

CAUCASUS UNIVERSITY



Undergraduate Program in
Computer Science and Artificial Intelligence
(In English)



Program Name	Computer Science and Artificial Intelligence	
Program Name in Georgian	კომპიუტერული მეცნიერება და ხელოვნური ინტელექტი	
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	01.12.2024 (Order #01/01-71) 29.04.2026 (Order #01/01-34)	
Academic head of the Program	Associated Professor Rati Skhirtladze, 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 learning courses of a narrow sphere and of free components: <u>Learning courses of narrow sphere (145 ECTS credits):</u> – Mandatory learning courses -140 ECTS – Optional learning courses – 5 ECTS <u>Learning courses of free component (35 ECTS credits):</u> – Mandatory learning courses of university - 20 ECTS – Optional learning courses of university - 10 ECTS – Free credits – 5 ECTS	

Program Description

Admission Requirements

- Any person with secondary education is entitled to enroll in the Undergraduate Program. 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 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 following the procedures set by the relevant law

Program Objectives

The objectives of the Program are to:

- Provide the student with a relatively deep knowledge of the theoretical aspects of higher education disciplines, which prepares the person for further study at the Master's degree program or work with a qualification.
- Give student an interdisciplinary education in Computer Science and Artificial Intelligence, based on fundamental theories and principles of Mathematics and Computer Science, which will enable him / her to develop professionally and contribute to the development of the field.
- Prepare high-level, competitive specialists with the broad theoretical knowledge and practice-oriented, transferable skills necessary for professional development in modern CS field in Georgia and abroad as well.

Learning Outcomes

Upon completion of the program, the graduate:

1. Defines key issues in fundamental knowledge areas of ICTs.
2. Describes core computer science concepts, specifically ICTs and necessary software and technical tools for implementing projects in other fields using ICTs. Explains the purpose and role of artificial intelligence.
3. Analyzes complex computational problems and selects the appropriate algorithm for their solution.
4. Determines and connects client and user interests during ICT task/project development/evolution/implementation processes.
5. In accordance with computer science and AI disciplines, participates in developing computer technology-based solutions, implementing and evaluating assigned tasks per ICT requirements.
6. Participates effectively in teamwork in program-related activities.
7. Applies the principles of programming, computer systems, artificial intelligence, the latest approaches and technological tools in practice.
8. Determines individual learning needs and plans personal development in both professional and ICT fields. Conducts oral and written communication.
9. Appreciates and shares computer science and artificial intelligence related values, ethical and social responsibilities with others.

Building a Career

This comprehensive program equips graduates with a diverse skill set that is highly valuable in Georgia's growing tech ecosystem and the global job market, providing multiple pathways for career growth and specialization.

Graduates of the program will be qualified for positions such as Junior Software Engineer, AI Research Assistant, Data Analyst, System Support Engineer. These professionals will possess the technical competencies to develop software applications, create initial AI models, analyze datasets, implement security protocols, manage technological infrastructure, and support complex technological systems.

They can be employed in a wide range of organizations including technology companies, software development firms, financial institutions, healthcare organizations, government agencies, educational institutions, research centers, telecommunications companies, e-commerce platforms, and startups focused on

innovative technological solutions. Additionally, graduates can pursue positions with multinational tech corporations, local Georgian tech companies, international consulting firms, and work as independent tech professionals or entrepreneurs in the technology sector.

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				Course						ECTS
				I		II		III		
				I	II	III	IV	V	VI	
№	Course Code	Course Prerequisite	Course Name	Semester						
	<u>Learning courses of narrow sphere</u>									
	Mandatory learning courses -140 ECTS									
1.	MATH 0003.32		Calculus I	x						5
2.	PROG 1143.32		Principles of Computer Programming I	x						5
3.	CARC 1143.32		Computer Architecture	x						5
4.	MATH 0004.32	MATH 0003.32	Calculus II		x					5
5.	PROG 1243.32	PROG 1143.32	Principles of Computer Programming II		x					5
6.	DM 1243.32		Discrete Mathematics		x					5
7.	NTW 1243.32		Principles of Networking		x					5
8.	IDB 1243.32		Introduction to Database Systems		x					5
9.	PHYS 2143.32	MATH 0003.32	Principles of Physics			x				5
10.	PRP 2143.32	PROG 1243.32	Programming Paradigms			x				5
11.	OS 2143.32	CARC 1143.32	Operating Systems			x				5
12.	PST 2143.32	MATH 0003.32	Probability & Statistics			x				5
13.	ALGO 2143.32	PROG 1243.32	Algorithms & Data Structures I			x				5
14.	OOP 2243.32	PROG 1243.32	Object Oriented Programming				x			5
15.	SEC 2243.32		Computer Security				x			5
16.	ALGO 2243.32	ALGO 2143.32	Algorithms & Data Structures II				x			5
17.	AI 2243.32	PRP 2143.32	Artificial Intelligence I				x			5
18.	PYTH 2243.32	PROG 1243.32	Python Programming Language I				x			5
19.	SCMP 2243.32	MATH 0004.32	Scientific Computing				x			5
20.	AI 3143.32	AI 2243.32	Artificial Intelligence II					x		5
21.	SE 3143.32	PROG 1243.32	Software Engineering I					x		5
22.	ML 3143.32	ALGO 2243.32 & PST 2143.32	Machine Learning					x		5
23.	DSC 3143.32	SCMP 2243.32 & PST 2143.32	Data Science					x		5
24.	NEUN 3243.32	AI 2243.32 & PST 2143.32	Neural Networks						x	5
25.	BDA 3243.32	DM 1243.32	Big Data Analytics						x	5
26.	NLP 3243.32	ALGO 2243.32 & SCMP 2243.32	Natural Language Processing						x	5
27.	BPR 3243.32		Bachelor's Thesis						x	10
Optional learning courses - 5 ECTS										
28.	WEB 3143.32	PROG 1143.32	Web Technologies I					x		5
29.	DBA 3143.32	IDB 1243.32	Database Administration					x		5
30.	STMA 3143.32	OS 2143.32	System Administration I					x		5
31.	WPT 3143.32		Web Penetration Testing I					x		5
32.	SSEC 3143.32	PROG 1243.32	Software Security					x		5
33.	PYTH 3143.32	PYTH 2243.32	Python Programming Language II					x		5

