CAUCASUS UNIVERSITY

Undergraduate Program in
Computer Science
(Delivered in English)

Caucasus University
Caucasus School of Technology

Program Name	
Computer Science	
Program Name in Georgian	
კომპიუტერული მეცნიერება	
Degree level	
Bachelor's	
Type of the educational program	
Academic	
Instruction Language	
English	
Expected Qualification	
In English:	Bachelor of Computer Science 0613
In Georgian:	კომპიუტერული მეცნიერების ბაკალავრი 0613
Date of Program Renewal	
18.03.2025	
Academic head of the Program	
Affiliated Professor Maksim Iavich, PhD.	
Program Volume in Credit Hours	

The Bachelor's Degree Program in Computer Science 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 maximum 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 (192 ECTS credits):

- Mandatory Learning Courses -126 ECTS
- Optional Learning Courses - 66 ECTS

Learning Courses of Free Component (48 ECTS credits):

- Mandatory Learning Courses of the University - 15 ECTS
- Optional Learning Courses of the University - 15 ECTS
- Free Credits - 18 ECTS

Program Description

Admission Requirements

- Any person having a secondary education is entitled to enroll in the Undergraduate Program in Computer Science. 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.
- Passing the English Language as a foreign language in the Unified National Examinations is a mandatory requirement for the program enrollment.
- Prospective students eligible for the program without having passed the Unified National Examinations must:
  - Confirm English language B2 level proficiency (IELTS-6.0; TOEFL-78; or other relevant international certificate confirming B2 level proficiency) or he/she has to pass an English language B2 level exam administered by the Caucasus University;
  - Pass an exam in Mathematics administered by the Caucasus 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 prepare highly qualified Computer Science specialists who possess deep theoretical knowledge and practical skills, capable of developing, implementing, and managing software solutions in a modern digital environment.
- To develop analytical and innovative thinking skills in graduates, enabling them to create new technological solutions and address complex challenges.
- To foster professionals with high ethical standards, capable of effective communication in multidisciplinary environments, possessing teamwork skills, and ready for continuous professional development amidst technological changes.
- To enhance graduates' competitiveness in the labor market, ensuring their readiness for both employment and further academic education in various fields of Computer Science.

Learning Outcomes

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

1. Describes the operating principles of software and hardware, analyzes the fundamental theoretical foundations of computer science, and the importance of modern information technologies in implementing projects across various fields.
2. Solves complex algorithmic problems, and develops and evolves software, using diverse programming paradigms and technologies to achieve efficiency.
3. Analyzes and integrates user requirements into the design, development, and implementation of computer science-based solutions, ensuring their usability and functionality.
4. In alignment with disciplinary contexts, participates in the development, implementation, and evaluation of computer technology-based solutions, according to specified computer science requirements.
5. Works effectively in teams, conducts professional communication with various stakeholders, and applies teamwork principles and the ability to share responsibility.
6. Applies programming, computer system operation principles, the latest approaches, and technological tools in practice.
7. Plans professional development, assesses personal learning needs, seeks ways to improve knowledge and skills, acquires new technologies and methodologies, and uses effective communication skills when drafting and presenting professional texts.
8. Demonstrates and shares ethical principles, social responsibility, and professional values related to computer science, applying these principles in professional activities and decision-making

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

Program graduates will have an opportunity to work in a variety of environments such as industry, media, government, private and business organizations. As a rule, the work of graduates involves the following types of activities: analyzing problems for solutions, formulating and testing, using advanced communications or multimedia equipment, or working in teams for product development. Examples of job titles of program graduates may include: Software Developer, Computer Communications Specialist, System and Security Administrator, Data Communications Analyst, IT Business Management Consultant, Product Line Manager, Multimedia Developer, Animator etc

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

№	Course 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 -126 ECTS												
1.	MATH 0003E		Calculus I	x								5
2.	MATH 0002E		Linear Algebra	x								5
3.	ICS 1141		Introduction to Computer Science	x								7
4.	MATH 0004E	MATH 0003E	Calculus II		x							5
5.	MATH 1240E		Discrete Mathematics		x							5
6.	CTC 1242E		Computer Architecture		x							5
7.	PABS 1241	ICS 1141	Programming Abstractions		x							8
8.	PHYS 2140E	MATH 0004E	Principles of Physics			x						5
9.	PRP 2143	PABS 1241	Programming Paradigms			x						5
10.	PYPR 2142	ICS 1141	Python Programming			x						5
11.	PST 2142	MATH 0003E	Probability & Statistics			x						5
12.	ALGO 2142	CTC 1243E	Introduction to Algorithms & Data Structures			x						5
13.	WPRG 2242	ICS 1141	Web Programming I				x					5
14.	OSSC 2242	PABS 1241	Operating Systems & Computer Security				x					5
15.	OOPP 2242	PYPR 2142	Object Oriented Programming Usung Python				x					5
16.	CTC 2144E		Principles of Networking				x					5
17.	CTC 2243E	ICS 1141	Introduction to Database Systems				x					5
18.	SCPM 3142	MATH 0004E	Scientific Computing					x				6
19.	CTC 4147E	ALGO 2142	Artificial Intelligence					x				6
20.	CTC 4141E	ICS 1141	Software Engineering I						x			6
21.	CTC 3244E	ICS 1141	.NET Technologies I						x			6
22.	BPRO 4242		Bachelor's Project								x	12
Optional Learning Courses - 66 ECTS												
23.	ELC 2240E	PHYS 2140E	Electronics				x					5
24.	WPRG 3142	WPRG 2242	Web Programming II				x					5
25.	ALGO 3142	ALGO 2142	Design and Analysis of Algorithms					x				6

