

**MINISTRY OF SCIENCE AND EDUCATION OF THE REPUBLIC OF AZERBAIJAN**

**Approved by the Order  
No. \_\_\_\_ of the Ministry of  
Science and Education of  
the Republic of Azerbaijan,  
dated \_\_\_\_ 2025.**

**Educational Programme for the Master's Degree in [Specialization]**

**Specialization Code and Title: 7005001 – “Biology”**

**BAKU – 2025**

## **1. General Provisions**

1.1. The Educational Program for the specialization 7005001 – “Biology” at the Master’s level of higher education (hereinafter – the Educational Program) has been developed in accordance with the Law of the Republic of Azerbaijan “On Education,” relevant resolutions of the Cabinet of Ministers of the Republic of Azerbaijan, the “Classification of Specializations at the Master’s Level of Higher Education” advanced international practices, and the requirements of the labor market.

1.2. The objectives of the Educational Program are as follows:

- – to define the competencies of graduates in the specialization, the framework of the specialization, teaching and learning methods for courses, assessment methods, learning outcomes, requirements for infrastructure and academic staff capacity for personnel training, as well as opportunities for internships, employment, and continuation of studies for students;
- – to familiarize students and employers with the knowledge, skills, and learning outcomes acquired by graduates;
- – to inform stakeholders involved in the evaluation process regarding the compliance of specialist training with the requirements of the Educational Program.

1.3. The Educational Program is mandatory for all higher education institutions operating in the Republic of Azerbaijan that provide Master’s level training in this specialization, regardless of their subordination, ownership type, or organizational-legal form.

1.4. Under a five-day working schedule, the total weekly academic workload of students, including in-class and extracurricular activities, shall be 45 academic hours (except for specialized higher education institutions). Of this, 12–16 academic hours shall consist of classroom instruction. The weekly workload for specializations studied in depth for professional purposes may be modified.

1.5. Each higher education institution shall develop a separate educational program for every specialization in which personnel training is conducted within the given field of study. In addition to the sections included in the Educational Program of the relevant specialization, each specialization-specific program shall also reflect teaching and learning methods, methods for assessing learning outcomes, organization and assessment of internships, and other relevant components.

## **2. Graduate Competencies**

2.1. Upon completion of the Educational Program, graduates shall acquire the following general competencies:

- the ability to independently resolve unexpected and complex issues within the framework of professional activity;
- the ability to propose and plan relevant activities and methods, as well as analyze their current and prospective outcomes;
- the ability to investigate the causes of problems related to the field of activity or study and resolve them within a specific time-frame and under conditions of limited information;
- the ability to select and apply appropriate technologies and methods in solving problems related to the field of activity or study, as well as to identify, evaluate, and assess expected outcomes;
- the ability to critically evaluate one’s own performance in the process of solving problems related to the field of activity or study.

- – the ability to present and substantiate problems related to the field of activity or study orally and in writing in the Azerbaijani language and in one foreign language, as well as to participate in relevant discussions with specialists and non-specialists;
- – the ability to transfer one’s knowledge and competencies to others through various methods;
- – the ability to act in accordance with ethical standards under all circumstances, and to understand the ethical aspects, limitations, and social role of personal conduct;
- – the ability to assess one’s own and others’ needs related to lifelong learning and professional development, as well as to apply effective methods necessary for independent learning.

2.2. Upon completion of the Educational Program, graduates of the specializations within the field **7005001 – “Biology”** shall acquire the following **professional competencies**:

### **Specialization in “Molecular Biology”**

- the ability to use laboratory equipment and materials in accordance with relevant instructions and to comply with safety regulations;
- the ability to apply molecular biological methods (protocols) and modify them according to specific research objectives;
- the ability to apply adequate knowledge regarding various biological molecular structures and structural modifications;
- the ability to process bio materials using recombinant gene and protein technologies and genetic engineering applications;
- the ability to select and utilize software tools for DNA and RNA sequence analysis (AFLP, RFLP, PCR, RT-PCR, ChIP, sequencing, NGS, etc.);
- the ability to utilize open-access international databases (NCBI, EMBL-EBI, MANET, PubMLST, Dryad, etc.).

