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:
Algebra and Number Theory

The PhD programme in Algebra and Number Theory 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 Algebra and Number Theory.

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 Algebra and Number Theory 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 Algebra and Number Theory 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 Algebra, Number Theory, 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 Algebra and Number Theory 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 Structures: discrete mathematical structures. It focuses on the preservation and development of scientific capacity in the field of fundamental research in mathematics and informatics; it also focuses on making this scientific capacity a base for applications in other fields of mathematics, in mathematical informatics, in theoretical physics and in all other natural and social sciences in which the usage of algebraic and arithmetic methods is expanding; it also focuses on the preservation and development of long-term traditions in the training of young talents in mathematics and informatics thus creating the next generation of researchers.

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 Algebra and Number Theory 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;
– be skilled in conceptual modelling, implementation, and testing of optimal functional models serving the case study;
– be capable of developing models for effective use and further growth of the produced technological tools and services; 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 Algebra and Number Theory are highly qualified specialists, who can work as:

– lecturers in universities, colleges, etc.; teachers in extracurricular activities of students with increased interest in Mathematics;
– researchers in scientific institutes and laboratories;
– leaders or members of teams working on national or international projects in fundamental or applied sciences;
– consultants or participants in the development of educational products and programmes, including such for the needs of governmental and public structures;
– evaluators of projects in the fields of Algebra, Number Theory, and their applications in other fields of Mathematics, in natural sciences and in certain areas of mathematical informatics, for example coding theory, data archiving, storage and protection, information transfer, etc.;

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).