GEORGIAN AMERICAN UNIVERSITY

Informatics & Engineering School

Bachelor's Program in Informatics

Curriculum
Name of Educational Program
Informatics
Higher academic education level
Sixth step (Bachelor's)
Qualification to be awarded
Bachelor of Informatics (0613)
Program Manager
Nino Karbelashvili Affiliate Professor. Detailed information on the qualifications of the program manager, his/her scientific and pedagogical activity are given in the documents attached to the program.
Program volume
The Bachelor of Informatics program is based on the ECTS system. The undergraduate program in Informatics gives the student a wide choice to plan their own profile. The program provides relevant training courses for the development of sectoral English. To qualify, under the educational program, the student must accumulate 240 credits, which is the sum of credits for the relevant content (compulsory and elective) of the undergraduate program courses and components and free components; The student accumulates 165 credits (68.75%), in the compulsory courses and components relevant to the main field of study, including 9 credits in the practical component and 18 credits in the research component - undergraduate thesis. In the elective courses appropriate for the major, the student accumulates 63 credits from 126 credits in the areas of software, application development and multimedia design. The student accumulates 12 (5%) credits from the elective courses of the free component. The student can also accumulate 12 credits from another academic program of the same level available at Georgian-American University Ltd.; From an academic educational program of the same level accredited in another higher education institution of Georgia; From the same level of academic education program at a foreign higher education institution, if these credits will be recognized in accordance with the legislation of Georgia.

The standard duration of study for the bachelor's program in Informatics is 4 years - 8 semesters.
During the year the student accumulates 60 credits, i.e. 30 credits per semester, however depending on the individual workload of the student the number of credits per year may be less than 60 credits or more but not more than 75 credits.

Practical component - 9 credits and research component - Undergraduate project - 18 credits are provided in the 8th semester, which a student will be allowed to complete only if he / she has accumulated 210 credits.
A detailed description of the practical component and the research component is given in the relevant syllabi and attached to the curriculum.

Language of instruction

Georgian language

The purpose of the program

The main purpose of the bachelor's program is to prepare a specialist - Bachelor of Informatics, who can create, manage and use software, applications, web and multimedia projects in modeling of various engineering and physical processes, commercial, scientific, advertising and media, innovative educational and creative activities;
Therefore, the goal of the undergraduate program is:

1. To study a wide field of informatics, which includes critical understanding of theories and principles, creation, development and analysis of software and applications, design of computer environment and methods of its development;
2. Learn the basic methods of computer technology, the widespread use of these methods in the creation and management of IT projects;
3. Develop the terms and conditions of work on the project or part of it (planning, drafting, updating, explanation, presentation, etc.);
4. Develop the ability to work on a research paper in accordance with pre-defined guidelines;

Develop professional ethics and professional courage and the ability to act within it.

Prerequisites for admission to the program

Only a holder of a state certificate of full general education or a person equal to him / her who is enrolled on the basis of the results of the Unified National Examinations eligible to study for a bachelor's degree.

Students can be enrolled in the Informatics Bachelor's program without the Unified National Examinations only in exceptional cases provided by the legislation of Georgia.

Field of employment

Bachelor of Informatics, can work successfully in any organization, such as:
Commercial, state, scientific, engineering, advertising, educational, banking or other organizations.
The Bachelor of Informatics is predominantly trained in computer technology, software and application (Web and Multimedia) development and analysis, web and multimedia project design and

management techniques. He can work in the following positions: low and middle level programmer, programmer-designer, designer-manager, programmer-manager, etc.

Opportunity to continue learning

A graduate of a bachelor's program can continue his/her studies at the second level of higher academic education - a master's degree, in accordance with the rules established by law.