### **Specialization in “Biochemistry”**

- the ability to understand and manage the requirements and procedures necessary for work in a biochemistry laboratory;
- the ability to comparatively analyze matter and energy metabolism in various living organisms and interpret the biochemical characteristics of cells and tissues;
- the ability to explain the production, structure, functions, and mechanisms of action of enzymes and other biologically active substances (vitamins, hormones, flavonoids, phytoestrogens, etc.);
- the ability to perform and apply methods for the extraction and purification of organic substances from biological materials;
- the ability to demonstrate awareness of biochemical databases (BISC, GESTIS, HMDB, Kallium Database, MANET, SABIO-RK, etc.) and use them effectively.

### **Specialization in “Human and Animal Physiology”**

- the ability to explain accurate and reliable information on the structural and functional characteristics of human and animal organisms at the level of contemporary scientific knowledge;
- the ability to investigate the mechanisms of vital functions (maintenance of organismal functions at various levels, movement, sensitivity, digestion, metabolism, excretion, reproduction, and development);
- the ability to understand the structural and functional mechanisms of internal organs and investigate the causes of pathological conditions.

- to analyze the fundamental regularities governing the functioning of natural systems at the levels of population, biocenosis, ecosystem, and biosphere;
- to be familiar with international ethical standards for conducting research on experimental animals, and to adopt and comply with the “4Rs” principles of the International Ethics Committee regarding animal experimentation (Reduction, Refinement, Replacement, and Responsibility);
- to understand the optimization of work processes, the application of safe technologies, the organization of work and preparation of recommendations for work schedules, as well as the use of personal protective equipment;
- to apply modern research methods in the study of real problems related to the regulation of processes in human and animal organisms.

### **Specialization in “Plant Physiology”**

- to select advanced methodologies and the most efficient experimental approaches, as well as to develop and optimize research protocols;
- to organize experiments aimed at investigating the sensitivity and resistance of living organisms to various environmental factors (frost, drought, salinity, diseases, etc.);
- to explain and substantiate the mechanisms of stress tolerance and antioxidant defense system responses in plants;
- to isolate cellular structural units and organelles (chloroplasts, mitochondria, etc.), and to investigate their metabolic and energetic processes;
- to identify potential risks in experiments conducted under natural and laboratory conditions, to assess these risks, and to develop proposals for their mitigation.

### **Specialization in “Mycology”**

- to investigate issues related to fungal evolution, systematics, morphology, physiology, biochemistry, and genetics;
- to distinguish fungal species, especially microfungi, from other microscopic organisms; to collect them, prepare herbarium specimens or isolate them into culture, and cultivate them;
- to understand essential requirements and procedures for sterile conditions in a mycological laboratory, to work with equipment and materials, and to apply international standards and advanced methodologies;
- to operate microscopes independently, identify key structural characteristics of fungi, document species descriptions, utilize identification keys, and determine species classification;
- to investigate controversial or pathogenic species using classical and modern molecular methods and approaches (PCR, RT-PCR, sequencing, NGS, etc.);
- to utilize scientific journals, local and international databases, and legal documents relevant to mycological research (CBS, ECCO, Fungal Planet, FungiDB, Index Fungorum, EPPO, GlobalFungi, IUCN, IPPC, MLCT, MycoBank, MycoPortal, NCBI, NCCB, etc.);
- to possess knowledge of edible, medicinal, and rare macrofungi, and to develop proposals for their study, safety, conservation, and sustainable use;
- to identify fungal species affecting agricultural crops as well as those promoting plant development, and to study plant–fungus interactions;
- to investigate fungal species for the bioremediation of contaminated environments and their application;
- to ensure quality control and safety in fungal cultivation processes.

