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

Medical Institute

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

COURSE SYLLABUS

Pathophysiology, clinical pathophysiology

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

2025 г.

1. COURSE GOAL(s)

The goal of the course «**Pathophysiology, clinical pathophysiology**» 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, clinical pathophysiology**» is designed for students to acquire following competences: **UC-1; GPC-5; PC-2;**

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

Competence code	Competence descriptor	Competence formation indicators (within this course)
GPC-5.	Being able to assess morpho-functional, physiological conditions and pathological processes in the human body to solve professional tasks	GPC-5.1. Mastering the algorithm of clinical, laboratory and functional diagnosis when dealing with professional tasks. GPC-5.2. Being able to evaluate the results of clinical, laboratory and functional diagnosis when dealing with professional tasks. GPC-5.3. Being able to determine morpho-functional, physiological states and pathological processes of the human body.
PC-2.	Being able to examine a patient in order to determine a diagnosis	PC-2.7. Being able to carry out differential diagnosis with other diseases/conditions, including the urgent ones, as well as to make a diagnosis taking into account the current international statistical classification of diseases and problems related to health (ICD).

3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course «**Pathophysiology, clinical pathophysiology**» refers to the core component of B1 block of the higher educational programme curriculum.

Within the higher education programme students also master other disciplines (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course «**Pathophysiology, clinical pathophysiology**».

Table 3.1. The list of the higher education programme components that contribute to the achievement of the expected learning outcomes as the course results.

Competence code	Competence descriptor	Previous courses/modules, internships*	Subsequent courses/modules, internships*
GPC-5.	Being able to assess morpho-functional, physiological conditions and pathological processes in the human body to solve professional tasks	<i>Biochemistry; Normal physiology; Biology; Microbiology, virology; Propaedeutics of internal diseases; Chemistry; Bioorganic chemistry; Anatomy; Histology, embryology, cytology;</i>	<i>Obstetrics and Gynecology; Oncology, Radiation Therapy; Molecular Genetic Methods; Microbiological Diagnostics; Phthisiology; Anesthesiology, Intensive Care, Intensive Therapy; Ophthalmology; Cell Biology and Histology; Topographic Anatomy and Operative Surgery; Forensic Medicine; Maxillofacial Surgery; Medical Criminology; Otorhinolaryngology; Pediatrics; Sectional Course.</i>
PC-2.	Being able to examine a patient in order to determine a diagnosis	<i>Propaedeutics of Internal Diseases; Microbiology, Virology; Molecular Genetics in Practical Biology and Medicine**</i>	<i>Surgical Practice: Assistant Surgeon; Assistant Physician of the Therapeutic Profile: Assistant Physician of the Therapist; General Medical Practice: Assistant to an Outpatient Clinic Doctor; Practice of Obstetric and Gynecological Profile: Assistant Obstetrician; Practice of Obstetrics and Gynecology Profile: Assistant to a Gynecologist; General Medical Practice: Assistant Pediatrician; Dermatovenereology; Neurology, Medical Genetics, Neurosurgery; Ophthalmology; Faculty Surgery; Occupational Diseases; Hospital Therapy; Endocrinology; Outpatient Therapy; Hospital Surgery, Pediatric Surgery; Pediatrics; Obstetrics and Gynecology; Anesthesiology, Intensive Care, Intensive Care; Oncology, Radiation</i>

			<i>Therapy;</i> <i>Otorhinolaryngology;</i> <i>Reproductive Health;</i> <i>Traumatology, Orthopedics;</i> <i>Faculty Therapy;</i> <i>Maxillofacial Surgery;</i> <i>General Medical Skills;</i> <i>Urgent Conditions; Urology;</i> <i>Infectious Diseases;</i> <i>Psychiatry, Medical</i> <i>Psychology; Allergology;</i> <i>Phthisiology; Endoscopic</i> <i>Urology; Telemedicine;</i> <i>Clinical Dentistry; Current</i> <i>Issues of Neonatology;</i> <i>Topical Issues in</i> <i>Neonatology; Cardiology in</i> <i>Quests; Molecular Genetic</i> <i>Methods; Microbiological</i> <i>Diagnostic Methods;</i> <i>Evidence-Based Medicine;</i> <i>Sectional Course.</i>
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* To be filled in according with the competence matrix of the higher education programme.

4. COURSE WORKLOAD

The total workload of the course «**Pathophysiology, clinical pathophysiology**» is **8** credits.

Table 4.1. Types of workload by periods.

Type of workload		Total hours	Semesters			
			5	6		
<i>Class hours (All)</i>		175	90	85		
Include:						
Lectures (L)		0	0	0		
Laboratory research (LR)		0	0	0		
Practical trainings (PT)		175	90	85		
<i>Independent work (total)</i>		47	42	5		
<i>Control (exam / test with assessment)</i>		30	12	18		
Total labor input	hours	252	144	108		
	credit units.	7	4	3		