Learning Outcomes

After completing the undergraduate program, the student:

1. Has extensive knowledge in the field of informatics, masters the basic theories and principles of algorithms, information technology, programming technologies, multimedia and web technologies; In addition, he/she knows how to operate two- and three-dimensional systems of computer graphics, animation and design;
2. Is able to manage projects and general management and marketing of communication technologies and systems;
3. Creates, develops and analyzes software products and applications; Can create interdisciplinary interactive projects; Carries out modeling, visualization and animation modeling of various physical, engineering and technological processes; Can create a product according to pre-defined instructions, analyze the data and/or situations, formulate a reasoned conclusion;
4. Formulates the goal and objectives of the project in the field of information technologies, collects, analyzes and processes conceptual data, determines the necessary human and technical resources, establishes the relationship between the results;
5. Finds relevant information and creatively solves the tasks of programming, use and introduction of multimedia technologies in various fields;
6. Discusses with specialists and non-specialists their own ideas in the field of information technologies, existing problems and ways to solve them in a manner appropriate to the context;
7. Has organizational skills, can take and implement initiatives, take responsibility for it. Keeps track of practice, science news and constantly updates knowledge. Adheres to the principles of ethics, independently plans and carries out complex tasks in the field of programming and design, takes responsibility for it;

Identifies its own further learning needs and implements with a high degree of independence.

Teaching-learning methods

Lecture
Workshop
Homework
Practical/lab work
Group work
Electronic resource training
E-learning
Training practice
Bachelor Thesis
Other;

The professor may use one or more of the above formats, methods, or any other method depending on the specific course assignment. The teaching-learning methods of a specific training course are reflected in the syllabus of the relevant training course.

Bachelor Thesis-Research Component

The bachelor's thesis envisages the creation and demonstration of qualification field and interdisciplinary multimedia projects.
A qualification project is software or application with interactive, structured design, written on a compact disc or posted on a website, which includes software code, graphic and animated visual models, video, audio, photo and text material, with an explanatory card attached.
The explanatory card represents the purpose of the qualification project, the definition of the work stages and structural-content description, the definition of the target audience groups and the formation of the expected results.

Evaluation system

A detailed assessment of the student's mastery of the course is presented in each of the learning components of the program.

Receival/accumulation of credits by the student in the relevant learning component involves active participation in the learning process and is based on the principle of continuous assessment of acquired knowledge. The level of achievement of learning outcomes is assessed according to the assessment system approved by the Order # 3 of the Minister of Education and Science of Georgia of January 5, 2007 "On the Rule of Calculation with Credits of Higher Education Programs".

Assessment of the level of achievement of learning outcomes includes forms of assessment - intermediate and final assessment, the sum of which is the maximum final assessment - 100 points.
Student assessment in the course is conducted throughout the academic semester. Accordingly, the student's final grade is the sum of the midterm grades and the final exam grade;

Assessment forms include the assessment component(s) that determines the student's knowledge/understanding and/or ability and/or autonomy/responsibility assessment method (oral/written exam, test, quiz, seminar/presentation, practical/laboratory work, homework/independent work etc). Assessment components combine assessment methods (test, presentation, graphic work, etc.). The evaluation method is measured by evaluation criteria.

Each form and component of the assessment has a share of the total assessment score (100), which is reflected in a specific syllabus.
The evaluation score of the final exam is 40, the remaining 60 points are distributed according to the midterm evaluations;
The distribution of 60 points in the midterm assessment may include several tests, workshops, practical training activities, presentations, homework assignments, etc., produced according to the specifics of the course and written in detail by the course professor in the syllabus;

Each form of assessment has a minimum competency threshold - a minimum of 25 points for the intermediate assessment and a minimum of 16 points for the final assessment.
A student who earns at least 25 points in midterm grades during the semester is eligible to take the final exam;
The minimum competency threshold can also be set for the assessment component / components, which will be described in detail in the course syllabus.

It is not allowed to grant credit using only one form of assessment. Credit is awarded to the student in case of a positive grade.

Credits can be obtained/accumulated by the student in the relevant course only if he/she successfully completes the work provided in the syllabus of the course and receives one of the positive evaluations provided by law;
The course will be considered passed if the student accumulates at least 51 points.