### **Specialization in “Microbiology”**

- to possess knowledge of the structure, physiology, biochemistry, evolution, classification, and taxonomy of microorganisms, and to distinguish them from one another;
- to perform microbiological analyses (cultural, microscopic, molecular, biochemical, etc.) using methodologies from related fields;
- to be aware of and effectively use relevant databases (BacDive, EPPO, MBGD, MiDAS, NCBI, Virus-HostDB, etc.);
- to understand pathogenic microorganisms and their interactions with hosts, and to work with them in accordance with safety requirements;
- to investigate the applications of microorganisms in various fields (industry, agriculture, medicine, etc.) and to apply them based on ethical principles;
- to document and statistically process experimental results and analyze findings.

### **Specialization in “Botany”**

- to investigate issues related to plant systematics, morphology, anatomy, physiology, biochemistry, genetics, and evolution;
- to work independently in field, herbarium, and laboratory conditions and to use identification keys;
- to integrate key morphological characteristics and molecular data for species-level plant identification;
- to understand plant biogeography, growth, and distribution patterns, and to develop proposals for plant conservation;
- to identify plants of nutritional, medicinal, industrial, and ornamental importance and to design programs for their efficient use based on international and local best practices;
- to adequately address current research problems in both fundamental and applied fields of botany using modern methodologies;
- to work with databases and local/international legal documents (AGRICOLA, BGCI, CBD, GBIF, IPNI, IPPC, ISTAR, IUCN, NCBI, WFO, etc.).

### **Specialization in “Genetics”**

- to understand fundamental genetic principles including heredity, DNA structure, gene expression, and genetic technologies;
- to analyze genetic data, including DNA sequencing, gene expression, and population genetics data;
- to work with bioinformatics tools and databases for genetic analysis (GenBank, MedGen, NCBI, OMIM, etc.);
- to plan and implement research projects in the field of genetics;
- to investigate the applications of heredity and variation principles in various fields (agriculture, medicine, etc.);
- to understand the ethical implications of genetic research and apply genetic knowledge in fields such as healthcare, agriculture, and environmental science.

### **Specialization in “Invertebrate Zoology”**

- to conduct research on the systematics, morphology, anatomy, physiology, and phylogenetic development of invertebrate animals.

### **For the specialization in “Immunology”**

- to demonstrate an in-depth understanding of the immune system and its role in health and disease, and to apply this knowledge in research and practical settings;
- to know the experimental and bioinformatics methods used in immunological research, and to identify research gaps and formulate hypotheses through the evaluation of scientific literature;
- to apply the fundamental principles of immunology, including the cells, molecules, and mechanisms involved in immune responses;
- to be able to relate basic immunological research to clinical applications and develop proposals for the creation of new therapeutic and diagnostic tools;
- to reason about infectious diseases, autoimmune diseases, allergies, and cancers, as well as the pathological processes underlying these conditions;
- to interpret the mechanisms of antibacterial, antiviral, and antitumor immune responses, analyze current approaches to vaccine development, and explain the immunological foundations of transplantation.

### **For the specialization in “Cell and Developmental Biology”**

- to know the principles of cell biology and developmental biology, possess an understanding of cell structure, function, genetics, molecular biology, and developmental processes, and apply this knowledge to research;
- to analyze and apply scientific achievements obtained on the basis of the scientific principles and methods of modern cell and developmental biology;
- to perform methods such as microscopy, molecular biology analyses, and genetic manipulation.

### **For the specialization in “Neurobiology”**

- to understand the complexities of the nervous system at different levels (molecular, cellular, systemic, and behavioral), distinguish neurological diseases, and provide ethically compliant recommendations for their prevention and treatment;
- to know various research methodologies, including experimental design, data analysis, critical thinking, and interpretation of research findings;
- to use various research methods such as molecular biology, cell culture, electrophysiology, microscopy, and behavioral analysis;
- to interpret the structure, function, and development of the nervous system, including molecular and cellular processes, neural circuits, and the biological basis of behavior;
- to apply knowledge to address complex questions concerning the nervous system and neurological disorders.

### **For the specialization in “Paleobiology”**

- to explain in depth the theoretical foundations and modern approaches of paleontology;
- to conduct scientific analyses on the evolution of living organisms based on paleontological data;
- to investigate fossil remains of ancient biodiversity using specific methods;
- to make inferences about the climatic conditions and ecology of ancient periods based on fossil remains;
- to contribute to solving geological problems through the application of paleontological achievements in areas such as rock dating and paleoenvironmental reconstruction;
- to work with paleontological databases (GeoZentrum, PFDB, etc.).

