Caucasus University

Undergraduate Program in
Computer Science

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		
Language of Instruction		
Georgian		
Expected Qualification and Code		
In Georgian:	კომპიუტერული მეცნიერების ბაკალავრი	0613
In English:	Bachelor of Computer Science	0613
Date of Program Approval		
10 May 2007		
Academic head of the Program		
Porfessor 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 (182 ECTS credits):

- Mandatory learning courses -140 ECTS
- Optional learning courses - 42 ECTS

Learning courses of free component (58 ECTS credits):

- Mandatory learning courses of university - 20 ECTS
- Optional learning courses of university - 20 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.
- 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:

- Provide the student with an in-depth 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, 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 the field of Computer Science in Georgia and abroad as well.

Learning Outcomes

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

- Describes the basic concepts of computer science. 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.
- Analyzes complex computational problems and selects the appropriate algorithm for their solution.
- Develops and implements complex software systems.
- Participates effectively in teamwork in program-related activities.
- Applies the principles of programming, computer systems, the latest approaches and technological tools in practice
- Realizes the importance of evaluating the learning process, the need to constantly update professional knowledge and acquire new knowledge, conducts oral and written communication.
- Appreciates and shares technology-related values, ethical and social responsibilities with others.

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, Network Systems and Data Communications Analyst, IT Business Management Consultant, Product Line Manager, Telecommunications 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

№	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 -140 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.	CTC 1242		Computer Architecture		x							5
6.	CTC 1243	CTC 1141	Principles of Computer Programming II		x							5
7.	MATH 2240	MATH 0004	Scinetific Computing			x						5
8.	PHYS 2140	MATH 0003	Principles of Physics			x						5
9.	CTC 2141	CTC 1141	Web Technologies I			x						5
10.	CTC 2143		Operating Systems			x						5
11.	CTC 2145	CTC 1243	Object Oriented Programming			x						5
12.	CTC 2144		Principles of Networking				x					5
13.	CTC 2241	CTC 2141	Web Technologies II				x					5
14.	CTC 2243		Introduction to Database Systems				x					5
15.	CTC 2244		Computer Security				x					5
16.	CTC 2245	CTC 1243	Algorithms & Data Structures I [1]				x					5
17.	CTC 3249	CTC 2245	Algorithms & Data Structures II					x				6
18.	CTC 3149	CTC 1243	Programming Paradigms					x				6
19.	PHY 3140	CTC 1243	Python Programming Language I					x				6
20.	PST 3240	MATH 0003	Probability & Statistics [2]					x				6
21.	CTC 4141	CTC 1243	Software Engineering I						x			6
22.	CTC 3244	CTC 1243	.NET Technologies I						x			6
23.	CTC 4241	CTC 4141	Software Engineering II							x		6
24.	CTC 4147	CTC 2245	Artificial Inteligence							x		6
25.	BPR 4242		Bachelol's Thesis								x	12

№	Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
Optional learning courses - 42 ECTS												
26.	ELC 2240	PHYS 2140	Electronics				x					5
27.	CTC 3143	CTC 2241	Web Technologies III					x				6
28.	CTC 3145	CTC 2143	System Administration I					x				6
29.	CTC 3148	CTC 2144	Virtualization Technology					x				6
30.	SEC 3140		Usable Security					x				6
31.	SEC 3141		Etical Hacking					x				6
32.	SEC 3142		Web penetration testing					x				6
33.	NW 3141	CTC 2144	Management of Computer Networks I					x				6
34.	DMK 3140		Digital Marketing					x				6
35.	DSY 3140	CTC 2245 CTC 2241 CTC 2144	Distributed Systems					x				6
36.	HPC 3140	CTC 2144	Introduction to High-Performance Computing (HPC) System					x				6
37.	CTC 4145	CTC 2243	Database Administration					x				6
38.	NW 3241	NW 3141	Management of Computer Networks II						x			6
39.	CTC 3241	CTC 1243	User Interfaces						x			6
40.	CTC 3242		Software Security						x			6
41.	CTC 3243	CTC 1243	Java Programming Language I						x			6
42.	SEC 3241	SEC 3142	Web penetration testing II						x			6
43.	OSS 3240	CTC 3145	Server-side operating systems security						x			6
44.	WEB 3240	CTC 3143	Web Technologies IV						x			6
45.	CTC 3245	CTC 2143	System Administration II						x			6
46.	CTC 3246		Network Security						x			6
47.	CTC 3247	CTC 2144	Corporate Wireless Networks						x			6
48.	DA 3240		Digital Art						x			6
49.	PRW 3240		Specialization Project						x			6
50.	TELC 3240	ELC 2240	Communication Theory						x			6
51.	PHY 3240	PHY 3140	Python Programming Language II						x			6

