



Faculty of Biology

# Genetics

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, [www.bio.bg.ac.rs](http://www.bio.bg.ac.rs)

ECTS: 60/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: SPECIALIST

## Study program content

The study program of Specialist academic studies in genetics is a 60 ECTS one-year academic program, dedicated to education and training of master students for professional and scientific work in the field of genetics. Upon completion of the study program, students gain the knowledge and skills necessary to work in institutions of medical, pharmaceutical, agricultural sciences and other industries.

The study program consists of compulsory and elective courses that deal with certain specific areas of genetics. The program is carried out through various forms of theoretical and practical instruction (lectures, labs), student research, mentoring, seminars, colloquia, and exams. The program envisages a final student thesis. Upon successful defence of this, the student acquires the rights provided by law for completion of specialist studies.

## Study program goals

The aim of the Specialist academic studies in genetics study program is to provide a complete academic education, as well as specific knowledge and understanding of selected specialist areas in the field of genetics.

## Study program outcomes

By completing the Specialist academic studies of genetics curriculum, the student obtains the following general and specific skills:

- Analysis and synthesis of specific knowledge of the genetic structure, organization and functions at the level of molecules, cells, individuals, populations;
- Mastering the complex and specific methods and processes of research in certain fields of genetics;
- The development of critical and self-critical thinking about genetic concepts and approaches to issues related to genetic phenomena; - application of the acquired knowledge of genetics in practice;

- Addressing specific technical problems of research in the field of genetics, using scientific methods and procedures, and understanding of specific tasks and responsibilities within the work;
- Development of professional skills, communication skills and responsibilities, individual and team work in a multidisciplinary environment; - effective professional communication skills, data collection and processing of relevant data in the field of genetics using information and communication technologies;
- Application of bioethics in genetics.

## Admission requirements

Anyone who has completed academic studies of the second degree level, including passing an exam in genetics, and who has achieved at least 300 ECTS is eligible to enroll.

## Contact

Head of the study program:  
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# Immunology with Microbiology

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, [www.bio.bg.ac.rs](http://www.bio.bg.ac.rs)

ECTS: 60/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: SPECIALIST

## Study program content

The study program of Specialist academic studies in immunology with microbiology is a 60 ECTS one-year academic program, dedicated to education and training of master students for professional and scientific work in the field of immunology and microbiology. Upon completion of the study program, students gain the knowledge and skills necessary to work in immunological / microbiological laboratories in medical, pharmaceutical, veterinary and other institutions that apply knowledge of Immunology and microbiology.

The study program consists of compulsory and elective courses that deal with certain specific areas immunology. The program is carried out through various forms of theoretical and practical instruction (lectures, labs), student research, mentoring, seminars, colloquia, exams. The program envisages a final student thesis. Upon successful defence of this, the student acquires the rights provided by law for completion of specialist studies.

## Study program goals

The aim of the Specialist academic studies in Immunobiology with microbiology study program is to provide a complete academic education, as well as specific knowledge and understanding of selected specialist areas in Immunology.

## Study program outcomes

By completing the Specialist academic studies in immunology with microbiology curriculum, the student obtains the following general and specific skills:

- Analysis and synthesis of specific knowledge about the organization and function of cells of microorganisms and the immune system and their interactions;
- Mastering the complex and specific methods and processes of research in certain areas of Immunology and microbiology;
- Development of critical and self-critical

thinking about immunological and microbiological concepts and approaches to understanding of immunobiological phenomena;

- Application of acquired knowledge in practice;
- Solving concrete technical problems of research in the field of immunology / microbiology using scientific methods and procedures, and understanding of specific tasks and responsibilities within the work;
- Development of professional skills, communication skills and responsibilities, individual and team work in a multidisciplinary environment;
- Effective professional communication skills, data collection and processing of relevant data in the field of Immunology and microbiology using information and communication technologies;
- Application of bioethics in immunological and microbiological investigations.

## Admission requirements

Anyone who has completed academic studies of the second degree level, including passing an exam in immunology and microbiology, and who has achieved at least 300 ECTS is eligible to enroll.