### **For the specialization in “Nuclear and Radiation Biology”**

- to use nuclear and radiobiological concepts and their units, accurately assess the radioecological situation under specific conditions, and investigate and analyze both the beneficial and harmful biological effects of radiation;
- to use modern research methods and information and communication technologies in radiobiology;
- to know the principles of radiation dosimetry and radiation safety, and explain the mechanisms of the biological effects of low-dose radiation on living organisms;
- to analyze the effects of radiation on subsequent generations and its genetic consequences;
- to organize awareness-raising activities concerning environmental problems caused by radiation;

– to comprehend the physical and chemical processes, cellular and molecular damage, and subsequent biological reactions occurring as a result of radiation exposure in interaction with biological systems.

**For the specialization in “Biomedical Materials”**

- to determine the preparation, prospects of use, and practical application possibilities of biomedical materials, and apply fundamental knowledge of advanced materials in this field;
- to independently analyze professional problems using modeling and mathematical analysis methods in the field of biomedical materials;
- to propose new biomedical materials using advanced technologies for environmental protection;
- to plan, organize, and monitor the creation and modernization of technological equipment and processes for the design and production of biomedical materials.

**For the specialization in “Virology”**

- to understand the nature of viruses and the complexity of host–pathogen interactions, and identify them using modern methods and approaches;
- to be aware of and guided by the socio-economic consequences of viruses and the ethical considerations involved in virological research, and to contribute to the development of new diagnostic and therapeutic strategies;
- to know the pathogenesis of viral infections and determine their spread and replication processes in the organism;
- to know the methods of treatment and prevention of viral infections, distinguish viruses, and analyze methods of protection against them;
- to know the mechanisms of viral epidemics and pandemics and develop action plans for their prevention.

**3. Structure of the Educational Program**

3.1. Standard duration of the educational program and the higher scientific-specialized degree awarded to graduates

<b>Names of Specializations</b>	<b>Degree Awarded</b>	<b>Duration of Full-Time Study</b>	<b>Number of Credits</b>
Molecular Biology	Master’s higher scientific-specialized degree	2 years	120
Biochemistry			
Human and Animal Physiology			
Plant Physiology			
Mycology			
Microbiology			
Botany			
Genetics			
Invertebrate Zoology			
Vertebrate Zoology			
Biophysics			
Entomology			
Environmental Biology			
Biological Monitoring			
Plant Genetics and Breeding			
Human Genetics			

Plant Anatomy and Morphology			
Bioinformatics			
Biological Resources			
Embryology			
Phytointroduction			
Immunology			
Cell and Developmental Biology			
Neurobiology			
Paleobiology			
Nuclear and Radiation Biology			
Biomedical Materials			
Virology			

3.2. The educational program shall consist of 120 ECTS credits (2 years). A maximum of 5 courses per semester and 30 credits per semester are envisaged. Credits are distributed as follows:

No.	Course Title	ECTS Credits
1	<b>Research Methods</b> The course focuses on the interdependence of quantitative and qualitative research methods, measurement, research design, and analysis. Within the framework of the course, the development of research competencies, the use of library and internet resources as sources of information, data investigation, analysis, and presentation skills are envisaged.	6
2	<b>Academic Writing and Ethics</b> The purpose of this course is to teach the fundamentals of academic writing, speaking, and integrity, to develop graduate students' skills in professionally writing scientific articles, dissertations, essays, and other academic documents, as well as professionally speaking at conferences, symposiums, seminars, and scientific discussions, and to improve publication ethics skills. The course will provide students with knowledge and competencies regarding academic style, proper use of sources, citation rules, and ethical standards.	6
3	<b>Research Analytics</b> The teaching of this course includes the data analysis process, types of data, sources of data collection, development of data analysis strategies, preparation and cleaning of data for analysis, systematization of data for analysis, data visualization, familiarization with software used for analysis according to the field ("Excel," "SPSS," "Stata," "R," "MAXQDA," "Matlab," "Python," etc.), conducting analyses using methods employed in specialized research (such as statistical tests and analyses, quantitative and qualitative analyses, experimental analyses, questionnaire and survey analyses, etc.), and preparing relevant conclusions based on the analyses.	6
4	<b>Compulsory courses determined by the higher education institution<sup>1</sup></b> The courses included here depending on the specialization are individually determined by each higher education institution and reflected in the educational program of the relevant specialization.	72

