School of Mathematics and Computer Science (MACS)

Programme Title:

Mathematics and Computer Science

Qualification Awarded:

Bachelor Degree in Computing;
Bachelor' Degree in Mathematics.

Programme Credits:

240 ECTS

Language of Instruction:

Georgian

Objectives of the Programme:

Graduates of Mathematics and Computer Science School of Free University will have a broad and in-depth theoretical knowledge in modern and fundamental areas of Mathematics and Computer Science.

Career Options:

After completing the Bachelor Programme, graduates will be able to work in private or public sector in various fields, including, but not limited to:

- in the industry or in a business. The positions might be related to the Software Engineering, Management of Informational Technologies or other positions connected to Computer Science;

- in their own company, established in the sphere of Computer Science.

Admission Prerequisites

Admission to the programme is carried out in accordance with the Law of Georgia on Higher Education and in accordance with the provisions of the unified national examinations approved by Order N19/N of 18 February 2011.

To facilitate the mobility of high school graduates and prospective students, it is permissible to enrol in an educational programme without passing unified national examinations, in accordance with the rules and terms defined by the Ministry of Education and Science of Georgia, for those that are:

- foreign citizens or persons without citizenship, who received complete general education or its equivalent abroad;
- Georgian citizens who received complete general education abroad or its equivalent and during the last two years of complete general education had been studying abroad;
- foreign citizens, who have studied/ are studying and have received credits/qualifications abroad from a Higher Educational Institution recognized by the legislation of that country;

of Georgia, lived/are living, studied/are studying and have received credits/qualifications abroad from a Higher Educational Institution recognized by the legislation of that country.

Enrolment in educational programs is also possible through mobility, in accordance with the Rule of Transfer Between High Educational Institutions defined by the by Order N10/N of February 4, 2010 by the Minister of Education and Science of Georgia.

Learning Outcomes

After completion of Bachelor Program, graduates will own general and specific competencies listed below:

General Competences:

Ability to:
- critically analyse, discuss and debate;
- professionally write and communicate in the native language;
- write and communicate in a foreign language (English);
- adapt and act in unfamiliar environments;
- work in teams;
- use modern information and communication technologies.

Specific Competences:

- in-depth knowledge in the different disciplines of computer science and ability to use this knowledge in the working process;
- knowledge of fundamental concepts, principles and theories of mathematics;
- ability to establish and prove key theories of different fields of mathematical science;
- knowledge of specific software packages/programming languages/languages necessary for mathematical computations;
- ability to transform real-world events into the mathematical models;
- ability to formulate and analyse problem-solving methods;
- ability to apply analytical / symbolic and numerical methods, as well as corresponding computational techniques to solve problems and tasks;
- ability to deepen knowledge in fundamental fields of computer science and mathematics;
- experience and skills in software engineering, ability to apply appropriate methods, approaches and tools;
- experience in research in exact science;
- understanding of professional responsibility, ethical norms and principles of sustainable development.

Competences developed in the Bachelor's in Mathematics and Computer Science Program are evaluated in accordance with the six criteria for the first level of Higher Education set by the National Qualification Framework:

Knowledge and Understanding:

Graduates of the programme will have a deep knowledge of the field that include critical understanding of theories and principles, as well as of complex issues of the field. In particular:

- in-depth knowledge of different fields of computer science;
- knowledge of fundamental concepts, principles and theories of mathematics;
- ability to establish and prove key theories in different fields in mathematical science;
- knowledge of specific software packages/programming languages/languages necessary for mathematical computations;
- ability to deepen knowledge in fundamental fields of computer science and mathematics.

Applying Knowledge to Practice:

Graduates will be able to use specific methods of the field and other important methods in problem-solving, research or practical projects, in accordance with assigned tasks. In particular, the graduates will have:

- ability to transform the real-world events into the mathematical models;
- ability to formulate and analyse problem-solving methods;
- ability to apply analytical / symbolic and numerical methods and computation techniques in the problem-solving process;
- experience and skills in software engineering, ability to apply appropriate methods, approaches and tools;
- experience in research in exact science.

Ability to Make Conclusion:

Graduates will have the ability to collect, interpret and generalize field-specific data, also analyse sporadic data and/or events by using standard and/or specific methods. Graduates will be also able to make justified conclusions.

Communication Skills:

Graduates will be able to:
- prepare detailed written reports on concepts, problematic issues and their solutions,
- communicate information with specialists and non-specialists in Georgian and English languages.
- use modern information and communication technologies.

Ability to Learn:

After successful completion of the programme, graduates will be able to consistently evaluate the learning process in various forms and determine further study steps.

Values:

Graduates will be able to evaluate and appreciate differences and cultural diversity and acknowledge and share professional responsibility and ethical norms.

Learning and Teaching Methods

In order to achieve the learning outcomes of the Bachelor Program, appropriate learning and teaching methods are used. In general, within the bachelor's study programmes, following methods are used:
- verbal/oral communication method;
- working with texts;
- textual method, which includes: making abstracts and extracts, forming ideas;
- practical methods;
- discussion/debate/presentation;
- team-work;
- problem-based learning;
- partnership learning;
- analysis of case studies;
- brain-storming;
- role-playing and situational games method;
- induction, deduction, analysis, synthesis;
- explanatory method;
- action oriented learning.

All methods are used during lectures, seminars and practical trainings.

Within the framework of academic freedom, the lecturer is entitled to specify and use methods that are not included in the programme and/or not use any of the learning and teaching methods from the programme, based on the course content.

Knowledge Assessment System

Student's knowledge is assessed by a score system out of 100 points. The assessment is multicomponent and meets the rules of calculating higher educational program credits, approved by the Order N3 issued on 5 January 2007 by the Minister of Education and Science of Georgia.

During the assessment of student's knowledge, all the academic staff and any invited personnel are obliged to use the above-mentioned rule. Following scheme is used to assess the knowledge:

1. Five types of positive assessment:

(A) Excellent – score between 91-100;
(B) Very good – score between 81-90;
(C) Good – score between 71-80;
(D) Satisfying – score between 61-70;

2. Two types of negative assessment:

(FX) Fail to pass – score between 41-50, which means that the student needs to work more and he or she is able to redeliver exam after the independent preparation;

(F) Fail – score 40 and below, which means that work done by students is not sufficient and he or she must study the course again.

During the assessment of study outcomes forming and summary assessment forms are used.

Study plan (Curriculum)

Curriculum and semester plan are available. The description of the study components is described in the syllabi.

Human and Material resources

Free University employs outstanding academic and invited personnel with successful experience for its educational programmes.

Educational programmes are financially and materially supported. For implementation of the programmes university allocates relevant financial resources. Programmes are also supported materially. Educational programmes are taught at Kakha Bendukidze University Campus, which is equipped with all the necessary inventory and other resources needed for high quality education.