



School Name

Engineering and Technology

Programme Name

Electrical and Computer Engineering

Qualification Awarded

Bachelor of Engineering

Programme Credits

240 credits

Language of Instruction

Georgian

Programme Objectives

The programme objective is to prepare *bachelors of engineering* in electrical and computer engineering, ready to perform both theoretical and practical work. Graduates will acquire knowledge, based on engineering disciplines and information technologies, in order to perform versatile, complex activities in the area of electrical and computer engineering.

The programme represents the unity of related specializations, which are based on deep electro-technical and computer education and corresponds to market requirements: automation and control systems, computer engineering, computer sciences, electro-mechanics, electro-technics and manufacturing electronics. Graduate will be able to continue study at the next level of education.

Career Options

Bachelor's degree, in addition to a successful academic career, provides the opportunities to be employed at institutions, where elaboration of electrical devices, their design and construction, operation and software support is needed. These are the modern companies, equipped with automated control systems and institutions providing corresponding design and expertise services:

- Power engineering (control and monitoring);
- Signal processing and telecommunication engineering;
- Embedded systems engineering;

- Robotics engineering;
- Healthcare (continuous energy supply of hospitals, climate-control, service of apparatus, design and service of pharmaceutical production companies);
- Construction (design and operation of energy supply and climate-control systems for ordinary and “smart buildings”);
- Service and monitoring of transportation (diagnostics of automobile control and monitoring systems, adjustment and testing diagnostics apparatus);
- Food industry (automation of quality control);
- Water and natural gas supply companies (design, construction and control of expenditure, quality control and parameter monitoring systems);
- Agriculture (control and monitoring of farms and greenhouses).

Admission Requirements

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 enroll 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, eligible candidates 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, have lived/are living, have 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 (Competencies)

After completion of the bachelor’s programme, graduates will have following general and specific competencies:

General Competencies:

- An ability to use abstract thinking, analysis and synthesis;
- An ability to professionally write and communicate in native language;
- An ability to write and communicate scientific material in foreign languages;
- An ability to adapt and act in unfamiliar and changing environments;
- An ability to work in a team;
- An ability to collect, process and analyze information;
- An ability to work independently;
- An ability to generate new ideas;
- An ability to conduct interdisciplinary work;
- Comprehension of professional responsibilities, awareness of ethical norms and sustainable development principles.

Specific Competencies:

- An ability to apply knowledge of mathematics, science and engineering;
- An ability to identify, formulate and solve engineering problems;
- An ability to use techniques, skills and modern engineering tools necessary for engineering practice;
- An ability to use specific information technologies and software;
- An ability to serve the information and data-bases;
- An ability of orientation and adaptation to the technologically developing environment;
- An ability to analyze the ongoing processes in the field of electro-technics, electronics and electro-mechanics;
- Knowledge of the theoretical basics of the operation of elements used in electrical circuits;
- Knowledge of analog and digital electronics, their characteristics and ongoing physical processes;
- Knowledge of power converters, their types and applications;
- An ability to analyze transitional processes going in electrical circuits and systems;
- Knowledge of algorithms and software, used to solve the problems of electrical engineering;
- Knowledge of computer and microprocessor architecture, programming and ability to operate technological processes in an optimal way.

Knowledge and Understanding:

Graduates of the programme will have a deep knowledge of the field that include critical

understanding of theories, principles, complex issues and practical applications. In particular:

- Knowledge of fundamental and natural science principles;
- Knowledge of theoretical principles in electrical and computer engineering and ongoing developments;
- Knowledge of how to define practical problems in electrical and computer engineering and methods to solve them;
- Knowledge of computer architecture, software maintenance and effective use of computer resources;
- Knowledge of mathematical and computer modeling-simulations;
- Knowledge of automation of technological process control systems.

Applying Knowledge into 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 predetermined instructions.

In particular graduates will be able to:

- Act in multidisciplinary environment, find the original ways to solve complex problems;
- Use reliable information sources for planning and implementation of the work;
- Prepare programs and projects, determine the optimal resources for implementation;
- Collect, process and analyze the data valuable in electrical and computer engineering;
- Prepare the design documentations and manuals for electro-technical companies;
- Implement practical or research projects.

Ability to Make Conclusion:

Graduates will be able to collect, interpret and generalize field-specific data, analyze events using standard or specific methods, formulate justified conclusions.

Communication Skills:

Graduates will be able to prepare detailed written report or make an oral presentation on the existing problems, solutions and ideas, as well as exchange the information in Georgian or English languages with specialists and non-specialists of the field. They will be able to use modern information and communication technologies.

Ability to Learn:

Graduates of the programme will be able to evaluate the learning process consistently and comprehensively, manage the time and learning resources effectively, determine and implement further steps for learning.

Values:

Graduates of the programme will participate in the formation of values and public opinion and pursue their aspirations. They will acknowledge and share professional responsibility and ethical norms.

Learning and Teaching Methods

In order to achieve the learning outcomes, the purpose of each study course is to determine the appropriate learning and teaching methods. In general, within the bachelor's study programmes, following methods are used:

- Verbal/oral communication method;
- Working with written material;
- Academic writing, which includes making abstracts and extracts, forming ideas;
- Laboratory method;
- Practical demonstration;
- Discussion/debate/presentation;
- Team work;
- Problem-based learning;
- Partnership learning;
- Analysis of case studies;
- Brainstorming;
- 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:

Scores	Assessment
91-100	Excellent, A
81-90	Very good, B
71-80	Good, C
61-70	Satisfying, D
51-60	Sufficient, E
41-50	Fail to pass, FX
0-40	Fail, F

Study Plan

Study plan consists few components:

Consentration: Automated Systems Management

	ECTS
University general education	50
Engineering general education	43
Core education	107
Concentration specific education	24
Practical education	8
Elective subjects	8
Total credits	240

Concentration: Computer Engineering

	ECTS
University General Education	50
Engineering general education	43
Core education	107
Concentration specific education	23
Practical education	8
Elective subjects	9
Total credits	240

Human and Material Resources

Agricultural University of Georgia 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.