QUALIFICATION DESCRIPTION

This qualification defines the knowledge, skills, personal and professional competences of the Ph.D. students who have studied and graduated from the Ph.D. programme Methodology of Teaching Mathematics and Informatics.

I. ANNOTATION OF THE PROGRAMME

The main goal of the educational and research activities in the Ph.D. programme is to develop highly qualified scientists in the field of mathematics, informatics and information technology education who possess the knowledge and skills to solve complex problems of scientific, applied and managerial nature. Improving the qualification of specialists in the field of mathematics, informatics and information technology and their teaching in secondary and higher education in theoretical and practical aspects concerns the following main areas:

- Methodology and methodology of pedagogical research: qualitative, quantitative and specific pedagogical research and the theories that justify them; basic methodological knowledge and statistical tools related to the preparation, conduct and evaluation of the results of pedagogical research; included are analysis of the organizational environment, participant competency standards, evaluation of effectiveness and efficiency for both traditional forms of education and blended, e-learning and fully online learning.
- Methodology and methodology of education in mathematics, informatics and information technologies related to cognitive psychology, learning theory and individual cognitive processes (work with gifted students, with SEN, etc.), analysis of the possibilities of the educational system for experimentation and implementation of new methods such as the integration of ICT-technologies and tools in teaching and e-learning.
- Problem-solving theory: problem-oriented and computer-oriented approaches to learning; modern problem-solving theory; heuristic strategies and opportunities for implementing modern cognitive tools and elements of artificial intelligence in learning as a form of acquiring knowledge and developing thinking; problem-solving in the design and delivery of learning; problem-solving models.

- Educational governance: state educational requirements and their content, historical and social analysis; curricula, curriculum and achievement standards; teacher competencies and career development; quality identifiers; strategic planning; institutionalization in education and best practices.

The curriculum is in line with the European Qualifications Framework, giving full comparability of qualifications with those in different countries and from different training systems in the EU. Teaching is carried out by the teaching staff of the Department of Education in Mathematics and Informatics in close collaboration with all colleagues of the FMI and in cooperation with other research organisations in the country and in the EU. Ph.D. students participate in the scientific and academic activities of the FMI, receiving real feedback on their achievements during the annual national and international scientific forums.

The admission and training of doctoral students is in accordance with the legal requirements of:
- Higher Education Act;
- Act for the Development of the Academic Staff in the Republic of Bulgaria;
- Regulations on the implementation of the Development of Academic Staff in the Republic of Bulgaria Act;
- The Rules on the Conditions and Procedure for Acquiring Science Degrees and Holding Academic Positions in Sofia University “St. Kliment Ohridski”.

The training is of the following duration:
- 3 years of full-time study;
- 4 years in part-time form of study;
- up to 5 years of self-study.

The Ph.D. programme Methodology of Teaching Mathematics and Informatic provides an opportunity to acquire the educational and scientific degree "Doctor of Philosophy" in professional field 1.3 Pedagogy of Teaching after:
- successful completion of all phases of the doctoral student's individual plan;
- successful defence of the thesis.

The training may be carried out in Bulgarian or in English, according to the candidate's preferences.The language of training is determined at the time of admission of the candidate and is not subject of change.

The main aims and objectives of the Ph.D. programme in Methodology of Teaching Mathematics and Informatic are:
- to provide Ph.D. students with training (in Bulgarian or in a foreign language) aimed at acquiring, broadening and deepening their theoretical knowledge, researching cutting-edge problems, tracking the newest trends in the development of the scientific field;
- to impose high standards for conducting scientific research in the professional field and in particular in the scientific topics of the doctoral program, using modern methods, tools and techniques for research;
- provide opportunities for doctoral students to produce independent and collaborative publications;
- to provide opportunities for Ph.D. students to participate in multidisciplinary teams of scientific and applied research projects carried out by members of the Department, under national and international programmes;
- to ensure that the Ph.D. student is consulted during the development of the dissertation by the supervisor, members of the department and the FMI;
- to provide opportunities for mobility of Ph.D. students through the development of scientific cooperation with other higher education institutions and scientific organizations in the country and abroad;
- to provide opportunities for the acquisition of skills and experience for teaching within the disciplines offered by the Department;
- to train highly qualified personnel with in-depth fundamental and professional competence for scientific, research, applied, expert and teaching activities, carried out both independently and in a team, by creating skills for planning and organizing scientific and applied research and presenting the obtained results.