№	Course Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
26.	CTC 3145E	OSSC 2242	System Administration I					x				6
27.	SEC 3142E		Web Penetration Testing					x				6
28.	DSY 3140E	ALGO 2142; CTC 2144E	Distributed Systems					x				6
29.	HPC 3140E	CTC 2144E	Introduction to High-Performance Computing (HPC) System					x				6
30.	CTC 4145E	CTC 2243E	Database Administration					x				6
31.	CTC 3241E	ICS 1141	User Interfaces						x			6
32.	CTC 3242E	ICS 1141	Software Security						x			6
33.	CTC 3243E	ICS 1141	Java Programming Language I						x			6
34.	SEC 3241E	SEC 3142E	Web Penetration Testing II						x			6
35.	OSS 3240E	CTC 3145E	Server-Side Operating Systems Security						x			6
36.	CTC 3245E	CTC 2143E	System Administration II						x			6
37.	CTC 3247E	CTC 2144E	Corporate Wireless Networks						x			6
38.	FPR 3240E	PRP 2143	Functional Programming						x			6
39.	CPL 3240E	ICS 1141	Compilers						x			6
40.	HDW 3240E		Hardware Product Prototyping						x			6
41.	ITPM 4140E		IT Project Management							x		6
42.	ALGO 4140E	ALGO 2142	Problem-Solving Using Algorithms & Data Structures							x		6
43.	DMK 3140E		Digital Marketing							x		6
44.	CTC 4142E	CTC 3243E	Java Programming Language II							x		6
45.	CTC 4143E	CTC 3244E	.NET Technologies II							x		6
46.	NWS 4141E	CTC 2144E	Security Systems of Corporate Networks							x		6
47.	NWS 4142E	CTC 3247E	Wireless Networks & Security							x		6
48.	CTC 4241E	CTC 4141E	Software Engineering II							x		6
49.	CTC 4148E	SCPM 3142	Cryptography								x	6
50.	CTC 4249E	ALGO 2142; PST 2142	Machine Learning								x	6
51.	ITL 4140E		Legal Issues of Information Technology								x	6
52.	PAR 4240E	ICS 1141	Principles of Parallel Programming								x	6
53.	TEST 4240E	ICS 1141	Principles of Test Automation Engineering								x	6
54.	BI 4241	CTC 2243E	Business Intelligence									6

№	Course Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
Learning Courses of Free Component												
Mandatory Learning Courses of the University - 15 ECTS												
55.	ACWR 0007E		Academic Writing	x								5
56.	ENGL 0009E		General English C1.0	x								5
57.	ENGL 0010E	ENGL 0009E	General English C1		x							5
Optional Learning Courses of the University - 15 ECTS												
58.	CIS 1140E		Computer Skills & Office Applications	x								5
59.	CIS 1242E	CIS 1140E	Data Analysis & Visualization		x							5
60.	GEO 0001		Georgian Language A1[1]	x								5
61.	GEO 0002	GEO 0001	Georgian Language A2		x							5
62.	ENGF 0001		General English Language Skills B2.0+[2]	x								5
63.	ENGF 0002	ENGF 0001	General English Language Skills B2+		x							5
64.	HIST 0001E		Introduction to World History & Civilization			x						5
65.	POLS 0002E		Political Science			x						5
66.	HIST 0003E		History of Georgia	x								5
67.	SOCI 0004E		Sociology	x								5
68.	PHIL 0005E		Philosophy			x						5
69.	PSYC 0006E		Psychology			x						5
70.	ENTP 0009E		Entrepreneurship			x						5
Free Credits - 18 ECTS												
71.			Free Course[3]						x			
			ECTS Credits Per Year	60		60		60		60		
			Courses Per Year	11		12		10		9		

[1] In case a foreign student attests the level of general English language proficiency defined by the program, he / she will be exempted from passing English language courses and will study the courses in Georgian language within these credits, but if a student also is fluent in Georgian, he / she is entitled to study courses form the program's electives or free courses

[2] General English Language B2 Level is offered for those students who have English language competency lower, than the Level C1

[3] Student can take courses in terms of "Free Course" from other Bachelor's degree programs and/or form the Elective Courses within this program