

ABSTRACT OF THE ACADEMIC DISCIPLINE

"MODERN PROBLEMS OF MOLECULAR BIOLOGY"

THE PURPOSE OF THE COURSE

The aim of the course is to teach students to navigate modern concepts of molecular biology, to give a holistic view of the molecular mechanisms of preservation and implementation of genetic information, the structure and functions of nucleic acids and proteins. methods for analyzing biological sequences and spatial structures of Biological Macromolecules. The academic discipline is the basic one for studying most courses from the cycles of fundamental natural science training and professional training.

THE PROCESS OF STUDYING THE DISCIPLINE IS AIMED AT THE FORMATION OF SUCH COMPETENCIES

To form students a holistic and systematic view on the organization of biological structures at the molecular level and mechanisms for the implementation of genetic information.

CONTENTS OF THE COURSE

- And module (1 credit) includes information on basic concepts and concepts of Molecular Biology, fundamentals of structural and functional organization of Biological Macromolecules, experimental methods for studying the structure of nucleic acids and proteins, protein dynamics and mechanism of action of enzymes, protein folding and the nature of conformational diseases, proteomics as a new branch of Molecular Biology.
- Module II (1 credit)-includes information about the structural and functional organization and genetic function of chromosomes, the structure of genomes, DNA reduplication and its molecular mechanisms, reverse transcription, genetic code, modification and restriction of DNA, repair of DNA damage, genetic recombination. enzymology of genetic processes.
- Module III (1 credit) - includes information on gene expression and mechanisms of RNA Matrix synthesis, transcription regulation, RNA processing and splicing, genome expression, the latest transcriptomics and proteomics technologies, molecular mechanisms of protein biosynthesis, protein processing, gene and protein engineering, bionanotechnologies and prospects for their practical application.

SCOPE OF STUDY OF ACADEMIC DISCIPLINE

3 ECTS credits, a total of 90 hours, including 36 hours of classroom training and 54 hours of independent and individual work.