№	Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
52.	FPR 3240	CTC 2245	Functional Programming						x			6
53.	CPL 3240	CTC 1243	Compilers						x			6
54.	CTC 3248	NW 3141	Wide Area Networking							x		6
55.	CTC 4142	CTC 3243	Java Programming Language II							x		6
56.	CTC 4143	CTC 3244	.NET Technologies II							x		6
57.	NWS 4141	CTC 2144	Security systems of corporate networks							x		6
58.	NWS 4142	CTC 3247	Wireless networks and security							x		6
59.	CTC 4144	CTC 3145	System Administration III							x		6
60.	CTC 4146	CTC 2144	Network & Service Management							x		6
61.	CTC 4148	MATH 2140	Cryptography							x		6
62.	ITPM 4140		IT Project Management							x		6
63.	ALGO 4140	CTC 2245	Problem-solving using algorithms and data structures							x		6
64.	ITL 4140		Legal Issues of Information Technology							x		6
65.	TELC 3245	TELC 3240	Digital Communication							x		6
66.	ELC 4142	TELC 3240	Wireless communication systems							x		6
67.	CTC 4242		Voice Over IP								x	6
68.	CTC 4243	CTC 1243	Mobile Programming								x	6
69.	CTC 4244	CTC 3248	Wide Area Networking II								x	6
70.	CTC 4248		Blockchain Technology & Cryptocurrency								x	6
71.	PAR 4240		Principles of Parallel Programming								x	6
72.	CTC 4249	CTC 2245 PST 3240	Machine Learning								x	6
73.	TEST 4240	CTC 2241	Principles of Test Automation Engineering								x	6
Learning courses of free component												
Mandatory learning courses of university - 20 ECTS												
74.	CIS 1140		Computer Skills and Office Applications	x								5
75.	ACWR 0007		Academic Writing	x								5
76.	ENGL 0007	ENGL 0006	General English B2.0	x								5
77.	ENGL 0008	ENGL 0007	General English B2		x							5

№	Code	Prerequisite	Course	Year								ECTS
				I		II		III		IV		
				Semester								
				I	II	III	IV	V	VI	VII	VIII	
Optional learning courses of university - 20 ECTS												
78.	CIS 1242	CIS 1140	Data Processing and Visualization		x							5
79.	MATL 2240		Software tools for modeling I		x							5
80.	ENGL 0009	ENGL 0008	General English C1.0			x						5
81.	ENGL 0010	ENGL 0009	General English C1				x					5
82.	ENGL 0005		General English B1.0 [3]	x								5
83.	ENGL 0006	ENGL 0005	General English B1		x							5
84.	MATH 0001		PreCalculus [4]	x								5
85.	HIST 0001		Introduction to World History & Civilization	x								5
86.	POLS 0002		Political Science									5
87.	HIST 0003		History of Georgia									5
88.	SOCI 0004		Sociology									5
89.	PHIL 0005		Philosophy									5
90.	PSYC 0006		Psychology									
91.	ENTP 0009		Entrepreneurship									5
Free credits - 18 ECTS												
92.			Free Course [5]						x			
			ECTS Per Year	60		60		60		60		
			Courses Per Year	12		12		10		9		

[1] Student, who already has accumulated 120 ECTS credits after the first two academic years, instead of the course - Algorithms & Data Structures I, will take the course - CTC 3141 Algorithms & Data Structures (In accordance to the previous program).

[2] "Probability & Statistics" is elective before Intake 2017-2018.

[3] General English Language B1 Level is mandatory for those students who have competency lower, than the Level B2.

[4] "PreCalculus" is mandatory for those students who have low competency in Math.

[5] 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.