MINISTRY OF SCIENCE, HIGH EDUCATION AND INNOVATION SCIENCE OF KYRGYZ REPUBLIC

IEO HE for Higher Education
Kyrgyz-Russian Slavic University named after first President B.N.Yeltsyn
Institute of Clinical Medicine and Biomedical technologies

ENDORSED BY
Dean of ICMandBT
Abilova S.S.
"04" 07 2026

Pathophysiology, clinical pathophysiology

Course Outline (Module)

Assigned to Department of Pathology and forensic medicine

Academic Curriculum 560001 General medicine

Mode of Study **Intramural**
Total Credit Value **8 credit point**

Course Hours 240
including:
in-class learning 144
individual work 65,7

Scope of Testing Semesters:
exam 5
credit 4

Course Hours Scheduling (per semester)						
Semester Academic Year	4 (1.1)		5 (1.2)		Total	
Weeks	18,7		18			
Type of Traning	AC	CO	AC	CO	AC	CO
Lectures	16	16	16	16	32	32
Practical Session	64	64	48	48	112	112
Contact work in theoretical period	0,3	0,3			0,3	0,3
Contact work in exam session			0,5	0,5	0,5	0,5
Including int.	4	4	4	4	8	8
Total In-class Session	80	80	64	64	144	144
Individual Work Assessment	80,3	80,3	64,5	64,5	144,8	144,8
Face-to-face Learning			29,5	29,5	29,5	29,5
Individual Work	9,7	9,7	56	56	65,7	65,7
Total	90	90	150	150	240	240

1. COURSE OUTLINE OBJECTIVES
The general purpose of teaching pathophysiology, clinical pathophysiology is to form a student's scientific knowledge of the general laws and specific mechanisms of occurrence, development and outcomes of pathological processes, reactions, individual diseases and disease conditions, the principles of their detection, therapy and prevention.
The objectives of this discipline are: teaching students the basic concepts and modern concepts of General nosology; teaching students etiology, pathogenesis, principles of detection, treatment and prevention of the most socially significant diseases and pathological processes, taking into account age characteristics; teaching students the common patterns and mechanisms of emergence, development and outcomes of pathological processes, conditions, reactions, and diseases ;the training of students carrying out pathophysiological analysis of pathological syndrome, pathological processes, forms of individual pathology and disease ;students acquire the knowledge and skills to formulate the principles (algorithms, strategies) and methods of detection, treatment and prevention of pathological processes, conditions, reactions and diseases; acquisition of students 'knowledge and skills to analyze scientific literature and official statistical reviews, prepare reviews of scientific literature or abstracts on modern medical scientific problems; acquisition of students' knowledge and skills to carry out statistical analysis and preparation of reports on the study; training of students to comply with the basic requirements of information security; acquisition of students 'skills of methodological, methodological and practical bases of clinical thinking and effective professional action of the doctor; acquisition of students' knowledge and skills to solve individual research and scientific-applied tasks in the field of health research on etiology and pathogenesis, diagnosis, treatment, rehabilitation and prevention of human diseases.

2. PLACE OF THE COURSE IN THE EDUCATIONAL PROGRAM	
Educational Program Units:	
2.1	**Students' Preliminary Training Requirements:**
2.1.1	"Philosophy" of Knowledge: methods and techniques of philosophical analysis of problems; forms and methods of scientific knowledge, their evolution. Skills: competently and independently analyze and assess the social situation in the Kyrgyz Republic, Russia and abroad and carry out their activities taking into account the results of this analysis. Skills: presenting an independent point of view, analysis and logical thinking, public speaking, ethical reasoning, debate and round tables.
2.1.2	"Physics, mathematics" Knowledge: mathematical methods for solving intellectual problems and their application in medicine; the main physical phenomena and laws underlying the processes occurring in the human body; characteristics of the impact of physical factors on the body; physical foundations of medical equipment. Skills: use of physical equipment. Skills: knowledge of methods of mathematical, statistical analysis of biomedical data of patients.
2.1.3	Biology of Knowledge: the General laws of the origin and development of life; of anthropogenesis and ontogenesis of a person; the laws of genetics, its importance for medicine; the laws of heredity and variation in individual development as the basis for the understanding of the pathogenesis and etiology of hereditary and multifactorial diseases.
2.1.4	Skills: use of biomedical laboratory equipment. Skills: proficiency in methods of studying inheritance in humans (cytogenetic method, genealogical method, twin method).
2.1.5	" Biochemistry " Knowledge: the chemical and biological essence of the processes occurring in the living organism at the molecular and cellular levels; the structure and biochemical properties of the main classes of biologically important compounds, the main metabolic pathways of their transformation; the role of cell membranes and their transport systems in metabolism in the body. Skills: interpret the results of the most common methods of laboratory diagnostics to identify pathological processes in organs. Skills: knowledge of the concept of limitation in the authenticity and specificity of the most common laboratory tests; preliminary diagnosis based on the results of biochemical studies of human biological fluids.
2.1.6	"Human Anatomy" Knowledge: anatomical-physiological, age-sexual and individual characteristics of the structure and development of a healthy and sick organism. Skills: to palpate on the person the main bone landmarks, to outline the topographic contours of the organs and the main vascular and nerve trunks.Skills: proficiency in medical and anatomical conceptual apparatus.
2.1.7	"Histology, embryology, Cytology" Knowledge: basic regularities of development and functioning of the body on the basis of the structural organization of cells, tissues and organs; histogenetically characteristics of fabric elements; methods of research.

