Faculty	Faculty of Business, Technology and Education
Program Title	Computer Science (Major)
Awarded Academic Degree/Qualification	Bachelor of Computer Science
Program Duration/ECTS Credits	8 Semesters, 240 ECTS (1 ECTS: 25 hours) • Free-elective Component: General Module – 60 ECTS (including 12 ECTS electives); • Major – 180 ECTS (including 42 ECTS electives).
Language of Instruction	English
Head of the Program	Erekle Magradze, Professor
The Date of Program development and Update	The program is developed in 2020 and can be subject to periodic revision.

Admission Requirements to the Program

Georgian citizens must pass the Unified National Exams. Admission for the program requires minimal competence levels in the following Unified National Exams:
- English Language - 70% + 1;
- Georgian Language determined by National Assessment and Examinations Center;
- Mathematics - 40% + 1 or Physics - 40%+1.

International applicants should follow the rules and terms defined by the Ministry of Education, Science, Culture and Sports of Georgia (http://www.mes.gov.ge/content.php?id=1131&lang=geo) according to the order №224/N (December 29, 2011). The Applicant should prove English language qualification equivalent to CEFR level B2 or higher. To prove the English qualification, the applicant must submit one of the following:
- a) an official international language certificate (the main certificates and minimum scores accepted are given below*);
- b) an English Proficiency Statement from the university, high school or college, confirming that English was the language of instruction;
- c) a certificate issued by a local or international English language instruction provider (e.g. language school), confirming the acquisition of B2 level as a result of a language course the applicant attended.
- d) Or apply and take University's institutional paper-based or online language test aligned with CEFR level B2.

Note: The English language requirement may be waived if the applicant is a native of or graduated from an English medium high school/university in countries, the official language of which is English.

* The following are the minimum English test scores for admission: TOEFL
- paper-based PBT 513
- internet-based iBT 65
- computer-based CBT 183

IELTS
Academic (Band 5.5)

Cambridge ESOL (English for Speakers of Other Languages)
- Certificate of Advanced English CAE: 160/Level B2 (also grades A/B/C)
- First Certificate in English FCE: 160/Grade C (also grades A/B)
- Business English Certificate (Higher) BEC: 45/Level B2 (also grades A/B/C)
- Business English Certificate (Vantage) BEC: 60/Grade C (also grades A/B)
- Business Language Testing Service BULATS: 60 overall

- PTE (General level 3)
- PTE Academic (59-75 points)

TELC (The European Language Certificates)

TELC English B2: Pass

Michigan (Cambridge Michigan)

- Examination for the Certificate of Proficiency in English ECPE: Low Pass
- Examination for the Certificate of Competency in English ECCE: Pass
- MELAB: B2

International Students shall undergo a paper or online-based entry test in Mathematics or Physics - Entry-Level Test 40% + 1 . The test will be administered by the University to a similar level as required by Georgian students.

Program Objectives

The mission of the Program:

The mission of the Computer Science program is to prepare our students for careers in their chosen area of specialization. As such, the program aims to provide quality instruction, advisory services and student support to ensure students achieve their goals and gain the knowledge and experience required to succeed in the demanding field of Computer Science.

The Program Educational Objectives of the Computer Science program coincides with Ilia State University's mission to generate, disseminate and apply knowledge to advance science and benefit society both, on national and global scales.

Besides focusing on providing necessary professional skills to students, the program delivers several courses to equip graduates with broad insights that would prepare them to stay efficient and live in harmony, in society, in general. Some of these courses will enhance critical thinking of future graduates of the program, and some will provide basic education in the field of natural sciences. Emphasis on teamwork as well as organization and structure of the core courses will give graduates the capability to fill the growing demand of software engineers, Web and Mobile application developers, data engineers, data scientists, system and database developers and administrators.

Within the program, fundamental courses in the key fields of mathematics, probability theory and statistics will be well integrated with the courses in software engineering, systems administration and data science. The program structure ensures the incremental acquisition of adequate practical and theoretical knowledge in the fields of Computer Science. Program graduates will be competitive professionals in Georgia and abroad in areas of software engineering, systems administration and data science.

In addition, the program is oriented towards the development of transferable skills such as effective oral and written communication in at least one non-native language, hence it will lead to the development of multicultural awareness. We expect that our graduates will use these skills to advance their careers in whichever area of their interest, in industry, or governmental sector or continue their studies in academia.

Program Educational Objectives:

The Program has the following Educational Objectives (PEOs):
- **PEO 1:** Graduates have sufficient knowledge and skills in the field of computer science to perform on a high professional level to contribute to the advancement of both their professional community and a broader society;
- **PEO 2:** Graduates are able to work autonomously and function efficiently in a team environment both as leaders and team members;
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Learning Outcomes and Competencies

The program learning outcomes aim at equipping students with:
1. Analyse a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Relationship between the program educational objectives and the student learning outcomes is given in the following table:

Computer Science (Major)	Program Learning Outcomes				
Program Educational Objectives	**1**	**2**	**3**	**4**	**5**
PEO 1	X	X	X	X	
PEO 2			X		X

Teaching Methods

- Interactive lectures and seminars;
- Active learning methods;
- Analysis and synthesis method;
- Problem-based learning;
- Individual and group work;
- Laboratory and practical work;
- Brainstorming and reflection;
- Projects.

