



# Faculty of Mathematics

# Mathematics

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

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

## Study program content

Study program Mathematics, PhD studies, at the Faculty of Mathematics lasts for 6 semesters and covers 180 ECTS. After completion of these studies, the candidate acquires the scientific name of the Ph.D. in Mathematics.

This program consists of one-semester elective courses and an Independent Research Work with more than 20 hours of active teaching classes per week. The number of active teaching, led by teachers, and number of ECTS define each course. Students have an Independent Research Work that is defined by a corresponding number of ECTS. Study program ends up with a PhD thesis, which covers 60 ECTS.

## Study program goals

The aims of PhD program in Mathematics are:

- To gain advanced knowledge in theoretical or applied mathematics and especially a specific knowledge relevant to the selected field of research;
- To master advanced skills such as: solving the tasks that deepen the advanced knowledge, discovering new situations and apply what one have learned in those situations, obtaining original results and writing papers;
- After achieving PhD title, the best students are expected to continue scientific research and to work as university teachers;
- To improve general education and to gain general cultural skills relevant for the profession, such as: the ability to use literature and collect information over the Internet, data processing, drafting texts and modern electronic demonstration, on mother tongue or foreign language, and to represent a scientific or professional activities in the logical connection and linguistically correct manner;
- To develop curiosity and persistence, as well as logical, analytical, inductive-deductive and abstract thinking, very important for mathematics, and to develop general, scientific, professional and other abilities;
- To build professional and ethical attitudes, develop critical thinking;

- To have continuous improvement and to continue rich scientific career, to be involved in scientific research in academic institutions, educational and development institutions, as well as in other industries.

## Study program outcomes

Student should obtain the following general and specific skills by acquiring the Ph.D. academic program in mathematics:

- To govern with advanced knowledge of the fields of mathematics and related disciplines that the program covered - computer science, etc;
- To make the optimal choice of literature for solving specific problems, to obtain and report on results using the computer and to apply knowledge in practice;
- To know how to teach mathematics at the university level, higher education institutions and high schools in accordance with appropriate regulations;
- To be able to work as a researcher in the scientific and research institutions;
- To know how to think critically about phenomena related to the field of research, to critically examine and analyze the facts, assemble the results that occur, in an understandable manner using modern forms of processing and demonstrating results;
- To know how to demonstrate the results of scientific work to national and international public in an understandable way and to spread knowledge to others.

## Admission requirements

Candidates who have completed the appropriate undergraduate academic and master academic studies with an average grade above 8.00 are entitled to enroll .

### Contact

Head of the study program:  
**Prof. Dr. Aleksandar Lipkovski**  
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# Informatics

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

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

## Study program content

The program consists of two compulsory subjects which are of general importance to scientific and research work and 8 elective courses (35 are offered) elected by the student, depending on the chosen theme for the PhD thesis, in collaboration with the mentor. Two semesters make up the academic year. Total number of ECTS per semester is 30 and 60 for the academic year. The program lasts 3 years (6 semesters), during which a student should achieve at least 180 ECTS, including the points for PhD thesis.

A candidate who completes the academic program Informatics, defends PhD thesis and acquires 480 ECTS points, gets the title of doctor of Computer Science.

## Study program goals

The aims of the PhD academic program include the achievement of scientific and academic skills and development of creative skills.

The aims are in line with modern developments in mathematics and computer science in the world and are compatible with the basic tasks and goals of higher education institution where the program is held.

The aim of this academic program is the education and training students for scientific and research work. The student should acquire a wide knowledge and systematic understanding of a specific scientific field. Through this program,

student has to research the topic that was profled with two compulsory and four elective courses.

Through a large number of elective courses (23) students have a possibility to round up the selected research topic. The student should learn how to recognize the level of scientific knowledge in selected doctoral topics through the review of contemporary scientific literature, through review of news in selected topics and to recognize further development and researches.

## Study program outcomes

Acquired knowledge gives the possibility to apply a deeper knowledge, understanding and skills adopted during PhD studies, for the successful resolution of complex problems in new or unfamiliar environment, especially in research fields. Knowledge provides an opportunity to work in research institutes, centers and universities.

