



Mathematics and Computer Science School (MACS)

Programme Title:

Electrical and Computer Engineering

Qualification Awarded:

Bachelor's in Engineering

Programme Credits:

240 ECTS

Language of Instruction:

Georgian

Objectives of the Programme:

The objective of the programme is to prepare graduates, who will have in-depth knowledge of mathematics, physics, electrical engineering, programming and laboratory work. The programme is aimed to prepare high-level professionals, who will be competitive on Georgian, as well as on the global labour market. In addition, the goal of the programme is to enable graduates to continue education on to the next level.

Career Options:

After completing the Bachelor Programme, graduates will be able to work in communication sphere, internet-provider companies, computer companies and in any organization, which employs management systems that are built on modern electronic modules.

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;



- Georgian citizens, who, for the term defined by the Ministry of Education and Science 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 completing the Bachelor Program, graduates will have the following competences:

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, graduates will have:

- extensive knowledge in mathematics. Specifically, the programme includes basic subjects of mathematics: calculus I and II, linear algebra, differential equations, discrete mathematics, probability, and statistics. Additionally, it is necessary for graduates of Electrical and Computer Engineering to study three subjects of physics, which are: mechanics, electricity and magnetism, optics.
- knowledge of the basic subject of engineering: electrical circuits, electromagnetic systems, digital circuits, microprocessors and processing the signalling.
- thorough knowledge of programming. Graduates will know two programming languages and work with networks and bases.
- ability to solve complex problems of electrical and computer engineering independently, using analytical and numerical methods and coding.

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 be able to:

- use modern methods in the field of Electrical and Computer Engineering;
- prepare and conduct projects;
- use gained knowledge in problem-solving;
- use information technologies and software;
- create and maintain databases;
- form, manage and synchronize computer processes;
- conduct technical analyses in electronic scheme;
- calculate technical parameters in electronic devices;



- use software and other computer resources.

Ability to Make Conclusion:

Graduates will be able to:

- collect and define field-specific data, analyse sporadic data and/or events by using standard and/or specific methods, as well as make justified conclusions;
- collect and interpret data related to Electrical and Computer Engineering, as well as analyse standalone data and situations by using appropriate methods and make a reasonable conclusion;
- conduct critical analysis, formulate decisions and reasonable conclusions, as well as make a decision, which is oriented on problem-solving.

Communication Skills

Graduates will be able to:

- prepare detailed written reports on concepts, existing problems and their solutions in the field of Electrical and Computer Engineering;
- 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, as well as determine and implement further study steps.

Values

Graduates will share professional responsibility and ethical standards, as well as participate in values formation process and strive to implement them.

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 these 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 programme 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;
- (E) Sufficient – score between 51-60.

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.