Speciality “General Medicine”

ACADEMIC DISCIPLINE "BIOLOGICAL CHEMISTRY" of the Medical and Biological Module 1

Academic discipline outline	Biological Chemistry" is a discipline, containing systematized scientific knowledge about the molecular basis of human life processes in normal conditions and the potential causes and consequences of disruptions in metabolic reactions.
Resulting skills	Basic professional competence. To use knowledge of the molecular foundations of life processes in the human body under normal conditions and in pathology, to apply the principles of biochemical methods for diagnosing diseases, and the main methods of biochemical research.
Learning outcomes	The student must **to know:** the composition of the living human organism, the structure and physicochemical properties of the main classes of compounds: proteins, nucleic acids, carbohydrates, lipids; the metabolism of these compounds, and the mechanisms of metabolic regulation; the structure of enzymes; the mechanisms of reactions catalyzed by enzymes (using the transformations of proteins, nucleic acids, carbohydrates, and lipids as examples); molecular mechanisms of enzyme action regulation (types of regulation); the hierarchy of regulation; types of catalysis used in enzymatic reactions; the mechanisms of oxidative phosphorylation, molecular mechanisms of energy coupling processes; the mechanisms of protein synthesis, its regulation and energy supply; the mechanisms of protein spatial structure formation; chain oxidation reactions and their role in biological systems under normal conditions and in the development of pathological processes; the biochemical foundations of healthy nutrition and the health consequences of malnutrition; the rules of medical ethics and deontology. **be able to:** conduct chemical research according to a given protocol, using laboratory equipment and instruments; analyze and document the obtained results of biochemical

	studies. **master:** operating instruments and equipment used in biochemical laboratories (spectrophotometers, photoelectric colorimeters, centrifuges, automatic pipettes); methods for qualitative and quantitative analysis of nucleic acids, proteins, lipids, carbohydrates, vitamins, and hormones in biological material.
Semester(s)	3,4 semesters
Prerequisite	Medical chemistry Bioorganic chemistry Medical and biological physics Medical biology and general genetics Histology, cytology, embryology
Credit value	8 credits
Academic hours	298 academic hours in total, including: 187 classroom hours
Forms of midterm attestation	Test Examination