MINISTRY OF EDUCATION AND SCIENCE OF THE KYRGYZ REPUBLIC

Government-run Educational-Institution of Higher Professional Education
Kyrgyz-Russian Slavic University named after B.N. Yeltsin
School of medicine

ENDORSED BY
Director of the Institute of Clinical Medicine and Innovative Technologies
Abylova S.S.
4th of November
2026 year.

Biochemistry

Annotation of course Outline (Module)

Assigned to	**Base and Clinical Pharmacology, Chemistry and Biochemistry Department**
Academic Curriculum	560001_26_1LDi.pli.xml 560001 - KR General Medicine (for foreign student)
Qualification	**Specialist**
Mode of Study	**Intramural**
Total Credit Value	**8 credit points**

Course Hours	240
including:	
in-class learning	112
Individual work	97,7
exam	35,5

Scope of Testing Semesters:
exams 3
credits 2

Course Hours Scheduling (per semester)

Semester (Academic Year)	2 (1.2)		3 (2.1)		Total	
Weeks	18		16			
Type of Training	AC	CO	AC	CO	AC	CO
Lectures	16	16	32	32	48	48
Practical Session	32	32	32	32	80	80
Contact work during semester	0.3	0.3			0.3	0.3
Contact work during exam period			0.5	0.5	0.5	0.5
Including Interactive Session	3	3	3	3	6	6
Total In-class Session	48	48	64	64	112	112
Common contact work	48.3	48.3	64.5	64.5	112.8	112.8
Independent student work	71.7	71.7	26	26	97,7	97,7
Exam			29,5	29,5	29,5	29,5
Total	120	120	120	120	240	240

1. COURSE OUTLINE OBJECTIVES	
1.1	to acquire systemic knowledge of the main molecular mechanisms of biological systems functioning, their impact on human health and adaptation at the molecular, cellular and organ levels, to form theoretical basis for further study of medical biological and clinical disciplines in specialty 560001 General Medicine

2. PLACE OF THE COURSE IN THE EDUCATIONAL PROGRAM	
Cycle (section) CEP:	B1.O
2.1	**Students' Preliminary Training Requirements:**
2.1.1	Medical informatics
2.1.2	Physiology
2.1.3	Histology, Embryology, Cytology
2.1.4	Anatomy
2.1.5	Biology
2.1.6	Physics, Mathematics
2.1.7	Chemistry
2.2	**Course Units and Practical Sessions imposing the prior Proficiency:**
2.2.1	microbiology, virology;
2.2.2	pathophysiology, clinical pathophysiology;
2.2.3	Propaedeutic of internal diseases
2.2.4	pharmacology;
2.2.5	immunology;
2.2.6	Faculty therapy
2.2.7	Faculty surgery
2.2.8	Clinic pharmacology;
2.2.9	Endocrinology
2.2.10	Hospital therapy
2.2.11	Hospital surgery
2.2.12	Infection diseases

3. THE STUDENT'S COMPETENCIES FORMED AS A RESULT OF MASTERING THE DISCIPLINE (MODULE)	
PC-6: In order to address professional tasks a student is capable and ready to assess the morphofunctional and physiological states and pathological processes in the human body in different age and gender groups.	
Knowledge:	
Level 1	To characterize biochemical processes in normal conditions and at during age and gender groups for the purpose of addressing professional tasks.
Skills:	
Level 1	To use biochemical methods to solve professional tasks, taking into account age and gender groups.
Expertise:	
Level 1	To understand the molecular mechanisms of disease pathogenesis; skills in assessing the diagnostic and prognostic significance of biochemical analysis results.

PC-7: Capable and ready to conduct and interpret patient interviews, physical examinations and clinical assessments, as well as the results of modern laboratory and instrumental tests and to complete outpatient and inpatient medical records.	
Knowledge:	
Level 1	The range of modern biochemical tests required for the examination of outpatients and inpatients.
Skills:	
Level 1	To Interpret the results of modern biochemical tests required for the assessment of outpatients and inpatients.
Expertise:	
Level 1	The Skills in the analysis and clinical-biochemical interpretation of laboratory tests.

DC-7: Capable of applying fundamental physicochemical, mathematical, and natural science concepts and methods to solve professional problems.	
Knowledge:	
Level 1	Fundamental physicochemical principles underlying the vital processes of the organism. Major pathways of protein, lipid, carbohydrate, and energy metabolism, and their interrelationships.
Skills:	
Level 1	Apply physicochemical and mathematical methods to solve biochemical problems. Explain the mechanisms of key metabolic processes using concepts from the natural sciences.
Expertise:	
Level 1	Skills in applying physicochemical methods to the study of biological systems. Skills in using knowledge from the natural sciences to explain the mechanisms of pathological changes in the body.

Final Students' Competences

3.1	**Knowledge:**
3.1.1	Fundamental and applied issues of modern biochemistry: chemical composition, structure, exchange and functions of molecular and supramolecular formations;
3.1.2	the main ways and mechanisms of regulation of metabolism of carbohydrates, lipids, proteins, amino acids, nucleotides;
3.1.3	mechanisms of energy exchange and tissue energy supply;
3.1.4	mechanisms of enzymatic catalysis, features of the enzymatic composition of organs; basic principles of diagnosis and treatment of diseases associated with impaired functioning of enzymes;
3.1.5	mechanisms of regulation and integration of metabolism, providing metabolic and physiological homeostasis of organs
3.1.6	principles of biochemical analysis, diagnostically significant indicators of the composition of blood, saliva, gastric juice, urine and ranges of their fluctuations in a healthy person.
3.2	**Skills:**
3.2.1	explain the molecular mechanisms of the structure and functional activity of the main organs and tissues;
3.2.2	perform laboratory work, fill out the research protocol, evaluate its results;
3.2.3	solve test tasks and situational tasks based on theoretical knowledge.
3.3	**Expertise:**
3.3.1	Using of Biochemical terminology;
3.3.2	in using laboratory instruments, laboratory chemical utensils and other laboratory equipment;
3.3.3	of performing biochemical laboratory tests in the presence of reagents and methodological materials;
3.3.4	Skills of independent work with biochemical literature: to search for data, turn what you read into a tool for solving biochemical, and in the future professional tasks.