Caucasus University

Undergraduate Program in
Electronics and Computer Engineering

Caucasus University

Caucasus School of Technology

Program Name	
Electronics and Computer Engineering	
Program Name in Georgian	
ელექტრონიკა და კომპიუტერული ინჟინერია	
Degree level	
Bachelor's	
Type of the educational program	
Academic	
Language of Instruction	
Georgian	
Expected Qualification and Code	
In Georgian:	ელექტრონული ინჟინერიის ბაკალავრი, 0714
In English:	Bachelor of Electronic Engineering, 0714
Date of Program Approval	
2 June 2017	
Academic head of the Program	
Porfessor Nodar Ugrelidze, PhD.	
Program Volume in Credit Hours	

The Bachelor's Degree Program in Electronics and Computer Engineering comprises 240 credits. 1 ECTS equals to 25 hours, which includes class hours and time spent on independent work (midterm and final examinations, as well as homework assignments).
Consequently, the standard official duration of the Bachelor's Degree Program is four years, but maximun six years. After expiration of the standard duration of the Bachelor's Degree Academic Program, the students having academic debts, with the view of completing the program, are allowed to continue education through additional semesters by retaining the student's status.

The program is envisages a narrow sphere and free components learning courses:
Learning courses of narrow sphere (199 ECTS credits):

- Mandatory learning courses -170 ECTS
- Optional learning courses - 29 ECTS

Learning courses of free component (58 ECTS credits):

- Mandatory learning courses of university - 20 ECTS
- Optional learning courses of university - 15 ECTS
- Free credits - 6 ECTS

Program Description

Admission Requirements

- Any person having a secondary education is entitled to enroll in the Undergraduate Program in Electronics and Computer Engineering.
- The precondition for admission to the program is to pass the Unified National Examination. Any exceptions to the Law on Enrolment at Higher Education Institutions are allowed only in the cases prescribed by Law.
- At the national exams, it is mandatory to pass the mathematics or physics exam from the optional subjects.
- A person authorized to enroll in the program without passing the unified national exams passes an internal exam in mathematics or physics established by the university.
- Mobility to the program is allowed in accordance with the procedures set by the relevant law.

Program Objectives

The objectives of the Program in Computer Science are to:

- To give the student the opportunity to get a broad knowledge of the field of electronics and automation, which prepares a person for further studies in the master's degree and/or work with the received qualifications through research programs.
- The student will acquire knowledge based on fundamental theories and principles of mathematics, electronic and computer engineering, which will enable him to plan, design and develop electronic and computer systems and devices.
- To prepare high-level, competitive specialists with broad theoretical knowledge and practice-oriented, transferable skills, which are necessary for professional activities in the field of modern electronics and automation

Learning Outcomes

Upon completion of the Bachelor's degree program in Computer Science, the graduate will acquire the following competencies:

1. Describes the basic concepts of electronics and computer engineering. Explains the theoretical aspects of the field based on a broad theoretical knowledge of mathematics, physics and engineering.
2. Describes the principles of computer system and network operation and security.
3. Processes, selects and uses electro-technical system and software to solve complex engineering tasks.
4. Effectively uses modern electronic and computer systems modeling tools.
5. Performs programming of microprocessors, microcontrollers and signal processors. In practice, he uses the latest programming methods and technological tools.
6. Selects the areas of use of communication systems and evaluates the possibilities of using the communication system. Uses standard and modern means and methods to ensure the security of communication systems.
7. Appreciates the development-oriented learning process, the importance of constantly updating professional knowledge and the need to acquire new knowledge, carries out oral and written communication.
8. Appreciates and shares with others the values, ethical and social responsibility related to electronic communication technologies.

Building a Career

Internships and Job Placements

The program structure allows students to be "job ready" early in the program and offers opportunities for career advancement. Students will be offered to be part of the coordinated internship programs or get a job placement through the support of the CU Career Center.

Career Opportunities

The obtained degree will allow the graduate to be employed in various types of organizations, be it a government structure, a private business company, a non-governmental organization or others.

After completing the program, the graduate will be able to find employment in the field of electrical equipment production, in Internet-providing and communication companies, in organizations that use management systems built on modern electronic modules, as well as in all companies whose field of activity is telecommunications, electrical engineering, and computer technologies.

Study Continuation Opportunities

The program graduates can continue their studies at any of Master's Degree programs in Georgia or abroad, in accordance with the regulation required by the law.