Student assessment is determined by the following assessment system:

Program Learning Component Assessment System:

Five types of positive reviews
(A) Excellent - 91-100 points of assessment;
(B) Very good - 81-90 points for maximum grade;
(C) Good - 71-80 points of maximum evaluation;
(D) Satisfactory - 61-70 points of maximum evaluation;
(E) Sufficient - 51-60 points for maximum grade.

Two types of negative evaluations
(FX) Didn't pass - a maximum score of 41-50, which means that the student needs more work to pass and is allowed to take an additional exam once by working independently;
(F) Fail - maximum rate of 40 points and less, which means that the student's work is not enough and he should study the subject again.

In case of passing the (FX) additional exam is appointed not less than 5 calendar days after the announcement of the final exam results.

Cumulative points are calculated at the end of the study process to determine the student's final grade and to encourage them (cumulative points are also calculated at the end of each semester). The cumulative score is calculated as follows: the number of points earned by a student in each course is multiplied by the number of credits allocated to that course, and then the sum of these numbers is divided by the number of credits accumulated by the student.

Resources to be achieved for the implementation of the program

Material resources:

- Space provided by law (training and support);
- Auditoriums equipped with appropriate equipment, conference halls, academic staff work rooms, space for administration work;
- Uninterruptible power supply system;
- Bathrooms;
- Natural lighting;
- Heating facilities;
- Fire safety mechanisms and fire-fighting equipment;
- Evacuation plan;
- Medical assistance mechanisms (medical office);
- Mechanisms to ensure order (University protection);
- Adequate number of computers and access to the Internet;
- Library equipped with relevant textbooks of the educational program and modern information-communication technologies;

Human resources:

- Academic staff selected in accordance with the legislation of Georgia and taking into account their qualifications.
- Practitioners and scientists with relevant qualifications are invited to the University as researchers and teachers.

Target marks for the learning outcomes of the undergraduate program in Informatics

1. Has extensive knowledge in the field of informatics, masters the basic theories and principles of algorithms, information technologies, programming technologies, multimedia and web technologies; In addition, he/she knows how to operate two- and three-dimensional systems of computer graphics, animation and design;

   Target benchmark:
   In order to evaluate the learning outcome, students' achievements in the following training courses are evaluated:

- Introduction to the specialty
- Algorithms and Data Structures (Python)
- Fundamentals of Information Technology
- Computer Raster Graphics (Adobe Photo Shop)
- Fundamentals of Theory of Composition and Color
- Calculus
- Web technologies (HTML, CSS)
- Programming Basics (Python)
- Basics of operating systems
- Graphic Basics of Web Design
- Linear algebra and analytic geometry
- Web technologies (JavaScript, jQuery)
- Database management systems
- Discrete Mathematics

- Web Technologies (PHP-MYySQL)
- Technical English II
- Build web applications using Framework
- Basics of Computer Networking
- R-programming
- Probability theory
- Programming on the JVM platform
- Information Systems Security Basics
- Applied Statistics
- Web optimization and marketing
- Academic writing and stylistics
- Qualification undergraduate project with explanatory card-presentation
- Practical application of computer technologies (practical component)

Because in these courses the students' achievements will be measured both in their theoretical basic knowledge and in their practical skills.
2. Able to manage projects and general management and marketing of communication technologies and systems;

Target benchmark:
2.1. Proper work planning;
2.2. Redistribution of functions;
2.3. Taking the initiative;
2.4. Implementation of the initiative;
2.5. Take responsibility for your own actions.
Assessment methods/components: Undergraduate internship, qualification thesis.
3. Creates, develops and analyzes software products and applications; Can create interdisciplinary interactive projects; Carries out modeling, visualization and animation modeling of various physical, engineering and technological processes; Can create a product according to pre-defined instructions, analyze the data and/or situations, formulate a reasoned conclusion;

Target benchmark
1. Analyzes individual assignments;
2. Carries out the development of a practical project according to the previously given information and characteristics;
3. Finds and uses relevant materials and literature;
4. completes the software and graphics part of the project;
5. Completes the text part of the project - explanatory card.