2.1.8	Abilities: to work with magnifying equipment (microscopes, optical and simple magnifiers); to analyze histophysiological structure of cells, tissues and organs.Skills: microscopy and analysis of histological preparations and electronic microphotography.
2.1.9	“Pathological anatomy” Knowledge: basic laws of development of diseases on the basis of changes in the structural organization of cells, tissues and organs; histogenetically features of the tissue elements at a pathology ; methods of research. Skills: to work with magnifying equipment (microscopes, optical and simple magnifiers); to analyze histopathological assessment of various cellular, tissue and organ structures in pathology .Skills: microscopy and analysis of histological preparations and electronic microphotography.
2.1.10	"Normal physiology" Knowledge: functional systems , their regulation and self-regulation when exposed to the environment in the normal.Skills: interpret the results of the most common methods of functional diagnostics, thermometry to detect pathological processes in organs and systems.
2.1.11	Skills: ability to plan and conduct a physiological experiment, analyze the results.
2.1.12	"Microbiology, Virology" Knowledge: classification, morphology and physiology of microorganisms and viruses, their impact on health, methods of microbiological diagnostics; safety regulations and work in biological laboratories, reagents, devices, animals. Skills: to carry out statistical processing of experimental data. Skills: use information on the principles of sterilization, disinfection and antiseptic treatment of instruments and equipment to avoid infection of the doctor and the patient.
2.1.13	"Immunology" Knowledge: structures and functions of the immune system , its mechanisms of development and functioning, basic methods of immunodiagnostics, methods for assessing the immune status and indications for immunotropic therapy. Skills: to justify the need for clinical and immunological examination of a sick person. Skills: preliminary diagnosis based on the results of laboratory and instrumental examination.
2.2	**Course Units and Practical Sessions imposing the prior Proficiency**
2.2.1	Therapy, surgery, obstetrics and gynecology, as well as all other specialties related to the diagnosis and treatment of patients.

3. STUDENTS’ COMPETENCIES RESULTING FROM THE COURCE UNIT (MODULE)	
PC-5: ability to provide pathophysiologic analysis of clinical syndromes, to prove pathogenetic methods of diagnostics, treatment; ability and readiness to provide and interpret survey of patient, physical and clinical examination, laboratory and instrumental results of the tests	
Knowledge:	
Level 1	mechanisms of action of pathogenic factors on an organism, regularities of origin and development of pathological processes, conditions of transition of compensatory and adaptive reactions in the category of pathological, a role of response of an organism to damage, in emergence of disease.
Level 2	basic concepts, patterns and trends of occurrence and development, concepts and approaches of explanation and study, as well as possible interrelationships of typical pathological processes; individual, age and sex characteristics of General pathological processes in the pathogenesis of individual diseases.
Level 3	etiology, pathogenesis, symptoms of pathological conditions in the experiment; in extreme environmental conditions and clinic. General and distinctive features of experimental pathology from the clinical analogue.
Skills:	
Level 1	analyze, synthesize, evaluate the mechanisms of action of etiological pathogenic factors, physical, chemical and biological origin on the body, as well as the occurrence, development of damage and conditions of transition of damage to the disease. Be able to distinguish the mechanisms of sanogenesis from the laws of pathogenesis. Be able to distinguish the features of patho - and sanogenesis of the disease pattern in animals from man.
Level 2	interpret etiological, pathogenetic and clinical manifestations of typical pathological processes. To be able to reproduce in animals the individual experimental techniques.
Level 3	to understand, analyze, synthesize, evaluate the basic provisions and details of the doctrine of etiology and outcome of pathological conditions in an experiment and clinic. Reveal the meaning of the established facts in the simulation of animal diseases. To compare the results of the experiment with the clinical data.
Expertise:	
Level 1	skills of analysis, synthesis, evaluation and application of information on Pato - and sanogenesis, which are sufficient to solve theoretical problems and practical problems in the experiment. Have the ability to simulate disease in animals and interpret the results.
Level 2	skills of differentiated explanation of occurrence, development and outcome of typical pathological processes, skills of synthesis of individual symptoms of typical pathological processes. Master the basic methods of evaluation of the functional state of the human body, the skills of analysis and interpretation of the results of modern diagnostic technologies.
Level 3	skills of pathophysiological analysis of clinical syndromes, substantiate pathogenesis methods (principles) of diagnosis, treatment, rehabilitation and disease prevention. To own skills of expression and justify their own positions on the received information.