## Contact

Head of the study program:

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# Biology of Microorganisms

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, [www.bio.bg.ac.rs](http://www.bio.bg.ac.rs)

ECTS: 60/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: SPECIALIST

## Study program content

The study program of Specialist academic studies in Biology of microorganisms is a 60 ECTS one-year academic program, dedicated to education and training of master students for professional and scientific work in the field of microbiology. Upon completion of the study program, students gain the knowledge and skills necessary to work in microbiological laboratories in pharmaceutical, food and other industries that have research and development laboratories, and laboratories for microbiological quality control.

The study program consists of compulsory and elective courses that deal with certain specific areas of the biology of microorganisms. The program is carried out through various forms of theoretical and practical instruction (lectures, labs), student research, mentoring, seminars, colloquia, and exams. The program envisages a final student thesis. Upon successful defence of this, the student acquires the rights provided by law for completion of specialist studies.

## Study program goals

The aim of the study program of Specialist academic studies in Biology of microorganisms is to provide a complete academic education, as well as specific knowledge and understanding of selected specialist areas in the field of biology of microorganisms.

## Study program outcomes

By completing the Specialist academic studies in Biology of microorganisms curriculum, the student obtains the following general and specific skills:

- Analysis and synthesis of specific knowledge about the organization and function of prokaryotic and eukaryotic microorganisms and viruses and their interactions with other organisms and the environment;
- Mastering the complex and specific methods and processes of research in certain

- areas of microbiology;
- The development of critical and self-critical thinking on microbiological concepts and approaches to understanding microbiological phenomena;
- Application of acquired knowledge in practice;
- Solving concrete technical research problems in the biology of microorganisms, using scientific methods and procedures, and understanding of the specific tasks and responsibilities within the work;
- Development of professional skills, communication skills and responsibilities, individual and team work in a multidisciplinary environment;
- Effective professional communication skills, data collection and processing of relevant data in the field of microbiology using information and communication technologies;
- Application of bioethics in microbiological research.

## Admission requirements

Anyone who has completed academic studies of the second degree level, including passing an exam in microbiology, and who has achieved at least 300 ECTS is eligible to enroll.

## Contact

Head of the study program:  
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# Biology

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, [www.bio.bg.ac.rs](http://www.bio.bg.ac.rs)

ECTS: 180/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: PHD

## Study program content

The Doctoral degree program in Biology is organized and implemented by the Faculty of Biology, University of Belgrade, in cooperation with experts from other relevant institutions. The Study program carries a total of 180 ECTS, lasting for 3 years and includes thirteen modules.

Classes are organized within each module in three compulsory and a larger number of elective subjects. Each student is monitored by mentors and tutors from the university for the Doctoral dissertation.

## Study program goals

The program aims to provide an intellectual framework for the development of highly educated and creative young scientists who are expected to assume future leadership positions in scientific research, university teaching, and activities relevant to applied biology. The program provides students with high quality theoretical knowledge and experimental experience in the field of biology, as well as specific knowledge and experimental skills in the immediate area in which they do their own investigation.

Students learn contemporary views on current issues from a number of narrower research fields of biology, the latest experimental approaches to solving scientific problems and new technologies. The specific objectives of the PhD program in Biology are: further development and systematization of knowledge in the field of biology gained from previous levels of education, learning about topics that are currently the focus of scientists, especially those that were not, or not sufficiently, covered in primary and masters higher education studies.

Students will develop independent and critical thinking through interactive forms of instruction such as panel discussions, group analysis and interpretation of experimental data from the literature or personal study, analysis of key scientific papers for specific areas that are studied, and so on. Creativity, individuality and personal preferences are encouraged through activities such as writing essays on free themes, designing

research project proposals and the like; mastering academic skills such as writing research papers and project proposals, and presentations of research results.

## Modules

Algology, animal and human physiology, cell and tissue biology, developmental biology of animals, genetics, evolutionary biology, experimental and applied botany, experimental mycology, immunobiology, microbiology, morphology, systematics and phylogeny of animals, neuroscience and physiology and molecular biology of plants.

## Study program outcomes

The concept, quality, goals and organization of the study program for biology are designed for students to acquire, after successful completion of doctoral studies, general and specific skills that qualify them for scientific research and give a solid basis for successful construction of a scientific and / or university career.

