

120 credits

Professional Competencies

Compulsory disciplines

- Advanced biochemistry
- Molecular Oncology
- Basics of Genetic Engineering
- Molecular Neuroscience

1, 2, 3, 4 semester

12 credits

Elective specializations / modules / disciplines

- Cytotoxicity studies
- Visualization of 3D structures and tissues
- Principles and applications of oligonucleotide biosensors
- Microorganisms basics
- Principles of oligonucleotide agents that cleave RNA
- Gene synthesis
- Microfluidic technologies
- Atomic force microscopy in biology
- Cell culture basics
- Scientific experiment basics
- Cell staining
- Digital screening of nanoparticle cytotoxicity
- Advanced methods for nucleic acid detection
- Synthesis and characterization of nanoparticles for biomedicine
- 3D culture basics
- Design of peroxidase mimetic nanomaterials
- Oligonucleotide-based gene therapy
- Modern methods of tumor therapy
- Basics of working with plasmid DNA
- Nanoparticle biocompatibility investigation
- Enzyme biosensors for the food industry
- Magnetic composite materials for biomedicine
- 3D bioprinting for biomedicine
- Multiphysics modeling in biomedicine and biotechnology
- Biosensors and their applications for biomarker detection and analysis
- Biostatistical analysis of microbiota
- Biostatistics in R
- Bacterial genome assembly and annotation

1, 2, 3, 4 semester

42 credits

54 credits

Core disciplines

- Thinking
- Entrepreneurship
- Creative technologies
- Foreign languages
- Applied Artificial Intelligence
- Soft skills

1, 2, 3, 4 semester

18 credits

Practical training

- Research Internship
- Senior Internship
- Preparation for Thesis Defense and Thesis Defense

1, 4 semester

54 credits

Optional courses (in English)

- Energy Storage
- Natural Language Processing in Chemistry
- Machine Learning for Chemical Systems
- Computational Chemistry and Modeling of Chemical Systems
- Advanced Methods of Materials Characterization
- Catalysts and Green Chemistry
- Data Product Development Workshop
- Applied Math and Statistics
- Algorithms and Big Data in Chemistry and Materials Science
- Comprehensive Approach to Materials Synthesis
- Alternative Energy Fundamentals
- Nanoengineering and Nanofabrication
- Neural Networks in Chemistry
- Programming of Chemical Tasks
- Advanced Materials for Industrial Applications
- Additive Technologies

1, 2, 3, 4 semester