Note: Specific teaching methods are identified for each individual program component and are listed in relevant syllabi.

Program Structure

All students admitted to the bachelor program are required to accumulate **240 ECTS** to be awarded their Bachelor's Degree in Computer Science.

8 Semesters, 240 ECTS (1 ECTS: 25 hours)
- Free-elective Component: General Module – 60 ECTS (including 12 ECTS electives);
- Major - 180 ECTS (including 42 ECTS electives).

The bachelor program in Computer Science combines a solid core of Computer Science courses with the ability to gain additional depth through providing elective courses in fundamental areas of Computer Science and general education. All the combinations of mandatory and elective courses provide sufficient knowledge and expertise to the students necessary for computing practice, for applying the secure computing principles and for perception of local and global impacts of computing solutions on individuals, organizations and society in general. In addition, the curriculum provides breadth through various choices for basic science and general education, including business administration courses.

The bachelor program in Computer Science culminates with **a Senior Design Project (12 ETCS),** during which students are tasked to solve actual computing problems using the knowledge and skills they have learned throughout their studies. The Senior Design Project teams will generally

consist of 3 to 6 students under the supervision of a faculty mentor/supervisor. The purpose of the project is to improve the students' practical and technical skills, communication skills by integrating writing, presentation and teamwork opportunities and moreover, it serves to the transformation of students into proficient and equipped prospective employees.

Student Evaluation

Student assessment should be based on a 100-point grading scale:
(A) 91-100 Excellent
(B) 81-90 Very Good
(C) 71-80 Good
(D) 61-70 Satisfactory
(E) 51-60 Sufficient
(FX) 41-50 Unsatisfactory - meaning a student needs more effort to pass an examination and is given an extra chance to pass an additional examination through independent work.
(F) Failure - 40 and less of the maximum of grades, meaning the student's effort is not enough and he has to learn the subject anew.

Note: The detailed assessment components and criteria are described in more detail in the respective syllabus of each course of the program.

Employment Opportunities

Graduate students of the Computer Science program can be employed in a variety of organizations related and pursue their professional careers in the fields of:

Systems and Software Engineering
Graduates of the program will have fundamental knowledge and technical skills to program hardware devices and electronic components of digital systems using the low level programming languages. Graduates of the program will be able to perform comprehensive tests of the programmed devices and ensure that hardware is functioning according to the systems requirements.
Graduates of the program will gain sufficient knowledge and skills to create software platforms and programs for computers, mobile devices and web. Graduates will be able to develop, maintain, test and deliver software programs for their integration and implementation in computer-based systems.

Computer Systems and Database Management, Operations and Administration
Acquired knowledge and technical skills make it possible for graduates of the program to manage IT infrastructure, software systems and services in a small, medium or large-scale organization. Management of IT and computer systems means continuous follow up of the quality of IT services and systems functioning, proper assessment of new products that are required from business to be deployed, corresponding security audit of IT infrastructure and identification of threads and possible weaknesses of the organization's IT systems and infrastructure. This position requires efficient communication and interpersonal skills that will be developed during the courses of the program.
Graduates of the program will have sufficient fundamental knowledge as well as analytical and problem-solving skills to analyze and evaluate the data needs and system requirements for users and organizations. Database and systems administrators develop and scale corresponding infrastructure and resources to store and provide valuable information in the optimized and efficient way.
Systems administrators are responsible for proper configuration of access control mechanisms to different systems and provisioning of central managed systems for user authentication, authorization, file sharing, email, web and application integration and work. Skills and knowledge gained during the program courses, will help future database and systems administrators and operators to correct malfunctions in databases and modify systems according to the needs of horizontal or vertical scaling.

Data Engineering and Data Science

Nowadays data has a key value in decision making and further planning of almost all fields related to business, science, health, transportation, logistics and other spheres of human life and social activities. Processing and analysis of data, extraction of information and new knowledge out of it are the key skills, which are required for almost all areas of industry, science or medicine. Graduates of the program will gain corresponding knowledge in mathematics, probability theory and statistics as well as in various fields of computer science to become a successful and competent Data Science or Data Engineering. These professionals statistically analyze and model data about various processes and their dynamics, which makes it possible to understand certain facts better and even predict events in the near and long term future.

The graduates of the program can pursue their academic studies at a master level.

Necessary Auxiliary Conditions /Resources For Learning

Teaching and learning resources:
- Classes;
- Computer Classes;
- Computing Centre;
- Electrical and Electronic Engineering teaching laboratories;
- Ilia State University Library;
- Electronic platform of the University – Argus;
- Moodle, Turnitin;
- Teaching and Learning Staff Development Center.

Partner organizations, supporting the development and implementation of the program:
- University of California San Diego;
- San Diego State University;
- Karlsruhe Institute of Technology, Steinbuch Center of Computing;
- MaxinAI LTD;
- OptioAI LTD;
- Liberty Bank JSC;
- Bank of Georgia;
- TulaCo;
- Feedc;
- Deutsche Post DHL Group;
- Orient Logic;
- Edison LTD;
- Innotec LTD;
- Kartli Generation LTD.