

DOCTORAL STUDIES IN BIOLOGY

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, www.bio.bg.ac.rs

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

Study program content

The **Biology** program of doctoral studies is organized and conducted by the University of Belgrade – Faculty of Biology in collaboration with experts from other relevant institutions. The study program requires a total of 180 ECTS credits, takes three years and consists of 17 modules, one of which contain sub modules as well. Each module includes three mandatory courses, two of which are common for all modules, and a number of elective courses. Preparation of the PhD thesis of each student is monitored by mentors and tutors from the University of Belgrade.

Study program goals

The programme 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 programme 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, master the latest experimental approaches to solving scientific problems and become acquainted with new technologies.

The specific objectives of the PhD program in Biology are the further development and systematization of knowledge in the field of biology gained from previous levels of education, and 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, etc. Creativity, individuality and personal preferences are encouraged through activities such as writing essays on free themes, designing biology research project proposals, writing research papers and giving presentations of research results.

Modules

The modules are as follows: Animal and Human Physiology; Cell and Tissue Biology; Animal Development; Genetics; Evolutionary Biology; Experimental and Applied Botany; Experimental Mycology; Immunobiology; Microbiology; Algology; Animal Morphology, Systematics and Phylogeny; Entomology; Neurobiology (two submodules Experimental Neurobiology and Neurophysiology from Cell to Behaviour); Plant Physiology and Molecular Biology; Fisheries Biology with Principles of Aquaculture; Integrated Food Science; and Molecular Oncology.

Study program outcomes

The concept, quality, goals and organization of the study programme in biology are designed for students to acquire, after successful completion of their doctoral studies, general and specific skills that qualify them for scientific research and provide a solid basis for a successful scientific and/or university career. Along with the promotion of theoretical knowledge in more specialized fields of science, students will gain the ability 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 in working on their own scientific problems.

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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 comprehend 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

Vice Dean for Science and Doctoral Studies
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DOCTORAL STUDIES IN MOLECULAR BIOLOGY

at Faculty of Biology, 16 Studentski trg, 11000 Belgrade, www.bio.bg.ac.rs

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

Study program content

The **Molecular Biology** program of doctoral studies is organized and conducted by the University of Belgrade – Faculty of Biology in collaboration with experts from other relevant institutions. The study program requires a total of 180 ECTS credits, takes three years and consists of two modules. Each module includes four mandatory courses, three of which are common for both modules, and a number of elective courses. Preparation of the PhD thesis of each student is monitored by mentors and tutors from the University of Belgrade. The programme is realized through:

1. Teaching, which includes lectures and other forms of interactive instruction and the theoretical study of research procedures (experimental laboratory work organized in the form of a “rotation”, seminars, trial production of a doctoral dissertation);
2. Individual work of students. Monitoring of the programme’s implementation is the responsibility of the Program Council, which is composed of the senior lecturers in all subjects. The Head of this body chairs the study programme. Senior lecturers are responsible for organizing the teaching of their subject. As a rule, a senior lecturer hires more lecturers, each of whom treats their part of the subject. Guest speakers from home and abroad are engaged, depending on circumstances. A three-member Advisory Panel, consisting of the mentor and two other members of the Programme Council, supervises 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 aim of the programme is 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 programme 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 carry out their own investigation. To achieve this objective, the study programme has brought together a number of speakers, including lecturers from the Faculty of Biology and scientists from IMGGE, the IBISS and other scientific and research institutes in Serbia and foreign countries where our molecular biologists have achieved notable scientific and university careers. 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 programme is realized in cooperation with two highly respected institutes in addition to the Faculty of Biology, students have the opportunity during the PhD programme to acquire valuable “first-hand” experience of experimental work and, through contact with researchers working on a wide range of topics, absorb the latest information on global trends in molecular biology research.

The specific objectives of the PhD program in Molecular Biology are:

- Ensuring the further development and systematization of knowledge in the field of molecular biology gained at 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 basic and masters 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 in the specific areas studied, etc.; and
- Encouraging creativity, individuality and personal preferences through activities such as writing essays on free themes and designing research projects; and mastering academic skills like writing

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ting research papers, formulating project proposals and giving oral presentations of research results.

Modules

The modules are as follows: Molecular Biology of Eukaryotes and Molecular Biology of Prokaryotes.

Study program outcomes

The concept, quality, goals and organization of the programme of studies in molecular biology are designed so that students acquire, after successful completion of their doctoral studies, general and specific skills that qualify them for scientific research and provide a solid basis for a successful scientific and/or university career. Students will acquire the latest knowledge in various fields of molecular biology, which will enable them to create their own research programmes and design their own 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 in expressing their opinions; to focus on the most important scientific problems in certain specialist areas of molecular biology and formulate hypotheses for their solution; to learn how to develop arguments; to critically analyse and interpret their own experimental results, those of other authors and hypotheses and theories encountered in the literature; and to apply their knowledge and ideas to solving theoretical and experimental problems that arise during their research project. Through writing and public presentation of essays and test papers, students will gain valuable experience needed for mastering the skills of writing scientific papers and oral communication with an audience. Experimental experience gained from working in different laboratories ("rotation") will allow them to comprehend the complexity of experimental work, from planning and preparation of the experiment and mastering a range of methods and experimen-

tal approaches to presenting and analyzing the results using the latest software packages. Students will receive assistance and training from their supervisors and members of the Advisory Commission for writing a proposal for their own research project, together with training enabling them to define clearly and precisely their research objectives and design appropriate experimental approaches in a manner that produces high-quality and biologically relevant research results and makes it possible for implementation of the project to be 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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DOCTORAL STUDIES IN ECOLOGY

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Study program content

The **Ecology** program of doctoral studies is organized and conducted by the University of Belgrade – Faculty of Biology in collaboration with experts from other relevant institutions. The study program requires a total of 180 ECTS credits, takes three years and consists of four modules. Each module includes four mandatory courses, three of which are common for all modules, and a number of elective courses. Preparation of the PhD thesis of each student is monitored by mentors and tutors from the University of Belgrade. The programme is realized through teaching, which includes lectures and other forms of interactive instruction and the theoretical study of research work and individual work of students.

Study program goals

The study programme 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 programme 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. In keeping with the complexity and importance of the phenomena studied, the study programme 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

The modules are as follows: Plant Ecology and Phytogeography; Animal Ecology and Biogeography; Biodiversity Conservation; and Aquatic Ecology.

Study program outcomes

The programme offers training for academic and scientific research careers, as well as applied knowledge and skills in analysis, monitoring, management and protection of biodiversity of the Balkan Peninsula. It encompasses the profiling of all levels of environmental organization (species, population and countryside-ecosystem levels) and 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; to create hypotheses for their solution; to learn how to develop arguments; to critically analyze and interpret their own results, those of other authors and hypotheses and theories encountered in the literature; and to apply their knowledge and ideas to solving problems that arise during their research project. Through writing and public presentation of essays and test papers, students will gain valuable experience for mastering the skills of writing scientific papers and oral communication with an audience. They will receive assistance and training from supervisors and committee members in writing a proposal for their own research project, together with training needed to define clearly and precisely their research objectives and design appropriate experimental approaches in a manner that produces high-quality and biologically relevant research results and makes it possible for implementation of the project to be 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.

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