Course				Course						ECTS
				I		II		III		
№	Course Code	Course Prerequisite	Course Name	Semester						
				I	II	III	IV	V	VI	
34.	JAVA 3143.32	PROG 1243.32	Java Programming Language I					x		5
35.	NET 3143.32	PROG 1243.32	.NET Technologies I					x		5
36.	CMP 3143.32	PROG 1243.32	Compilers					x		5
37.	ALGO 3143.32	ALGO 2243.32	Problem-solving Using Algorithms & Data Structures					x		5
38.	DSY 3143.32	ALGO 2143.32 & NTW 1243.32	Distributed Systems					x		5
39.	ITPM 3143.32		IT Project Management					x		5
40.	DMK 3143.32		Digital Marketing					x		5
41.	STMA 3243.32	OS 2143.32	System Administration II						x	5
42.	WPT 3243.32	WPT 3143.32	Web Penetration Testing II						x	5
43.	WEB 3243.32	WEB 3143.32	Web Technologies II						x	5
44.	FPR 3243.32	PRP 2143.32	Functional Programming						x	5
45.	SE 3243.32	SE 3143.32	Software Engineering II						x	5
46.	JAVA 3243.32	JAVA 3143.32	Java Programming Language II						x	5
47.	NET 3243.32	NET 3143.32	.NET Technologies II						x	5
48.	CRPT 3243.32	SCMP 2243.32	Cryptography						x	5
49.	NWS 3243.32	NTW 1243.32	Security Systems of Corporate Networks						x	5
50.	PAR 3243.32	PYTH 2243.32	Principles of Parallel Programming						x	5
51.	TEST 3243.32	PROG 1243.32	Principles of Test Automation Engineering						x	5
52.	ITL 3243.32		Legal Issues of Information Technology						x	5
<u>Learning courses of free component</u>										
Mandatory learning courses of university - 20 ECTS										
53.	CIS 1143.32		Computer Skills and Office Applications	x						5
54.	ACWR 0007.32		Academic Writing	x						5
55.	ENGL 0009.32		General English C1.0	x						5
56.	ENGL 0010.32	ENGL 0009.32	General English C1		x					5
Optional learning courses of university - 10 ECTS										
57.	DAV 1243.32	CIS 1142.3	Data Analysis and Visualization			x				5
58.	GEO 0001.32		Georgian Language A1 ¹	x						5
59.	GEO 0002.32	GEO 0001.32	Georgian Language A2		x					5
60.	ENGF 0001.32		General English Language Skills B2.0+ ²	x						5
61.	ENGF 0002.32	ENGF 0001.32	General English Language Skills B2+		x					5
62.	HIST 0001.32		Introduction to World History & Civilization			x				5
63.	POLS 0002.32		Political Science			x				5
64.	HIST 0003.32		History of Georgia			x				5

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

Course				Course						ECTS
				I		II		III		
№	Course Code	Course Prerequisite	Course Name	Semester						
				I	II	III	IV	V	VI	
65.	SOCI 0004.32		Sociology				x			5
66.	PHIL 0005.32		Philosophy				x			5
67.	PSYC 0006.32		Psychology				x			5
68.	ENTP 0009.32		Entrepreneurship				x			5
	Free credits - 5 ECTS									
69.			Free Course ³					x		5
ECTS Credits Per Year				60		65		65		
Courses Per Year				12		13		10		

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