

CAUCASUS UNIVERSITY



Undergraduate Program in
Computer Science
(Delivered in English)



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 Approval & Update			
	22.09.2022 (Order #01/01-54) 29.04.2026 (Order #01/01-31)		
Academic head of the Program			
	Affiliated Professor Maksim Iavich, PhD.		
Program Volume in Credit Hours			
The Bachelor's Degree Program comprises 180 credits. 1 ECTS equals 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 three years, but a maximum of five years. After the 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 their education through additional semesters by retaining the student's status. The program envisages a narrow sphere and free components learning courses: <u>Learning Courses of Narrow Sphere (138 ECTS credits):</u> – Mandatory Learning Courses -126 ECTS – Optional Learning Courses - 12 ECTS <u>Learning Courses of Free Component (42 ECTS credits):</u> – Mandatory Learning Courses of the University - 15 ECTS – Optional Learning Courses of the University - 15 ECTS – Free Credits - 12 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

Nº	Course Code	Prerequisite	Course	Year						ECTS
				I		II		III		
				Semester						
				I	II	III	IV	V	VI	
Learning Courses of Narrow Sphere										
Mandatory Learning Courses -126 ECTS										
1.	MATH 0003.32		Calculus I	x						5
2.	MATH 0002.32		Linear Algebra	x						5
3.	ICS 1141.32		Introduction to Computer Science	x						7
4.	MATH 0004.32	MATH 0003.32	Calculus II		x					5
5.	MATH 1240.32		Discrete Mathematics		x					5
6.	PABS 1241.32	ICS 1141.32	Programming Abstractions		x					8
7.	CTC 1242.32		Computer Architecture		x					5
8.	PHYS 2140.32	MATH 0004.32	Principles of Physics			x				5
9.	PRP 2142.32	PABS 1241.32	Programming Paradigms			x				5
10.	PYPR 2142.32	ICS 1141.32	Python Programming			x				5
11.	PST 2142.32	MATH 0003.32	Probability & Statistics			x				5
12.	ALGO 2142.32	PABS 1241.32	Introduction to Algorithms & Data Structures			x				5
13.	WPRG 2242.32	ICS 1141.32	Web Programming I				x			5
14.	DB 2242.32	ICS 1141.32	Introduction to Database Systems				x			5
15.	OSSC 2242.32	CTC 1242.32	Operating Systems & Computer Security				x			5
16.	NTW 2242.32		Principles of Networking				x			5
17.	OOPP 2242.32	PYPR 2142.32	Object Oriented Programming Using Python				x			5
18.	SCPM 3142.32	MATH 0004.32	Scientific Computing					x		6
19.	NET 3142.32	ICS 1141.32	.NET Technologies I					x		6
20.	SE 3142.32	ICS 1141.32	Software Engineering I					x		6
21.	AI 3142.32	ALGO 2142.32	Artificial Intelligence					x		6
22.	BPRO 4242.32		Bachelor's Project						x	12
Optional Learning Courses - 12 ECTS										
23.	ELC 2240.32	PHYS 2140.32	Electronics				x			5
24.	WPRG 3142.32	WPRG 2242.32	Web Programming II					x		6
25.	ALGO 3142.32	ALGO 2142.32	Design and Analysis of Algorithms					x		6
26.	CTC 3145.32	OSSC 2242.32	System Administration I					x		6
27.	SEC 3142.32		Web Penetration Testing I					x		6
28.	JAVA 3142.32	ICS 1141.32	Java Programming Language I					x		6
29.	DBA 3142.32	DB 1242.32	Database Administration					x		6
30.	ITPM 3140.32		IT Project Management					x		6
31.	WLN 3142.32	NTW 2242.32	Corporate Wireless Networks					x		6
32.	DMK 3140.32		Digital Marketing					x		6
33.	NWS 3142.32	NTW 2242.32	Security Systems of Corporate Networks					x		6
34.	SSEC 3142.32	ICS 1141.32	Software Security					x		6
35.	DSY 3140.32	ALGO 2142.32; NTW 2242.32	Distributed Systems					x		6
36.	FPR 3142.32	PRP 2142.32	Functional Programming					x		6
37.	CPL 3142.32	ICS 1141.32	Compilers					x		6
38.	NET 3242.32	NET 3142.32	.NET Technologies II						x	6
39.	HPC 3242.32	NTW 2242.32	Introduction to High-Performance Computing (HPC) System						x	6

№	Course Code	Prerequisite	Course	Year						ECTS
				I		II		III		
				Semester						
				I	II	III	IV	V	VI	
40.	DPD 3242.32	ICS 1141.32	Digital Product Design						x	6
41.	SEC 3242.32	SEC 3142.32	Web Penetration Testing II						x	6
42.	OSS 3240.32	CTC 3145.32	Server-Side Operating Systems Security						x	6
43.	CTC 3245.32	OSSC 2242.32	System Administration II						x	6
44.	HDW 3240.32		Hardware Product Prototyping						x	6
45.	ALGO 3242.32	ALGO 2142.32	Problem-Solving Using Algorithms & Data Structures						x	6
46.	JAVA 3242.32	JAVA 3142.32	Java Programming Language II						x	6
47.	NWS 3242.32	WLN 3142.32	Wireless Networks & Security						x	6
48.	SE 3242.32	SE 3142.32	Software Engineering II						x	6
49.	CRPT 3242.32	SCPM 2242.32	Cryptography						x	6
50.	ML 3242.32	ALGO 2142.32; PST 2142.32	Machine Learning						x	6
51.	ITL 3240.32		Legal Issues of Information Technology						x	6
52.	PAR 3240.32	ICS 1141.32	Principles of Parallel Programming						x	6
53.	TEST 3240.32	ICS 1141.32	Principles of Test Automation Engineering						x	6
54.	BI 3242.32	DB 1242.32	Business Intelligence						x	6
Learning Courses of Free Component										
Mandatory Learning Courses of the University - 15 ECTS										
55.	ACWR 0007.32		Academic Writing	x						5
56.	ENGL 0009.32		General English C1.0	x						5
57.	ENGL 0010.32	ENGL 0009.32	General English C1		x					5
Optional Learning Courses of the University - 15 ECTS										
58.	CSK 1142.32		Computer Skills & Office Applications	x						5
59.	DAV 1242.32	CSK 1142.32	Data Analysis & Visualization		x					5
60.	GEO 0001.32		Georgian Language A1 ¹			x				5
61.	GEO 0002.32	GEO 0001.32	Georgian Language A2				x			5
62.	ENGF 0001.32		General English Language Skills B2.0+ ²	x						5
63.	ENGF 0002.32	ENGF 0001.32	General English Language Skills B2+		x					5
64.	HIST 0001.32		Introduction to World History & Civilization			x				5
65.	POLS 0002.32		Political Science			x				5
66.	HIST 0003.32		History of Georgia	x						5
67.	SOCI 0004.32		Sociology	x						5
68.	PHIL 0005.32		Philosophy				x			5
69.	PSYC 0006.32		Psychology				x			5
70.	ENTP 0009.32		Entrepreneurship				x			5
Free Credits - 12 ECTS										
71.			Free Course ³						x	
ECTS Credits Per Year				60		60		60		
Courses Per Year				11		12		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 from 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 from the Elective Courses within this program