Ministry of Education and Science of the Kyrgyz Republic
Government-run Educational Institution of Higher Professional Education
Kyrgyz-Russian Slavic University
Institute of Clinical Medicine and Biomedical Technologies

Endorsed by
the Director, Assoc. Prof. Abilova S.S.
«04» 12 2026

Medical Biology
Course Outline (Module)

Assigned to the Department of Academic Curriculum	**Physics, Medical Informatics and Biology** 560001 KR General Medicine (for foreign students)
Qualification	**Specialist**
Mode of Study	**Intramural**

The Course outline developed by: Kostritsyna T.V.

Course Hours Scheduling (per semester)				
Semester Academic Year	**1 (1.1)**		**Total**	
Weeks	**16**			
Type of Training	EP	WP	EP	WP
Lectures	16	16	16	16
Practical Session	32	32	32	32
Contact Work During the Period of Theoretical Training	0,3	0,3	0,3	0,3
including of Interactive Session	4	4	4	4
Total in Auditorium Session	48	48	48	48
Contact work	48,3	48,3	48,3	48,3
Independent Work	41,7	41,7	41,7	41,7
Total	90	90	90	90

1. COURSE OUTLINE OBJECTIVES	
1.1	The mail concept the course on Medical Biology is the formation of general theoretical system knowledge among students in the field of biology. Studying of the academic discipline (module) "Medical biology" consists in mastering general theoretical knowledge in the field of biology and in developing students' ability to apply basic concepts in the field of biology necessary for a scientific worldview in the practice of a doctor.
1.2	Course typically covers the study of biological systems, genetics, and cellular processes with a focus on human health and disease at a molecular and cellular level.
1.3	The objective of the course is to provide a comparative overview of the most important topics in parasitology: the classification, biology, and life cycles of human parasites, their associated diseases (pathogenesis), diagnostic methods (especially laboratory techniques), and treatment, prevention, and control strategies.
1.4	Course “Medical biology” explores the biological underpinnings of human health and disease. It combines the content of the various disciplines of the biological sciences to provide a multifaceted, biological understanding of topics essential to medicine

2. PLACE OF THE COURSE IN THE EDUCATIONAL PROGRAM	
Educational Program Units:	**B 1 .B.16.06**
2.1	**Students' Preliminary Training Requirements:**
2.1.1	**Biology, anatomy and general biology which include in a high school level**
2.1.2	**Medical biology**
2.1.3	**Chemistry in the framework of a high school level**
2.2	**COURSE UNITS AND PRACTICAL SESSIONS IMPOSING THE PRIOR PROFICIENCY**
2.2.1	**Anatomy**
2.2.2	**Biochemistry**
2.2.3	**Histology**
2.2.4	**Microbiology, virology**
2.2.5	**Normal physiology**
2.2.6	**Hygiene**
2.2.7	**Epidemiology**
2.2.8	**Immunology**
2.2.9	**Obstetrics and gynecology**
2.2.10	**Urology**
2.2.11	**Pathophysiology, clinical pathophysiology**
2.2.12	**Ophthalmology**
2.2.13	**General hygiene**
2.2.14	**Anesthesiology, resuscitation and intensive care**
2.2.15	**Forensic Medicine**

3. STUDENTS' COMPETENCIES, RESULTING FROM THE COURCE UNIT (MODULE)
IC-l - is able and ready to analyze socially significant problems and processes, use the methods of natural sciences, mathematics and the humanities in various types of professional and social activities **PC-10 - able and ready to carry out preventive measures to prevent infectious, parasitic and non-communicable diseases**
AFTER STUDY OF THE DISCIPLINE THE STUDENT MUST: **TO KNOW**

Level 1	Basic biological concepts
Level 2	Basic scientific medical and biological terminology
Level 3	The main sources of information, bibliographic resources, the methodology for processing scientific and technical information on the Internet and specialized databases, the main methods of working with specialized software for solving standard problems of professional activity
AFTER STUDY OF THE DISCIPLINE THE STUDENT MUST: BE ABLE TO:	
Level 1	Use biomedical terminology, information and communication technologies, incl. Research methods for solving standard problems of professional activity
Level 2	Apply basic research methods to solve professional problems
Level 3	Apply information, bibliographic resources, processing methods, search for scientific and technical information using general and specialized databases and use specialized software when carrying out theoretical calculations and processing experimental data to solve standard problems of professional activity
AFTER STUDY OF THE DISCIPLINE THE STUDENT MUST: OWN SKILLS	
Level 1	Elementary methods of work and safety instructions for laboratory equipment and chemical reagents in biological, physical and chemical laboratories; general safety rules for handling computers.
Level 2	***To know:*** Fundamental professional definitions, categories, and signs (symptoms) ***Be able to:*** Use fundamental professional definitions, categories, and signs (symptoms) to carry out professional activities
Level 3	***Be able to*** use educational, scientific, popular science literature, reliable medical electronic resources for research activities, highlight the main thing in the flow of information