Along with the promotion of theoretical knowledge in more specialised fields of science, students will gain the capacity to use an integrative approach (from the level of molecules and cells to the level of the organism) in the assessment of fundamental problems in biology. Students will develop the intellectual and experimental skills and abilities needed for creative basic and applied research and further training in the field of biology and other related fields - medicine, veterinary medicine, agriculture, pharmacy, etc. Through mastering the curriculum, students will acquire the latest knowledge in various fields of biology, which will give them a good basis for designing experiments to work on their own scientific problems.

Through writing and public presentation of essays and test papers, students will gain valuable experience that helps them master the skills of writing scientific papers and oral communication with an audience. Experimental experience gained from working in different laboratories, will allow them to look at the complexity of experimental work, from planning and preparation

of the experiment, and mastering a range of methods and experimental approaches to presenting and analyzing results using the latest software packages.

### Admission requirements

Anyone who has completed the appropriate basic and master academic studies with an average mark above 8.00 is eligible to enroll.

#### Contact

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# Ecology

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, [www.bio.bg.ac.rs](http://www.bio.bg.ac.rs)

ECTS: 180/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: PHD

## Study program content

The Doctoral degree program in Ecology is organized and implemented by the Faculty of Biology, University of Belgrade, in cooperation with experts from other relevant institutions. The Study program carries a total of 180 ECTS, lasting for 3 years and includes four modules: the ecology of plants and phytogeography, ecology and biogeography, biodiversity protection and hydrobiology. Within each module, classes are organized in four compulsory subjects, three of which are common to all modules, and with a larger number of elective courses. In consultation with the mentor a student can choose elective courses from other academic programmes organized by the Faculty of Biology. The optional part of the program is planned according to the individual needs of candidates, depending on previous education and experience. The program is implemented through teaching that includes lectures and other forms of interactive teaching, the study of research work and individual work of students.

## Study program goals

The program aims to provide a framework for the development of highly educated and creative young scientists who are expected to assume future leadership positions in scientific research, university teaching and activities in which ecology, biogeography and environmental protection and biodiversity are implemented. The program offers students high-quality theoretical knowledge and practical experience and specific knowledge and skills in the immediate area in which they do their own investigation. Given the complexity and importance of the phenomena studied, the study program covers both fundamental and applied aspects of research, monitoring, protection, conservation and sustainable use of the rich and diverse wildlife of the Balkan Peninsula.

## Modules

Ecology of plants and phytogeography, ecology and biogeography, biodiversity protection and hydrobiology.

## Study program outcomes

The program offers training for academic and scientific research outputs, and applied knowledge and skills in analysis, monitoring, management and protection of biodiversity of the Balkan Peninsula. Allows the profiling of the levels of environmental organizations (species, population and countryside-ecosystem levels), as well as the type of environment (terrestrial and aquatic ecosystems and habitats). Various forms of interactive teaching stimulate students to formulate and freely express independent opinions, to focus on the most important problems of certain specialist fields of ecology, biogeography and biodiversity protection and to formulate hypotheses for their solution, to learn how to develop arguments, to critically analyze and interpret their results and the results of other authors, hypotheses and theories encountered by studying the literature, to apply their knowledge and ideas to solving problems they encounter during their research project.

Through writing and public presentation of essays and test papers, students will gain valuable experiences for mastering the skills of writing scientific papers and oral communication with an audience. Students will get help and training from their supervisors and committee members for writing a proposal of their own research project, with training to define clearly and precisely their research objectives and to design appropriate experimental approaches in a manner that allows high-quality and biologically relevant research results to be obtained and project implementation monitored.

## Admission requirements

Anyone who has completed the appropriate basic and master academic studies with an average mark above 8.00 is eligible to enroll.

## Contact

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# Molecular Biology

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, [www.bio.bg.ac.rs](http://www.bio.bg.ac.rs)

ECTS: 180/ LANGUAGE OF INSTRUCTION: SERBIAN/ DEGREE: PHD

## Study program content

The Doctoral degree program in Molecular Biology carries a total of 180 ECTS, lasting for 3 years and includes two modules: molecular biology of eukaryotes and molecular biology of prokaryotes. Each module is organized into four compulsory courses and a larger number of elective courses, and each student on the degree program will gain 22 ECTS for compulsory and 36 ECTS for elective courses. In consultation with the mentor a student can choose elective courses from other academic programmes organized by the Faculty of Biology.

