

**SPECIALIST DEGREE PROGRAMME 31.05.01 'GENERAL MEDICINE'**

**COURSE (MODULE) 'PHYSIOLOGICAL BASIS OF ACUTE MEDICAL PROBLEMS'**

**OVERVIEW**

Mode of study	full time	
Faculty	International Institute of Medical Education and Cooperation	
Department	Normal physiology	
Year	2	
Semester –	4 – Normal physiology (72 ac.h.)	*ac. h. – academic hours
Lectures –	10 ac.h.	
Exam –	- semester - ac.h	
Practical classes	30 ac.h	
Contact classes	40 ac.h.	
Self-study	29 ac.h	
Total workload	72 ac.h (2 credits)	

The course (module) is devised according to FSES HE requirements approved on February,9, 2016 by Order of Ministry of Health, Russian Federation) and vocational functions of General Practitioner (primary care physician, district doctor) Professional Standard.

**1. THE COURSE AIM AND SCOPE**

**The aim:**

The teaching of a variable discipline is necessary for the formation of systemic knowledge about the life of the organism as a whole, its interaction with the external environment and the dynamics of life processes, an understanding of the basic laws of the functioning of body systems and the mechanisms of their regulation, familiarization with the most important principles and ways of compensating for functional deviations, providing a theoretical basis for further study of clinical disciplines.

**The course focuses on:**

- subject, purpose, objectives of the discipline and its significance for its future activities;
- the main stages in the development of physiology and the role of domestic scientists in its creation and development;
- patterns of functioning and mechanisms of regulation of the activity of cells, tissues, organs, systems of a healthy organism, considered from the perspective of general physiology, private physiology and integrative human activities;
- physiological mechanisms of the most pressing medical problems

As a result of studying normal physiology, students should be able to:

- use the dialectical principle as a generalized approach to the knowledge of the general physiological laws of the vital activity of a healthy organism in various conditions of its existence;
- explain the physiological principles of the most important methods for studying the functions of a healthy body;
- independently work with scientific, educational, reference and educational literature.

## **2. THE COURSE POSITION IN SPECIALIST DEGREE PROGRAMME 31.05.01 'GENERAL MEDICINE' .**

The course "PHYSIOLOGICAL BASIS OF ACUTE MEDICAL PROBLEMS" refers to the basic cycle of disciplines in the specialty of medical business of higher professional medical education, is studied in the third and fourth semesters and the following knowledge is necessary for its mastery:

1. philosophy, bioethics, psychology, pedagogy, history of medicine, Latin
  2. physics and mathematics, biology, human anatomy, histology, embryology, cytology
- Human anatomy (morphological basis for the study of functions). Myology, splanchnology, angiology, neurology, hematopoietic organs and immune system, esthesiology ..
  - Biology. Cell biology. Genotype and phenotype. Individual development, types, periods of development. Elementary processes of the body. Body aging. Homeostasis. Common human health problems. Regeneration as a structural basis of homeostasis. The principles of the evolution of organs, functions. Ecology. The specificity of human ecology. Biosphere. Noosphere.
  - Biological and medical physics. Thermodynamics of open systems, flows of substances, energy, entropy, information. Homeostasis, homeokinesis. Transients. Biophysics of cell membranes. Basics of electrogenesis. Electrical properties of nerve conductors. Biophysics of synaptic processes. Biophysics of muscle contraction and relaxation. Elements of the theory of information and control theory. The body as an automatic control system. Hydrodynamics, biomechanics. Acoustics, optics, electricity.
  - Biophysical, bioorganic and biological chemistry. Osmotic and oncotic pressure. The main classes of natural organic compounds, their metabolism (proteins, nucleic acids, carbohydrates, lipids). Vitamins, enzymes, hormones. Biochemistry of the liver, blood, kidneys, urine, nervous and muscle tissue. Common pathways of catabolism. Biological oxidation.
  - Histology. Embryology, cytology. Epithelial, connective tissue. Blood. Muscular and nerve tissue. Nervous system. Cardiovascular, endocrine, digestive, respiratory, excretory and reproductive systems. The sensory organs. Blood formation.
  - Philosophy. Worldview and methodological function of philosophy. Basic laws and categories of philosophy. Cognition as a reflection of reality. Methods and forms of scientific knowledge. Different concepts of cognition. Religious, atheistic, moral consciousness, science and culture. Matter and consciousness. Philosophical aspects of the work of I.M. Sechenova, I.P. Pavlova, P.K. Anokhin.
  - Latin language. Terminology.
  - Medical informatics. Theoretical foundations of informatics, search, collection, storage and processing of information in medical and biological systems, the ability to use information computer systems.