AS A RESULT OF LEARNING THE DISCIPLINE, THE STUDENT MUST

3.1	**KNOW:**
3.1.1	The general concepts that are fundamental to all biological systems, Levels of biological organization.
3.1.2	Cell morphology. Structural components of the cytoplasm and nucleus Structural and functional organization of the prokaryotic & eukaryotic cells
3.1.3	Molecular bases of heredity. Characterization of nucleic acids.
3.1.4	Organization of information flow in the cell Regulation of gene expression
3.1.5	Life cycle and cell cycles: types of division.:Mitosis. Meiosis.
3.1.6	Mendel's laws. Mono-, di- and polyhybrid crosses.
3.1.7	Fundamentals of Medical Genetics. Methods for studying human heredity.
3.1.8	Chromosomal theory of heredity. Linked inheritance. Genetics of sex.
3.1.9	Cytogenetic method. Chromosomal diseases. Biochemical method and DNA diagnostics. Population-statistical method. Medical genetic counseling
3.1.10	Medical Protozoology. Medical and biological bases of parasitism. General characteristic of Subkingdom Protozoa (Protozoa).
3.1.11	General overview Phyla of medical importance: Sarcomastigophora, Apicomplexa Ciliophora, Microspora.

3.1.12	Life cycles of protozoan human parasites, their associated diseases (pathogenesis), diagnostic methods (especially laboratory techniques), and treatment, prevention, and control strategies.
3.2	**BE ABLE**
3.2.1	to work Independently with a microscope; the light microscope, its device and methods of working with it.
3.2.2	to describe the basic structure of prokaryotic cells; cite an example of these cells.
3.2.3	To give the function and cellular location of the following basic eukaryotic organelles and structures: cell membrane, nucleus, endoplasmic reticulum, Golgi bodies, lysosomes, mitochondria, ribosomes, chloroplasts, vacuoles, and cell walls.
3.2.4	Understanding the laws of inheritance and applying them to human pedigrees and gene transmission through mitosis and meiosis.
3.2.5	to analyze the organization of the human genome into chromosomes
3.2.6	Understanding multifactorial inheritance, how the environment interacts with genetics, and the genetic basis of complex diseases.
3.2.7	to define of basic terms in parasitology: parasitology, parasitism, parasite, host; types of biological interactions; morphological and physiological adaptations of parasites to the parasitic lifestyle.
3.2.8	to classify: systematic position of parasites. Parasite-host interactions. Systems and organs attacked by various species of parasites.
3.2.9	to explore the biology, pathogenesis, diagnosis of parasitic infections in humans
3.3	**TO OWN SKILLS:**
3.3.1	to create Punnett squares for predicting recurrence risks for inherited disorders or traits in families.
3.3.2	to analyze Pedigree charts depict family relationships and transmission of inherited traits.
3.3.3	to analyze karyotypes and chromosomal abnormalities, including numerical and structural aberrations, and their clinical implications.
3.3.4	Applying genetic principles to diagnose genetic disorders, understand the basis of personalized medicine, and evaluate research data in a clinical context.
3.3.5	providing patients and families information about how genetic conditions may affect them in the future and their risk for a variety of genetic conditions.
3.3.6	Calculating genetic risk from human pedigrees and interpreting genetic information using probability rules.
3.3.7	Demonstrate awareness human parasites common in certain localities and other parts of the world
3.3.8	Classify parasites of medical importance in its broad scientific taxonomic positions.
3.3.9	outline and discuss epidemiologic principles of parasitic disease
3.3.10	Describe and discuss the common parasitic diseases caused by protozoa as regards infective stage, mode infection and life cycle of parasites of medical importance.
3.3.11	to identify medically important vectors or intermediary hosts and incriminate them in disease transmission