

**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 Modelling and Application of Mathematics

The PhD programme in Mathematical Modelling and Application of Mathematics 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 Modelling and Application of Mathematics.

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 Modelling and Application of Mathematics 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 Modelling and Application of Mathematics 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 mathematical modelling, by creating skills for planning, organising and performing scientific and applied research and presenting its results.

The training in the PhD programme in Mathematical Modelling and Application of Mathematics 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 Modelling: numerical methods and scientific computation, theory of approximations, development and study of mathematical models with application in other sciences, medicine, economics, industry, etc.

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 on 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;
- obligatory command of English at a very good level.

More specifically, the successful PhD graduates in Mathematical Modelling and Application of Mathematics at IMI-BAS shall:

- have acquired a wide professional horizon in theoretical and applied aspects in the field of mathematical modelling;

- have mastered the methods for creating and applying modern and original approaches in theoretical and applied aspects in the field;
- have developed skills for the use of modern information and communication technologies to facilitate research work;
- have acquired interdisciplinary training and knowledge to ensure their professional adaptation to the studied applied field;
- have knowledge and skills for solving complex problems of scientific and applied nature.

Careers

PhD Graduates in Mathematical Modelling and Application of Mathematics are highly qualified specialists, who can work as:

- lecturers in universities, colleges, etc.;
- researchers in scientific institutes and laboratories;
- leaders or members of research teams working on national or international projects in fundamental or applied sciences;
- evaluators of projects in the field of mathematical modelling and application of mathematics;
- experts in governmental and public structures on issues related to the use of numerical methods in other sciences, medicine, industry, etc.;
- consultants on problems, related to application of numerical methods to other sciences, medicine, industry, 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 on May 15-18, 2020 (Minutes No. 5).