Program Curriculum

№	Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
Learning courses of narrow sphere												
Mandatory learning courses -170 ECTS												
1.	MATH 0003		Calculus I	x								5
2.	CTC 1141		Principles of Computer Programming I	x								5
3.	MATH 0004	MATH 0003	Calculus II		x							5
4.	MATH 1240		Discrete Mathematics		x							5
5.	PHYS 2140	MATH 0003	Principles of Physics		x							5
6.	CTC 1243	CTC 1141	Principles of Computer Programming II		x							5
7.	CTC 1242		Computer Architecture		x							5
8.	MATH 0002	MATH 0004	Linear Algebra			x						5
9.	ELC 2141		Electrical Components and Sensors			x						5
10.	ELC 2140	PHYS 1240	Electronics			x						5
11.	CTC 2143		Operating Systems			x						5
12.	CTC 2146		Principles of Networking				x					5
13.	CTC 2246	CTC 1243	Algorithms & Data Structures				x					5
14.	MATL 2240		Software tools for modeling I				x					5
15.	ELC 2241	PHYS 1240	Electrical circuits I				x					5
16.	PYTH 2240	CTC 1243	Python Programming				x					5
17.	PST 3240	MATH 0003	Probability & Statistics					x				6
18.	ELC 3141	ELC 2241	Electrical circuits II					x				6
19.	ELC 3142	ELC 2241	Microelectronic circuits I					x				6
20.	ELC 3145	ELC 2241	Signalling Processors					x				6
21.	NW 3141	CTC 2146	Management of Computer Networks I					x				6
22.	ELC 4242	ELC 3142	Microcontrollers						x			6
23.	TELC 3240	ELC 2140	Communication Theory						x			6
24.	ELC 3144	ELC 2241	Applied Electrodynamics						x			6
25.	ELC 3241	ELC 3142	Microelectronic circuits II						x			6
26.	TELC 3245	TELC 3240	Digital Communication							x		6

№	Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
27.	ELC 3244	ELC 2140	Radiotechnical circuits							x		6
28.	ELC 4141	ELC 3241	Microprocessors							x		6
29.	NWS 4140	CTC 2146	Network Security							x		6
30.	BPR 4242		Bachelol's Thesis								x	12
Optional learning courses - 29 ECTS												
31.	CTC 2243		Introduction to Database Systems				x					5
32.	CTC 2244		Computer Security									5
33.	MATL 3140	MATL 2240	Software tools for modeling II					x				6
34.	MK 3140		Digital Marketing					x				6
35.	CTC 3145	CTC 2143	System Administration I					x				6
36.	CTC 3148	CTC 2146	Virtualization Technology					x				6
37.	HPC 3140	CTC 2146	Introduction to High-Performance Computing (HPC) System					x				6
38.	CTC 4145	CTC 2243	Database Administration					x				6
39.	CTC 3243	CTC 1243	Java Programming Language I						x			6
40.	NW 3241	NW 3141	Management of Computer Networks II						x			6
41.	CTC 3241	CTC 1243	User Interfaces						x			6
42.	CTC 3244	CTC 1243	.NET Technologies I						x			6
43.	CTC 3245	CTC 2143	System Administration II						x			6
44.	CTC 3247	CTC 2146	Corporate Wireless Networks						x			6
45.	HDW 3240		Hardware Product Prototyping						x			6
46.	CTC 4142	CTC 3243	Java Programming Language II							x		6
47.	CTC 3248	NW 3141	Wide Area Networking							x		6
48.	CTC 4143	CTC 3244	.NET Technologies II							x		6
49.	ELC 4142	TELC 3240	Wireless Communication Systems							x		6
50.	ELC 4143	TELC 3240	Cable Systems							x		6
51.	ELC 4245	TELC 3240	Radiolocation and Radionavigation							x		6
52.	CTC 4147	CTC 2246	Artificial Inteligence							x		6
53.	PRW 4140		Specialization Project							x		6
54.	CTC 4248		Blockchain Technology & Cryptocurrency								x	6

№	Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
55.	CTC 4243	CTC 1243	Mobile Programming								x	6
56.	ELC 4244	TELC 3245	Communication Technologies								x	6
Learning courses of free component												
Mandatory learning courses of university - 20 ECTS												
57.	CIS 1140		Computer Skills and Office Applications	x								5
58.	ACWR 0007		Academic Writing	x								5
59.	ENGL 0007	ENGL 0006	General English B2.0	x								5
60.	ENGL 0008	ENGL 0007	General English B2		x							5
Optional learning courses of university - 20 ECTS												
61.	ENGL 0009	ENGL 0008	General English C1.0			x						5
62.	ENGL 0010	ENGL 0009	General English C1				x					5
63.	ENGL 0005		General English B1.0 [1]	x								5
64.	ENGL 0006	ENGL 0005	General English B1		x							5
65.	MATH 0001		PreCalculus [2]	x								5
66.	HIST 0001		Introduction to World History & Civilization	x								5
67.	POLS 0002		Political Science									5
68.	HIST 0003		History of Georgia									5
69.	SOCI 0004		Sociology									5
70.	PHIL 0005		Philosophy									5
71.	PSYC 0006		Psychology									
72.	ENTP 0009		Entrepreneurship									5
Free credits - 18 ECTS												
73.			Free Course [3]						x			
			ECTS Per Year	60		60		60		60		
			Courses Per Year	12		12		10		9		

[1] General English Language B1 Level is mandatory for those students who have competency lower, than the Level B2.
[2] "PreCalculus" is mandatory for those students who have low competency in Math.
[3] Student can take courses in terms of "Free Course" from the other Bachelor's degree programs and/or form the Elective Specialization Courses in this program.