## Admission requirements

Persons who have completed the appropriate undergraduate academic studies to the extent of 180 ECTS are entitled enroll this program.

## Contact

Head of the study program:

**Prof. Dr. Miodrag Živković**

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# Astronomy and Astrophysics

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

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

## Study program content

Academic program Astronomy and Astrophysics, PhD studies, Faculty of Mathematics, according to the Statute of the Faculty it lasts for 6 semesters and covers 180 ECTS.

PhD program consists of one-semester courses and an Independent Research Work with more than 20 hours of active teaching classes per week.

The number of active teaching led by teachers and the number of ECTS define each course. A corresponding number of ECTS also defines Independent Research Work. A way of teaching as well as a way of continuous evaluation is determined for each course. Due to the complexity of content and distribution of various forms of teaching in order to overcome the anticipated contents, 1 ECTS = 30 hours of student's work is the basis for calculating the number of points in each individual course as well as the total number of points in an academic program. Academic program consists only of elective courses and Independent Research Work and, if necessary, practical work in the professional astronomical observatories at home and abroad. This program ends up with a PhD thesis, which covers 60 ECTS.

## Study program goals

The main aims of this academic program are to enable students to acquire advanced knowledge and skills and to apply the acquired knowledge from a specific field of astronomy and astrophysics in science, higher education institutions and other organizations. This advanced knowledge and these skills should enable students to work in the field of astronomy and astrophysics and related fields within scientific institutions, higher education institutions or development institutions or in other activities.

The aim of this academic program is to develop specific scientific skills, including mastery of advanced knowledge in all areas covered by the program of study of astronomy and astrophysics as well as the relevant parts of related sciences, mathematics, physics, computer science,

chemistry, biology and archeology; to enable students to use the scientific literature, to count with the help of advanced, sophisticated techniques and computers, to simulate, to process and present the results of scientific research, to enable them to think critically and analyze facts, shape results in an understandable manner using modern forms of processing and demonstration of results; to perceive the importance of ethical principles in science, to gain a routine in the application of astronomical methods and techniques in theoretical and experimental fields of astronomical, astrophysical, physical, chemical, biological, archaeological computer and other systems, as well as to interpret their conditions, structure and processes at the level of elementary particles to the Universe as a whole.

An important aspect of concept of this program is to master the theoretical principles of astronomical and astrophysical methods, which provides a creative use of modern equipment for astronomical observations based on modern optics, electronics and automation and the efficient maintenance of equipment, in working condition.

Finally, the program provides the basis for the continuation of rich scientific career, as well as the possibility of including in scientific research work in a wide range of natural and technological sciences.

## Study program outcomes

Mastering the PhD program of astronomy and astrophysics student gets general ability:

- To govern with advanced knowledge from fields of astronomy and astrophysics and related sciences - mathematics, physics, computer science;
- To make the optimal choice of the scientific literature to solve specific astronomical problems, to calculate, simulate, process and demonstrate results using the computer and to apply knowledge in scientific, academic practice;
- To critically think about phenomena related to the field of research, critically examine and analyze the facts, assemble the results

that occur, in an understandable manner using modern forms of processing and demonstration of results;

- To show the results of scientific work to both domestic and international public in an understandable way and to spread knowledge to others;
- To respect the ethical principles of the profession.

Through PhD program of astronomy and astrophysics, a student obtains the following specific scientific competence:

- Has a routine in the application of advanced and modern astronomical methods and techniques in the fields of theoretical and experimental astronomical, physical, chemical, biological, archaeological, computer and other systems and to interpret their conditions, structure and processes at the micro and macro levels;
- To use instrumental analysis methods, such as photometric, spectroscopic, polarimetric, radio astronomy, infrared, ultraviolet etc. in the practice;

- To take a creative look at the possibility of using modern equipment for astronomical measurements for nonspecific use and effectively maintain the equipment, in working condition;
- To teach astronomy, astrophysics, physics and related subjects similar to astronomy and astrophysics in higher education institutions or high schools, in accordance with appropriate regulations.

### Admission requirements

Candidates who have completed the appropriate undergraduate academic and master academic studies with an average grade above 8.00 are entitled to enroll .

### Contact

Head of the study program:

**Prof. Dr. Dejan Urošević**

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