<sup>1</sup> The term "courses" used herein shall include, in addition to academic subjects, projects (including a "Capstone" project), creative work, laboratory work, and other relevant instructional activities, where applicable. These courses are determined by the higher education institution on the basis of the expertise of the academic staff, research infrastructure, and local and international employment opportunities, and shall be compulsory for students admitted to the relevant specialization. This section must include a minimum of 4 (four) courses.

...	Elective courses determined by the higher education institution <sup>2</sup> Relevant courses are individually determined by each higher education institution depending on the specialization and reflected in the educational program of the relevant specialization.	
	Internship	
...	<b>Scientific-pedagogical internship</b>	6
...	<b>Scientific research internship</b>	6
	Dissertation Work	
...	Master's thesis	18
<b>TOTAL</b>		<b>120</b>

#### 4. Learning outcomes of the program and each course

**4.1.** Graduates of this educational program must possess systematic and broad knowledge and a general understanding of the fundamental concepts, theoretical principles, and research methods related to the field of education or professional activity, as well as acquire in-depth knowledge in a specific (specialized) field of education or professional activity.

**4.2.** The determination of learning outcomes for each course within the specialization program and the preparation of the syllabus for each course fall within the authority of the higher education institution/academic staff.

**4.3.** The learning outcomes of the specialization program are specified in Annex 1.

Each higher education institution determines the learning outcomes of courses. The learning outcomes matrix (Annex 2) should reflect the relationship between courses and the learning outcomes of the educational program.

**4.4.** To ensure that the educational program provides scientific and practical content that responds to the changing needs of society and the labor market, course syllabus should be updated regularly.

<sup>2</sup> The term “courses” used herein shall include, in addition to academic subjects, projects (including a “Capstone” project), creative work, laboratory work, and other relevant instructional activities, where applicable. These courses are proposed by the higher education institution on the basis of the expertise of the academic staff, research infrastructure, and local and international employment opportunities. In determining such courses, labor market demands shall also be taken into consideration, and for this purpose the establishment of a working group comprising representatives of higher education institutions and the labor market is recommended. Courses determined by the higher education institution shall be elective in nature for students and shall also facilitate students’ participation in international exchange programs. This section must include a minimum of three courses.

#### 5. Infrastructure and human resources

**5.1.** The teaching, training, and assessment process of the educational program requires the higher education institution to possess the following infrastructure:

- computer laboratories equipped with information analytic and data processing systems, as well as licensed versions of statistical and biological analysis software (R, PAST, STATA, EXCEL, SPSS, PYTHON, etc.) for the organization and analysis of biological data;
- lecture and seminar rooms equipped appropriately;
- teaching laboratories;
- research laboratories and analysis centers equipped for conducting research on customs policies, border security, and the analysis and assessment of trade operations;
- online access to international scientific databases, journals, and publications (JSTOR, Science Direct, Wiley, Springer, etc.);
- opportunities for cooperation with the Ministry of Science and Education of the Republic of Azerbaijan, the

Ministry of Ecology and Natural Resources, the Ministry of Agriculture, the Ministry of Health, and their relevant subordinate institutions for scientific research, joint data analysis, and exchange;

- internship bases and training programs;
- platforms supporting projects and research activities;
- resources for the development of multicultural and language skills;
- opportunities for seminars and training on ethical conduct and professionalism in public service.

**5.2.** The academic staff involved in teaching at higher education institutions may, as a rule, include specialists holding academic degrees.

**5.3.** Scientific supervision of master's dissertations is generally carried out by persons holding an academic title or academic degree.

