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	

Academic head of the Program	
	Associated Professor Rati Skhirtladze, PhD

Program Volume in Credit Hours

The Bachelor's Degree Program comprises 240 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 four years, but a maximum of six 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:
Learning courses of narrow sphere (193 ECTS credits):
- – Mandatory learning courses -153 ECTS
- – Optional learning courses – 40 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 - 12 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. Describes the basic concepts of computer science. Explains the purpose and role of artificial intelligence. Based on the knowledge of the principles of mathematical and computer technology, explains the theoretical and practical aspects of the field, the main features of the field and modern trends.

2. Analyzes complex computational problems and selects the appropriate algorithm for their solution.

3. Develops and implements complex software systems.

4. Participates effectively in teamwork in program-related activities.

5. Applies the principles of programming, computer systems, artificial intelligence, the latest approaches and technological tools in practice.

6. Realizes the importance of evaluating the learning process, the need to constantly update professional knowledge and acquire new knowledge, conducts oral and written communication.

7. 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.

№	Course Code	Prerequisite	Name	I	II	III	IV	V	VI	VII	VIII	ECTS
				Year I		Year II		Year III		Year IV		
				I	II	III	IV	V	VI	VII	VIII	
Learning courses of narrow sphere												
Mandatory learning courses -153 ECTS												
1.	PROG 1141		Principles of Computer Programming I	x								5
2.	MATH 0003E		Calculus I	x								5
3.	PROG 1241	PROG 1141	Principles of Computer Programming II		x							5
4.	CARC 1241		Computer Architecture		x							5
5.	MATH 0004E	MATH 0003E	Calculus II		x							5
6.	DM 1241		Discrete Mathematics		x							5
7.	PHYS 1242	MATH 0003E	Principles of Physics		x							5
8.	PRP 2142	PROG 1241	Programming Paradigms			x						5
9.	IDB 2141		Introduction to Database Systems			x						5
10.	OS 2141	CARC 1241	Operating Systems			x						5
11.	SCMP 2142	MATH 0004E	Scientific Computing			x						5
12.	ALG 2242	PROG 1241	Algorithms & Data Structures I				x					5
13.	OOP 2242	PROG 1241	Object Oriented Programming				x					5
14.	NTW 2242		Principles of Networking				x					5
15.	SEC 2241		Computer Security				x					5
16.	ALG 3141	ALG 2242	Algorithms & Data Structures II					x				6
17.	AI 3141	PROG 1241	Artificial Intelligence I					x				6
18.	PYTH 3141	PROG 1241	Python Programming Language I					x				6
19.	PST 3142	MATH 0003E	Probability & Statistics					x				6
20.	AI 3241	AI 3141	Artificial Intelligence II						x			6
21.	SE 3242	PROG 1241	Software Engineering I						x			6

№	Course Code	Prerequisite	Name	I	II	III	IV	V	VI	VII	VIII	ECTS
			Course / Year I–IV / **Semester**									
22.	ML 3241	ALG 2242 PST 3142	Machine Learning						x			6
23.	DSC 3241	SCMP 2142 PST 3142	Data Science						x			6
24.	NEUN 4141	AI 3141 PST 3142	Neural Networks							x		6
25.	BDA 4141	DM 1241	Big Data Analytics							x		6
26.	NLP 4241	ALG 3141 SCMP 2142	Natural Language Processing								x	6
27.	BPR 4245		Bachelor's Thesis								x	12
Optional learning courses - 40 ECTS												
28.	WEB 2143		Web Technologies I			x						5
29.	ELC 2142	PHYS 1242	Electronics			x						5
30.	WEB 2243	WEB 2143	Web Technologies II				x					5
31.	DBA 2242	IDB 2141	Database Administration				x					5
32.	WEB 3142	WEB 2243	Web Technologies III					x				6
33.	STMA 3141	OS 2141	System Administration I					x				6
34.	SEC 3143		Web Penetration Testing I					x				6
35.	SSEC 3141	PROG 1241	Software Security					x				6
36.	PYTH 3241	PYTH 3141	Python Programming Language II						x			6
37.	STMA 3242	OS 2141	System Administration II						x			6
38.	SEC 3242	SEC 3143	Web Penetration Testing II						x			6
39.	JAVA 3242	PROG 1241	Java Programming Language I						x			6
40.	NET 3242	PROG 1241	.NET Technologies I						x			6
41.	FPR 3241	ALG 2242	Functional Programming						x			6
42.	SE 4142	SE 3242	Software Engineering II							x		6

№	Course Code	Prerequisite	Name	I	II	III	IV	V	VI	VII	VIII	ECTS
43.	JAVA 4141	JAVA 3242	Java Programming Language II							x		6
44.	NET 4141	NET 3242	.NET Technologies II							x		6
45.	CMP 4141	PROG 1241	Compilers							x		6
46.	ALGO 4141	ALG 3141	Problem-solving Using Algorithms & Data Structures							x		6
47.	DSY 4141	ALG 2242 NTW 2242	Distributed Systems							x		6
48.	ITPM 4141		IT Project Management							x		6
49.	DMK 4141		Digital Marketing							x		6
50.	CRPT 4241	SCMP 2142	Cryptography								x	6
51.	NWS 4241	NTW 2242	Security Systems of Corporate Networks								x	6
52.	PAR 4242	PYTH 3241	Principles of Parallel Programming								x	6
53.	TEST 4241	WEB 2243	Principles of Test Automation Engineering								x	6
54.	ITL 4241		Legal Issues of Information Technology								x	6
			Learning courses of free component									
			Mandatory learning courses of university - 20 ECTS									
55.	CIS 1142		Computer Skills and Office Applications	x								5
56.	ACWR 0007E		Academic Writing	x								5
57.	ENGL 0009E		General English C1.0	x								5
58.	ENGL 0010E	ENGL 0009E	General English C1		x							5
			Optional learning courses of university - 15 ECTS									
59.	GEO 0001		Georgian Language A1[1]	x								5
60.	GEO 0002	GEO 0001	Georgian Language A2		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 form the program's electives or free courses

№	Course Code	Prerequisite	Name	I	II	III	IV	V	VI	VII	VIII	ECTS
			Course	Year I		Year II		Year III		Year IV		
				Semester								
61.	ENGF 0001		General English Language Skills B2.0+[2]	x								5
62.	ENGF 0002	ENGF 0001	General English Language Skills B2+		x							5
63.	HIST 0001E		Introduction to World History & Civilization									5
64.	POLS 0002E		Political Science	x								5
65.	HIST 0003E		History of Georgia									5
66.	SOCI 0004E		Sociology									5
67.	PHIL 0005E		Philosophy									5
68.	PSYC 0006E		Psychology			x						5
69.	ENTP 0009E		Entrepreneurship									5
70.	DAV 1241	CIS 1142	Data Analysis and Visualization									5
			Free credits - 12 ECTS									
71.			Free Course[3]							x		
			ECTS Credits Per Year	60		60		60		60		
			Courses Per Year	12		12		10		9		

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[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