

Home tasks
Fall semester 2025-2026 academic year
Educational program 7M05109 Биотехнология, daily,
1 course (Autumn)
 Modern methods in biotechnology

Week	Home task Title
1	IWS P 1. Consultations on the implementation of IWST 1 ATTENTION. Number of IWST (6), IWS (5) for 15 weeks Isolation of nuclear and mitochondria membranes. Using membrane vesicles to study ion transport. Study of passive transport of K ⁺ and Na ⁺ ions on membrane vesicles. Methods for determining the electrical characteristics of membranes
2 week	IWST 2. Control work, test, individual / group project, essay, situational task, testing, portfolio, etc. at the teacher's choice.
5 week	IWST3. Theme. Applications of methods for quantitative determination of proteins. Mass spectrometry in protein research. Electrospray ionization (ESI) in proteomic analysis. Quantitative mass spectrometry in protein studies
8 week	IWST 4. Consultations on the implementation of IWS 2. Molecular methods used in biotechnology.
9 week	IWST 5. Mass spectrometry /MS sequencing, ESI, MALDI-TOF) for protein sequencing.
11 week	IWST 6. Genome-wide association study (GWAS). Types. Sample of genome-wide association study (GWAS) protocol Quantitative trait locus (QTL). Marker-assisted selection (MAS)
13	IWST 4. Theme. Examples using biochemical engineering for developing products and processes Use of algae for biogas, green diesel, food supplementation. Algae-based energy harvester. Species. The techniques used for inserting the isolated gene into the host genome. Recent advancements using genome editing techniques, notably CRISPR for , the production of GMOs