## **6. Career opportunities and lifelong learning**

**6.1.** Graduates of the **7005001 – Biology** program may continue their education at the doctoral level and may work in the following fields and professions:

### **For the specialization in “Molecular Biology”**

- researcher at scientific research institutes
- manager and specialist in higher education, secondary specialized education, and vocational education institutions
- biotechnology/pharmaceutical industry specialist
- food safety specialist
- environmental specialist
- specialist in innovative biological solutions

### **For the specialization in “Biochemistry”**

- researcher at scientific research institutes
- manager and specialist in higher education, secondary specialized education, and vocational education institutions
- analytical chemist
- biotechnologist
- biomedical specialist
- clinical research associate

- computer laboratories equipped with licensed versions of information analytics and data-processing systems, as well as statistical and biological analysis software (R, PAST, STATA, EXCEL, SPSS, PYTHON, etc.) for the organization and analysis of biological data;
- lecture and seminar rooms furnished with appropriate equipment;
- educational laboratories;
- research laboratories and analytical centers equipped for conducting studies in the fields of customs policy, border security, and the analysis and assessment of trade operations;
- online access to international scientific databases, journals, and publications (JSTOR, ScienceDirect, Wiley, Springer, etc.);
- opportunities for cooperation with the Ministry of Science and Education of the Republic of Azerbaijan, the Ministry of Ecology and Natural Resources, the Ministry of Agriculture, the Ministry of Health, and their subordinate relevant institutions for scientific research, joint data analysis, and information exchange;
- internship bases and traineeship programs;
- platforms supporting project and research activities;
- resources for the development of multicultural and language competencies;
- opportunities for seminars and training sessions on ethical conduct and professionalism in public service.

**5.2.** The academic staff engaged in teaching at higher education institutions may, as a rule, also include specialists holding academic degrees.

**5.3.** Supervision of master's dissertations shall, as a rule, be carried out by individuals holding an academic title or scientific degree.

## **6. Career Opportunities and Lifelong Learning**

**6.1. Graduates of the 7005001 – Biology program** may continue their education within doctoral (PhD) programs and pursue employment in the following fields and professions:

### **Specialization in “Molecular Biology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in the biotechnology/pharmaceutical industry
- specialist in food safety
- specialist in ecology
- specialist in innovative biological solutions

### **Specialization in “Biochemistry”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- analytical chemist
- biotechnologist
- biomedical specialist
- clinical research associate
- forensic expert
- specialist in medicinal chemistry
- nanotechnology specialist
- pharmacology specialist
- physician/specialist in medical laboratories
- specialist in nanotechnologies

### **Specialization in “Human and Animal Physiology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in human and animal health
- specialist in environmental issues related to human and animal health
- specialist in animal health and safety in various settings such as farms, slaughterhouses, and animal shelters
- specialist in the behavior, ecology, and conservation of animals in their natural habitats
- laboratory specialist in life sciences
- physician/specialist in medical laboratories

### **Specialization in “Plant Physiology”**

- research scientist at scientific research institutes

- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in agricultural policy and strategies
- specialist in the cultivation of cultivated plants
- specialist in the pharmaceutical or biotechnology industry
- specialist in gardens, parks, and protected areas
- specialist in food safety
- ecologist

### **Specialization in “Mycology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in fungal diversity and monitoring
- specialist in the establishment and operation of mycological laboratories
- specialist in fungal pathogens of plants
- mycologist specializing in fungal infections in biological and medical laboratories
- food safety specialist
- environmental specialist
- forensic expert
- specialist in fungal collections (herbaria, cultures)
- specialist in fungal biotechnology

### **Specialization in “Microbiology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in the identification of microorganisms
- specialist in the study of agricultural pathogenic microbes
- specialist in microbial infections in biological and medical laboratories
- specialist in water and food safety
- environmental specialist
- forensic expert
- specialist in microbial collections (cultures)
- specialist in microbial biotechnology

### **Specialization in “Botany”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in plant diversity and monitoring
- specialist in the establishment and maintenance of botanical gardens
- specialist in nature conservation organizations
- agricultural specialist
- pharmaceutical specialist
- specialist in botanical collections (herbaria, seeds)
- specialist in narcotic and psychotropic plants

