

# 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

Vice Rector

*Aliyeva*

23.10. 2025 year



## Biochemistry

### Course Outline (Module)

Assigned to	<b>Chemistry and Biochemistry Department</b>
Academic Curriculum	560001_24_12LDi pli.xml 560001 - KR General Medicine (for foreign student)
Qualification	<b>Specialist</b>
Mode of Study	<b>Intramural</b>
Total Credit Value	<b>8 credit points</b>

Course Hours	240
including:	
in-class learning	112
Individual work	97.7
exam	29.5

Scope of Testing Semesters:  
exams 3  
credits 2

The Course outline developed by: Abdurashitova Y.A., associate professor, CCS and Ibraeva I.G., associate professor, CMS

#### Course Hours Scheduling (per semester)

Semester (Academic Year)	3 (2.1)		4 (2.2)		Total	
	AC	CO	AC	CO	AC	CO
Weeks	18		18			
Type of Training	AC	CO	AC	CO	AC	CO
Lectures	16	16	32	32	48	48
Practical Session	32	32	32	32	64	64
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
Individual 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 35.05.01 General Medicine

2. PLACE OF THE COURSE IN THE EDUCATIONAL PROGRAM	
Cycle (section) CEP:	Б1.О
<b>2.1</b>	<b>Students' Preliminary Training Requirements:</b>
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
<b>2.2</b>	<b>Course Units and Practical Sessions imposing the prior Proficiency:</b>
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. STUDENTS' COMPETENCIES RESULTING FROM THE COURSE UNIT (MODULE)	
<b>GC-1: Be able to solve standard tasks of professional activity with the use of information, bibliographic resources, medical and biological terminology, information and communication technologies, taking into account the basic requirements of information security.</b>	
<b>Knowledge:</b>	
Level 1	<ul style="list-style-type: none"> <li>– socially significant problems and processes,</li> <li>– Fundamental and applied issues of modern biochemistry</li> </ul>
<b>Skills:</b>	
Level 1	<ul style="list-style-type: none"> <li>– to use the methods of natural sciences, mathematics and humanities to explain the molecular mechanisms, structural features and functional activity of the main organs and tissues</li> </ul>
<b>Expertise:</b>	
Level 1	<ul style="list-style-type: none"> <li>– Basic physico-chemical, mathematical and natural science laws,</li> <li>– understanding of molecular mechanisms of pathogenesis of diseases;</li> <li>– skills to assess the diagnostic and prognostic significance of the results of biochemical analysis</li> </ul>

**Final Students' Competences**

<b>3.1</b>	<b>Knowledge:</b>
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.
<b>3.2</b>	<b>Skills:</b>
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.
<b>3.3</b>	<b>Expertise:</b>
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.