5. COURSE CONTENTS

Table 5.1. The content of the course module

Name of the module of course	Contents of the section	Types of workload *
Module 1 General nosology.	Topic 1.1. Conceptions of health and disease. Sano- и pathogenesis.	PT
	Topic 1.2. Pathology of cellular biomembranes and organells. Types and mechanisms of cell death. Disorders of biorhythms of a cell.	PT
Module 2 Non-specific pathological processes	Topic 2.1. Disorders of local blood circulation.	PT
	Topic 2.2. Inflammation.	PT
	Topic 2.3. Immunity. Immunopathology.	PT
	Topic 2.4. Allergy.	PT
	Topic 2.5. Pathophysiology of tumor growth.	PT
Module 3 Non-specific metabolic disorders	Topic 3.1. Hypoxia.	PT
	Topic 3.2. Pathology of body thermoregulation. Fever.	PT
	Topic 3.3. Pathophysiology of carbohydrate metabolism. Diabetes mellitus.	PT
	Topic 3.4. Pathology of a water-salt exchange. Edema. Pathophysiology of acid-base balance.	PT
	Topic 3.5. Integral mechanisms of metabolic disorders.	PT
	Topic 3.6. Pathophysiology of lipid, protein and purine metabolism.	PT
Module 4 Extreme states	Topic 4.1. Pathophysiology of extreme states.	PT
	Topic 4.2. Stress. Shock. Collapse. Coma. Dying and revival of an organism. Apparent and natural death. Principles of resuscitation.	PT

	Topic 4.3. “Diseases of civilization”. Chronopathology.	PT
	Topic 4.5. Ecological pathophysiology	PT
Module 5 Pathophysiology of the hematopoietic system	Topic 5.1. Anemias. Hemoblobonosis. Hemoglobinopathies.	PT
	Topic 5.2. Leukocytosis. Leukopenia. Leukemias.	PT
	Topic 5.3. Clinical tasks in the pathophysiology of the hematopoietic system.	PT
	Topic 5.4. Hemorrhagic diatheses.	PT
Module 6 Pathophysiology of the cardiovascular and respiratory systems.	Topic 6.1. Arrhythmias.	PT
	Topic 6.2. Coronary heart disease. Coronarogenic and noncoronarogenic necrosis of the myocardium. Complications of myocardial infarction.	PT
	Topic 6.3. Sudden cardiac death.	PT
	Topic 6.4. Heart defects. Cardiomyopathies. Myocarditis. Endocarditis. Pericarditis.	PT
	Topic 6.5. Heart failure. Pathophysiology of respiration.	PT
	Topic 6.6. Pathophysiology of bronchial obstruction syndromes.	PT
	Topic 6.7. Pathophysiology of vascular tonus.	PT
	Topic 6.8. Pathophysiology of the vascular wall. Atherosclerosis.	PT
Module 7 Pathophysiology of the gastrointestinal tract	Topic 7.1. Non-specific dysfunctions of the gastrointestinal tract.	PT
	Topic 7.2. Acute and chronic gastritis. Peptic ulcer. Diseases of the operated GIT.	PT
	Topic 7.3. Pathophysiology of the liver and bile ducts. Jaundice. Hepatic failure. Pathophysiology of cholecystitis. Pathophysiology of the pancreas. Intestinal obstruction.	PT
Module 8 Pathophysiology of the excretory system	Topic 8.1. Non-specific disorders of the excretory function of the kidneys.	PT

	Topic 8.2. Nephrotic syndrome. Nephritic syndrome. Acute and chronic diffuse glomerulonephritis. Pyelonephritis. Urolithiasis. Acute and chronic renal failure. Uremia. Renal coma.	PT
Module 9 Pathophysiology of the endocrine system	Topic 9.1. General mechanisms of endocrine disorders. Pathophysiology of the hypothalamic, pituitary and adrenal systems.	PT
	Topic 9.2. Pathophysiology of thyroid, parathyroid glands, thymus, epiphysis and gonads.	PT
Module 10 Pathophysiology of the nervous system and higher nervous activity	Topic 10.1. Pathophysiology of functional neuroses. Pathological reflexes. Pathophysiology of drug addiction. Pathophysiology of alcoholism.	PT
	Topic 10.2. Pathophysiology of CNS and neuroses.	PT

* - filled in only for full-time education: L - lectures; LR - laboratory research; PT - practical trainings

6. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. classroom Equipment and Technology Support Requirements

Classroom for Academic Activity Type	Classroom Infrastructure	Specialized Classroom Equipment, software and materials
Lab works	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
Seminars	Classroom for seminars, workshops, lab works, group and individual	ViewSonic PA503S Projector + Digis DSM-2 Ceiling Mount

Classroom for Academic Activity Type	Classroom Infrastructure	Specialized Classroom Equipment, software and materials
	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: 213)	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) 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

Classroom for Academic Activity Type	Classroom Infrastructure	Specialized Classroom Equipment, software and materials
		Office/Office 365, Teams, Skype) Complete SPARK system unit (10 pcs.) Monitor 17" TFT Proview (10 pcs.)

7. RESOURCES RECOMMENDED FOR COURSE

Main reading(sources):

a) Main literature

1. **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.
2. Ходорович Н.А., Величко Э.В. Патофизиология 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

b) Additional literature:

1. Благонравов М.Л., Склифасовская А.П. Патофизиология 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
2. Благонравов М.Л., Склифасовская А.П. Патофизиология 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
3. Litvitskiy P.F., Pathophysiology : lectures, tests, tasks / Litvitskiy P.F., Pirozhkov S.V., Tezikov E.B. - M. : GEOTAR-Media, 2016. - 432 p. - ISBN 978-5-9704-3600-4.
<http://www.studmedlib.ru/book/ISBN9785970436004.html>
4. Mohan Harsh. Textbook of pathology. - New Delhi : Jaypee Brothers Medical Publishers Ltd., 2015. - 7 th ed. - 954 p.: il
5. Mohan Harsh. Textbook of pathology. - New Delhi : Jaypee Brothers Medical Publishers Ltd., 2015. - 7 th ed. - 665 p.: il. Supplement
6. 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

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
- 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, clinical pathophysiology".*

2. *Guidelines for the implementation of tests in the discipline "Pathophysiology, clinical pathophysiology"*

** - 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, clinical pathophysiology» 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:

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_____ M.L. Blagonravov

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