BULGARIAN ACADEMY OF SCIENCES
INSTITUTE OF MECHANICS

QUALIFICATION CHARACTERISTICS

Field of higher education:
4. Natural Sciences, Mathematics and Informatics
Professional field:
4.5. Mathematics
Ph. D. program "Fluid Mechanics"

The Ph. D. program "Fluid Mechanics" provides the third level of higher education leading to the educational and scientific degree of "Ph. D.". This qualification characteristic defines the knowledge, skills, personal and professional competencies of doctoral students trained in and graduated from the doctoral program "Fluid Mechanics".

Conditions for admission and training

The admission and training of doctoral students is in accordance with the legal requirements of:
1. The Higher Education Act,
2. The Act on the Development of the Academic Staff in the Republic of Bulgaria,
3. The Regulations for the Implementation of the Act on the Development of the Academic Staff in the Republic of Bulgaria,
4. Regulations on the Conditions and Procedure for Acquiring Scientific Degrees and Holding Academic Positions at the Bulgarian Academy of Sciences,
5. Regulations on the Conditions and Procedure for Acquiring Scientific Degrees and Holding Academic Positions at the Institute of Mechanics of the Bulgarian Academy of Sciences,
6. Regulations on the Activities of the Training Center (TC) and the Academic Council (AC) at the Bulgarian Academy of Sciences. The duration of the training is:
• 3 years in full-time education;
• 4 years in part-time education; •
up to 5 years in independent training.

The doctoral program "Fluid Mechanics" provides an opportunity to acquire the educational and scientific degree "Ph. D." in the professional field "4.5. Mathematics" after:
1. successful completion of all stages of the doctoral student's individual plan;
2. successful defense of the dissertation.

Objective of the doctoral program

The objective of the doctoral program "Fluid Mechanics" is to prepare highly qualified personnel with in-depth fundamental and professional competence for scientific research, applied science and teaching activities in the field of theoretical and applied fluid mechanics. Moreover, the competence is for activities carried out both independently and in a team, by creating skills for planning and organizing scientific and applied science research and for presenting the results obtained. The training in the doctoral program "Fluid Mechanics" is in full accordance with the mission and goals of the Institute of Mechanics-BAS, listed in its priority direction "Fluid Mechanics": analytical theories of nonlinear wave propagation, turbulence theory, mechanics of micro and nanofluid systems, fluid mechanics with applications to ecology and other sciences such as medicine, economics and social systems.

Competencies

Graduates of the educational and scientific degree "PhD" at the Institute of Mechanics-BAS should have acquired intellectual qualities, knowledge, practical skills and habits:
• for independent learning;
• for planning and completing scientific and applied scientific tasks on time;
• for teamwork;
• for formulating problems, proposing solutions, justifying the choice of approaches and methods;
• for conducting a comprehensive scientific study;
• for clearly formulating, expressing and defending scientific theses, ideas and concepts;
• for mandatory proficiency in English at a very good level.
• for high-quality written and oral presentation of scientific results.

In more detail, successful graduates of the doctoral program "Fluid Mechanics" at the Institute of Mechanics - BAS should have:
1. mastered the methods for creating and applying modern and original approaches in theoretical and applied aspects in the field;
2. acquired a broad professional horizon in theoretical and applied aspects in the field of mathematical modeling;
3. acquired interdisciplinary training and knowledge that will ensure their professional adaptation to the researched applied field;
4. developed skills in using modern information and communication technologies to facilitate research work;
5. gained knowledge and skills in solving complex problems of a scientific and applied nature.

Implementation

Graduates of the doctoral program "Fluid Mechanics" of the Institute of Mechanics - BAS are highly qualified specialists who can work as:

• researchers in scientific institutes and laboratories;
• lecturers in universities, higher education institutions, etc.;
• specialists in companies with technological applications of fluid mechanics;
• experts in state and public structures on issues related to fluid mechanics and its applications in other sciences, such as medicine or engineering sciences;
• leaders or members of teams working on national or international research or applied science projects;
• evaluators of projects in the field of fluid mechanics;
• consultants on problems related to the application of fluid mechanics in other sciences

A graduate of the doctoral program can participate in:
1. competitions for holding academic positions and/or obtaining a scientific degree.
2. −various forms of continuing qualification such as e.g. Postdoctoral Programs

This qualification description was adopted by the Scientific Council of the Institute of Mechanics-BAS on January 15, 2026 (protocol No. 1).

Approved by: /s/

(Prof. Svetoslav Nikolov, Director of Institute of Mechanics-BAS)