BULGARIAN ACADEMY OF SCIENCES
INSTITUTE OF MATHEMATICS AND INFORMATICS

Approved:
(Acad. V. Drensky, Director of IMI-BAS)

QUALIFICATION PROFILE

Higher Education Area:
4. Natural Sciences, Mathematics, and Informatics

Professional Field:
4.5. Mathematics

PhD Programme:
Mathematical Logic

The PhD programme in Mathematical Logic provides the third degree of higher education for acquiring the educational and scientific degree of Doctor of Philosophy.

This Qualification Profile determines the knowledge, skills, personal and professional competences of PhD students who have pursued and completed the PhD programme in Mathematical Logic.

Requirements for admission and training

The admission and training of PhD students are in accordance with the legal requirements of:

- the Act on Higher Education;
- the Act on Development of the Academic Staff in the Republic of Bulgaria;
- the Regulations on the Implementation of the Act on Development of the Academic Staff in the Republic of Bulgaria;
- the Regulations on the Conditions and Order for Acquiring Scientific Degrees and Occupying Academic Positions at the Bulgarian Academy of Sciences;
- the Regulations on the Conditions and Order for Acquiring Scientific Degrees and Occupying Academic Positions at the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences;

- the Rules for the Activity of the Training Centre (TC) and the Academic Council (AC) of BAS.

The duration of the programme is:

- 3 years in case of full-time training;
- 4 years in case of part-time training;
- up to 3 years in case of self-study.

The PhD programme in Mathematical Logic provides the opportunity to obtain the educational and scientific degree of Doctor of Philosophy in professional field 4.5. Mathematics upon:

- successful completion of all stages of the PhD student's individual plan;
- successful defence of the thesis.

Aim

The PhD programme in Mathematical Logic aims to train highly qualified specialists with in-depth fundamental and professional competence for individual and team work in research and applied activities as well as teaching in the field of computer science and information technology, and their applications, by creating skills for planning, organising and performing scientific and applied research and presenting its results.

The training in the PhD programme in Mathematical Logic is in full compliance with the mission and objectives of IMI-BAS, set out in the Research Development Strategy of the Institute of Mathematics and Informatics, and in particular with its priority area Mathematical Computer Science, and, in particular, the mathematical foundations of computer science and the development of information security technologies.

Competences

Holders of the educational and scientific degree of Doctor of Philosophy, awarded by IMI-BAS, shall have acquired intellectual qualities, knowledge, practical skills and habits for:

- independent study;
- teamwork;
- planning and carrying out scientific and practical tasks in time;
- setting problems, proposing solutions, justifying choices of approaches and methods;
- formulating, expressing, and defending scholar arguments, ideas, and concepts;
- conducting comprehensive scientific studies;
- presenting scientific results orally and in writing;
- doing all of the above fluently in English – the global language in presentation and dissemination of scientific information and in communication among scientists.

More particularly, the successful PhD graduates in Mathematical Logic at IMI-BAS shall:

- have mastered methods and tools for research – collection, synthesis, analysis, and summarisation of scientific information on achievements, good practices, developments, policies, and problems in Bulgaria and around the world related to a specific case study;
- know the main areas and methods in mathematical logic and theoretical computer science, including set theory, computability theory, the systems of classical, modal and temporal logics, automata theory, automated deduction and logic programming;
- be capable of developing models for effective use and further growth of the produced theoretical results, methods and algorthms; be capable of evaluating the significance of open problems in the field of research and of developing tools for solving them;
- be able to apply schemes for monitoring and (self-)control of the performed research activity.

Careers

PhD Graduates in Mathematical Logic are highly qualified specialists, who can work as:

- lecturers in universities, colleges, etc.;
- researchers in scientific institutes and laboratories;
- leaders or members of teams working on national or international projects in fundamental or applied sciences;
- evaluators of projects in mathematics and theoretical computer science.

A PhD graduate can:

- participate in various forms of continuing qualification (postdoctoral programmes);
- apply for academic positions and obtain scientific degrees.

The Qualification Profile was approved by the Scientific Council of IMI-BAS in the period May 15-18, 2020 (Minutes No. 5).