Evaluation methods/components: Evaluation of the paper according to the following criteria:
Compilation of an explanatory card
Graphic part processing
Create software code
multimedia and graphic components

tic design of the project

Assessment methods/components: tests, etc.

4. Formulates the goal and objectives of the project in the field of information technologies, collects, analyzes and processes conceptual data, determines the necessary human and technical resources, establishes the relationship between the results;

Target benchmark:

1. Finding relevant information in the native language to complete the task;
2. Search for relevant information in a foreign language to complete the task;
3. Information analysis;
4. Formulation of the relevant conclusion;
5. Adherence to ethical responsibility.

Assessment methods/components: tests, abstract, homework, individual thesis (course work), undergraduate internship, qualification thesis.

5. Finds relevant information and creatively solves the tasks of programming, use and introduction of multimedia technologies in various fields;

Target benchmark:

1. The structure of the paper is observed;
2. The issues are clear and sufficiently specific;
3. An explanatory card is drawn up;
4. The graphic part is processed;
5. Part of the software code is processed;
6. Work process analysis is conducted, processed.

Assessment methods/components: tests, abstract, homework, qualification paper.

6. Discusses with specialists and non-specialists their own ideas in the field of information technologies, existing problems and ways to solve them in a manner appropriate to the context;

Target benchmark:

6.1. Present information according to the interest of the listener;
6.2. Present existing information and own arguments in writing logically, consistently and clearly;
6.3. Present existing information and own arguments orally in a logical, consistent and clear manner;
6.4. Use of information technology terminology when presenting information;
6.5. Respect different views;
6.6. Effective use of communication technologies in presenting information.

Assessment methods/components: tests, abstract, homework, pre-diploma internship, qualification thesis.

7. Has organizational skills, can take and implement initiatives, take responsibility for it. Keeps track of practice, science news and constantly updates knowledge. Adheres to the principles of ethics, independently plans and carries out complex tasks in the field of programming and design, takes responsibility for it;

Target benchmark:

7.1. Familiar with the ethics of information technology activities;
7.2. Respects the opinions of others;

7.3. Is committed to facilitating the observance of the obligations of the employer and the employee;
7.4. Acts in the interests of justice, social and democratic values.
Assessment methods/components: Pre-diploma internship.

8. Identifies its own further learning needs and implements with a high degree of independence.

Target benchmark:
8.1. Evaluates his/her own capabilities;
8.2. Evaluates the capabilities of others;
8.3. Has the ability to work in a team;
8.4. Can plan continuous professional development;
8.5. Accordingly manages time;
8.6. Accordingly manages the resources at its disposal.
Assessment methods/components: tests, abstract, homework, pre-diploma internship, qualification thesis.

Criteria for evaluating target benchmarks

	Criteria					
	A	**B**	**C**	**D**	**E**	**F**
Target Benchmark	Outstanding use of ability defined by the indicator to form obvious Conclusions displaying the highest skills of evidence synthesis via analytical way	Very good use of skills defined by the indicator, to form obvious conclusions., displaying the high skills of evidence synthesis via analytical way	Good use of skills defined by the indicator to form obvious conclusions., displaying the high skills of evidence synthesis via analytical way	Average Use of ability, defined by the indicator to form obvious conclusions., displaying the satisfactory ability of evidence synthesis via analytical way	Sufficient use of skills defined by the indicator to form obvious conclusions., displaying sufficient skills of evidence synthesis via analytical way	Insufficient use of skills defined by the indicator to form obvious conclusions., displaying insufficient skills of evidence synthesis via analytical way

Appendix 1: Program Curriculum;
Appendix 2: Map of Objectives and Outcomes;
Appendix 3: Map of Learning Outcomes;
Appendix 4: CV Nina Karbelashvili