### **Specialization in “Genetics”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in genetic diseases and disorders
- specialist in biotechnology and pharmaceuticals
- forensic expert
- specialist in pharmaceutical and biotechnology sectors
- environmental specialist

### **Specialization in “Invertebrate Zoology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in invertebrate diversity and monitoring
- specialist in nature conservation organizations
- agricultural specialist
- biology specialist in medical laboratories
- specialist in zoological collections (permanent specimens, taxidermy)
- specialist in poisonous and hazardous invertebrates
- environmental specialist

### **Specialization in “Vertebrate Zoology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in vertebrate diversity and monitoring
- specialist in nature conservation organizations
- agricultural specialist
- veterinary specialist
- specialist in biological laboratories
- specialist in zoological collections (specimens, taxidermy)
- specialist in poisonous and dangerous animals
- environmental specialist

### **Specialization in “Biophysics”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in molecular biology and biochemistry research laboratories
- specialist in biotechnology companies
- specialist in healthcare-related fields
- specialist in pharmaceutical consulting
- specialist in biological software development
- specialist in the development of new drugs, treatments, and medical technologies
- specialist in nanotechnology

### **Specialization in “Entomology”**

- research scientist at scientific research institutes

- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in entomological diversity and monitoring
- specialist in nature conservation organizations
- agricultural specialist
- pharmaceutical specialist
- specialist in zoological collections

### **Specialization in “Environmental Biology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- ecologist or environmental consultant
- specialist in climate change monitoring
- hydrobiologist
- aquaculture specialist
- specialist in conservation biology
- specialist in wildlife management
- specialist in environmental consultancy
- specialist in environmental education

### **Specialization in “Biological Monitoring”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in environmental consultancy
- specialist in climate change
- specialist in the analysis of plant diversity and the dynamics of plant communities
- specialist in soil and water quality monitoring
- specialist in the monitoring of agricultural diseases and pests
- specialist in Threshold Limit Values (TLVs) and Biological Exposure Indices (BEI)
- specialist in industrial hygiene testing and the assessment of workplace exposure hazards related to heavy metals and pollutants

### **Specialization in “Plant Genetics and Breeding”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in plant genetics and breeding
- agricultural specialist
- food safety specialist
- specialist in molecular biology laboratories
- seed production specialist
- specialist in chemical companies producing organic and inorganic fertilizers

### **Specialization in “Human Genetics”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions

institutions

- specialist in industrial research laboratories
- clinical genetics laboratory specialist
- biotechnologist

### **Specialization in “Plant Anatomy and Morphology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in industrial research laboratories
- specialist in botanical gardens
- specialist in plant cultivation and productivity in the agricultural sector

### **Specialization in “Bioinformatics”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- bioinformatics specialist
- specialist in the use of global biological databases
- specialist in the application and development of various biological software systems
- specialist in regulations and standards related to safety, efficiency, and quality

### **Specialization in “Biological Resources”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in the assessment and monitoring of biological resources
- specialist in the conservation of rare and endangered species and the restoration of degraded ecosystems
- product quality control specialist
- specialist in the development of new technologies and products

### **Specialization in “Embryology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in reproductive biology
- clinical laboratory specialist
- specialist in embryological research
- laboratory manager

### **Specialization in “Phytointroduction”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- specialist in ornamental horticulture
- specialist in landscape architecture
- specialist in forestry enterprises

- specialist in the establishment and maintenance of botanical gardens
- specialist in nature conservation organizations
- agricultural specialist
- specialist in landscaping authorities

### **Specialization in “Immunology”**

- research scientist at scientific research institutes
- administrator or specialist in higher education, secondary specialized education, and vocational education institutions
- clinical research specialist
- specialist in the development of pharmaceuticals and vaccines in the pharmaceutical or biotechnology industry
- specialist in governmental institutions responsible for overseeing compliance with regulations related to pharmaceutical or biological products
- specialist in the sales and marketing of biomedical research equipment

