Патопфизиология жирового и белкового обмена = Pathophysiology of lipid and protein metabolism : учебно-методическое пособие. — Москва : РУДН, 2020. — 17 с. — Книга на английском языке. ISBN 978-5-209-10589-3

[https://mega.rudn.ru/MegaPro/UserEntry?Action=Link\\_FindDoc&id=497588&idb=0](https://mega.rudn.ru/MegaPro/UserEntry?Action=Link_FindDoc&id=497588&idb=0)

4. Litvitskiy P.F., Pathophysiology : lectures, tests, tasks / Litvitskiy P.F., Pirozhkov S.V., Tezikov E.B. - М. : GEOTAR-Media, 2016. - 432 p. - ISBN 978-5-9704-3600-4.

<http://www.studmedlib.ru/book/ISBN9785970436004.html>

5. Mohan Harsh. Textbook of pathology. - New Delhi : Jaypee Brothers Medical Publishers Ltd., 2015. - 7 th ed. - 954 p.: il

6. Mohan Harsh. Textbook of pathology. - New Delhi : Jaypee Brothers Medical Publishers Ltd., 2015. - 7 th ed. - 665 p.: il. Supplement

7. Mohan Harsh. Textbook of pathology. - New Delhi : Jaypee Brothers Medical Publishers Ltd., 2010. - 6 th ed. - 933 p.: il.

Electronic source:

[http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn\\_FindDoc&id=475793&idb=0](http://lib.rudn.ru/MegaPro/UserEntry?Action=Rudn_FindDoc&id=475793&idb=0)

The specified educational editions are available in the Scientific Library of Peoples' Friendship University of Russia and at V.A. Frolov Department of general pathology and pathological physiology.

### *Internet-(based) sources*

1. Electronic libraries with access for RUDN students

- Electronic Library System (ELS) of the RUDN University <http://lib.rudn.ru/MegaPro/Web>

- ELS "University Library Online" <http://www.biblioclub.ru>

- ELS Jurait <http://www.biblio-online.ru>

- ELS «Student consultant» [www.studentlibrary.ru](http://www.studentlibrary.ru)

- ELS «Lan» <http://e.lanbook.com/>

2. Databases and search engines:

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

- Yandex search engines <https://www.yandex.ru/>

- Google search engine <https://www.google.com/>

- reference database SCOPUS <http://www.elsevierscience.ru/products/scopus/>

- WHO documentation center <http://whodc.mednet.ru/>

- Springer <https://rd.springer.com/>

*Educational and methodological materials for self-studies of students in the development of the discipline/module\*:*

1. *A course of lectures on the discipline «Pathophysiology – pathophysiology of head and neck».*

2. *Guidelines for the implementation of tests in the discipline «Pathophysiology – pathophysiology of head and neck»*

*\* - 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 ESYSTEM!*

## **8. ASSESSMENT AND EVALUATION TOOLKIT AND ASSESSMENT & GRADING SYSTEM**

Assessment and Evaluation Toolkit and Assessment & Grading System\* for assessing the level of competence formation based on the results of mastering the discipline «Pathophysiology – pathophysiology of head and neck» are presented in the Appendix to this Work Program of the discipline.

\* - Assessment and Evaluation Toolkit and Assessment & Grading System are formed on the basis of the requirements of the relevant local normative act of the RUDN University.

### **DEVELOPERS:**

Head of V.A. Department  
of General Pathology and  
Pathological Physiology  
position, department

signature

M.L. Blagonravov

Name of the developer

Assistant professor of  
V.A. Department  
of General Pathology and  
Pathological Physiology  
position, department

signature

V.A. Goryachev

Name of the developer

### **HEAD OF THE DEPARTMENT:**

of V.A. Department  
of General Pathology and  
Pathological Physiology  
department

signature

M.L. Blagonravov

Name of Head of Department

### **HEAD OF THE PROGRAMME:**

Deputy Director of Institute of  
Medicine

department

signature

S.N. Razumova

Name of Head of Programme