### 3. OUTCOME COMPETENCIES OF THE COURSE

On completing the course a student is expected to:

Learning outcomes	Competency developed: a description of (compulsory) threshold level	Competency code
1	2	3
<p><b>Know:</b>            basic physiological concepts and terms used in medicine; morphofunctional organization of a person, features of life activity in various periods of individual development and during pregnancy; the main mechanisms for regulating the functions of the physiological systems of the body (molecular, cellular, tissue, organ, organ-system, organisms); principles of modeling physiological functions; features of the development of excitation and inhibition in the human body; excitation transmission; mechanisms of motor functions.</p> <p><b>Be able to:</b>            Use literature, including Internet resources, to prepare abstract reports, analyze the results of experiments; be able to measure the most important indicators of human activity at rest; analyze the results of an experimental study of physiological functions in the norm (see list of skills);</p> <p><b>Skills:</b>            skills to measure the basic functional characteristics of the body (see list of skills); analysis of the results of an experimental study of physiological functions is normal.</p>	<p><b>General professional competencies (GPC)</b></p> <p>readiness to solve standard tasks of professional activity using information, bibliographic resources, biomedical terminology, information and communication technologies and taking into account the basic requirements of information security;</p>	GPC -1

<p><b>Know:</b>  basic physiological concepts and terms used in medicine; morphofunctional organization of a person, features of life in different periods of individual development and during pregnancy; basic mechanisms of regulation of the physiological systems of the body.</p> <p><b>Be able to:</b>  Use literature, including Internet resources, to prepare abstract reports; be able to measure the most important indicators of human activity at rest; analyze the results of an experimental study of physiological functions in the norm (see the list of skills);</p> <p><b>Skills:</b>  skills to measure the basic functional characteristics of the body (see list of skills).</p>	<p>the ability to assess morphofunctional, physiological states and pathological processes in the human body to solve professional problems</p>	<p>GPC -9</p>
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<p><b>Know:</b> basic physiological concepts and terms used in medicine; morphofunctional organization of a person, features of life in different periods of individual development and during pregnancy; the main mechanisms of regulation of the physiological systems of the body (molecular, cellular, tissue, organ, organ, organ); principles of modeling physiological functions; features of the development of excitation and inhibition in the human body; excitation transmission; mechanisms of motor functions.</p> <p><b>Be able to:</b> Use literature, including Internet resources, to prepare abstract reports, analyze the results of experiments; be able to measure the most important indicators of human activity at rest; analyze the results of an experimental study of physiological functions in the norm (see the list of skills);</p> <p><b>Skills:</b> skills to measure the basic functional characteristics of the body (see list of skills); analysis of the results of an experimental study of physiological functions is normal.</p>	<p><b>Professional competences (PC)</b></p> <p>ability and readiness to implement a set of measures aimed at preserving and promotion of health and including the formation of a healthy lifestyle, preventing the occurrence and (or) spread of diseases, their early diagnosis, identifying the causes and conditions of their occurrence and development, as well as aimed at eliminating harmful effects on human health of environmental factor.</p>	<p>PC -1</p>
<p><b>Know:</b> basic physiological concepts and terms used in medicine; morphofunctional organization of a person, features of life in different periods of individual development and during pregnancy; the main mechanisms of functioning of the visceral systems of the human body, the mechanisms of regulation of the function of the physiological systems of the body. The mechanisms of functioning of the sensory systems of the human body, HNA.</p> <p><b>Be able to:</b></p>	<p>ability to participate in research;</p>	<p>PC -21</p>

<p>Use literature, including Internet resources, to prepare abstract reports, analyze the results of experiments; be able to measure the most important indicators of human activity at rest; analyze the results of an experimental study of physiological functions in the norm (see the list of skills); be able to apply the acquired knowledge in practice, including when planning, conducting and analyzing the results of scientific research.</p> <p><b>Skills:</b> skills to measure the basic functional characteristics of the body (see list of skills); planning and analysis of the results of an experimental study of physiological functions is normal.</p>		
<p><b>Know:</b> basic physiological concepts and terms used in medicine; morphofunctional organization of a person, features of life in different periods of individual development and during pregnancy; the main mechanisms of functioning of the visceral systems of the human body, the mechanisms of regulation of the function of the physiological systems of the body. The mechanisms of functioning of the sensory systems of the human body, HNA.</p> <p><b>Be able to:</b> Use literature, including Internet resources, to prepare abstract reports, analyze the results of experiments; be able to measure the most important indicators of human activity at rest; analyze the results of an experimental study of physiological functions in the norm (see the list of skills); be able to apply the acquired knowledge in practice, including when planning, conducting and analyzing the results of scientific research.</p> <p><b>Skills:</b> skills to measure the basic functional characteristics of the body (see list of skills); planning and analysis of the results of an experimental study of physiological functions is normal.</p>	<p>readiness to participate in the introduction of new methods and techniques aimed at protecting the health of citizens</p>	<p>PC -22</p>

#### 4. THE COURSE (MODULE) 'PHYSIOLOGICAL BASIS OF ACUTE MEDICAL PROBLEMS' SYLLABUS AND CONTENTS

Total workload is 2 credits (72 ac.h.)

№ п/ п 1	Part (Module)	semester	week of the semester	Study forms (including self-study and workload in ac.h.)				Formative assessment ( <i>weekly</i> )
				Lectures	Practical classes	Seminars	Self-study	Summative assessment ( <i>by semesters</i> )
1	PHYSIOLOGICAL BASIS OF ACUTE MEDICAL PROBLEMS	4		10	30	-	29	Q T C A <b>redit</b>

**Q - Questions , T –Test , C – Cases, A – Algorithms of performance**

**Head of Normal physiology Department**  
(the name of the Chair)



Ass. Prof

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