The program is realized through:

1. Teaching that includes lectures and other forms of interactive teaching and the theoretical study of research (experimental laboratory work is organized in the form of a "rotation", seminars, experimental production of a doctoral dissertation);
2. Individual work of students.

Monitoring of program implementation is the responsibility of the Program Council, which comprises the senior lecturers in all subjects. The Head of this body chairs the study program. A senior lecturer is responsible for organizing the teaching within their subject. As a rule, the senior lecturer hires more lecturers, each of which implements their relevant part of the subject. Guest speakers from home and abroad are engaged, depending on the circumstances. A three-member Advisory Panel, consisting of the mentor and two other members of the Program Council, supervises the preparation of the doctoral thesis. The role of these committees is to monitor the progress of students and assist in the implementation of their research programmes.

## Study program goals

The program aims to provide an intellectual framework for the development of highly educated and creative young scientists who are expected to assume future leadership positions in scientific research, university teaching, and activities in which molecular biology is applied. The program offers students high-quality theoretical

knowledge and practical experience in the field of molecular biology, as well as specific knowledge and experimental skills in the immediate area in which they do their own investigation. To achieve this objective, the study program has brought together a number of speakers, including lecturers from the Faculty of Biology, scientists from IMGGE, the IBISS and other scientific and research institutes in the country, and visiting lecturers from abroad, in which our molecular biologists who have achieved notable scientific and university careers around the world predominate. Students learn contemporary views on current issues in the field of molecular biology, the latest experimental approaches in molecular biology and new biotechnology based on the achievements of molecular biology. As this study program is realized by two well-respected institutes in addition to the Faculty of Biology, students have the opportunity during the PhD program to acquire valuable "first hand" experience of experimental work and, through contact with researchers working on a wide range of topics, the latest information on global trends in molecular biology research.

The specific objectives of the PhD program Molecular biology are:

- Further development and systematization of knowledge in the field of molecular biology gained from previous levels of education;
- Understanding the issues that are the current focus of research, especially those topics that were not, or not sufficiently, covered in primary and masters higher education studies;
- Developing independent and critical thinking through interactive forms of instruction such as roundtables, group analysis and interpretation of experimental data from the literature or personal study, analysis of key scientific papers for specific areas that are studied, and so on;
- Encouraging creativity, individuality and personal preferences, through activities such as writing essays on free themes, designing research project proposals and the like, mastering academic skills such as writing research papers and project proposals, and giving presentations on research results.

## Modules

Molecular biology of prokaryotes and molecular biology of eukaryotes.

## Study program outcomes

The concept, quality, goals and organization of the study program for Molecular Biology are designed so that students acquire, after successful completion of doctoral studies, general and specific skills that qualify them for scientific research and give a solid basis for successful construction of a scientific and / or university career. Students will acquire the latest knowledge in various fields of molecular biology, to provide them with a good basis for creating their own research programmes and designing experiments.

Various forms of interactive teaching, involving continuous communication between students and lecturers, will provide intellectual challenges for students, and encourage them to become independent and confident to express their opinions, to focus on the most important scientific problems in certain specialist areas of molecular biology and to formulate hypotheses for their solution, to learn how to develop arguments, to critically analyze and interpret their experimental results of those of other authors, hypotheses and theories encountered by studying the literature, to apply their knowledge and ideas to solving theoretical and experimental problems they encounter during their research project. Through writing and public presentation of essays and

test papers, students will gain valuable experiences for mastering the skills of writing scientific papers and oral communication with the audience. Experimental experience gained from working in different laboratories ("rotation") will allow them to look at the complexity of experimental work, from planning and preparation of the experiment, to mastering a range of methods and experimental approaches, to presenting and analyzing the results using the latest software packages. Students will get help and training from their supervisors and members of the Advisory Commission for writing a proposal of their own research project, with training to define clearly and precisely their research objectives and to design appropriate experimental approaches in a manner that allows high-quality and biologically relevant research results to be obtained and project implementation monitored.

## Admission requirements

Anyone who has completed the appropriate basic and master academic studies with an average mark above 8.00 is eligible to enroll.

## Contact

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