GEORGIAN AMERICAN UNIVERSITY

Informatics & Engineering School

Bachelor's Program in Construction Engineering

Curriculum
Name of Educational Program
Construction
Higher academic education level
Bachelor
Qualification to be awarded
Bachelor of Construction Engineering
Program Manager
Program Manager - Otar Chakvetadze Program Coordinator - Ketevan Davitadze Detailed information on the qualifications of the program manager and coordinator, their scientific and pedagogical activities are given in the documents attached to the program.
Program volume
The undergraduate program in construction is built on the ECTS system. Under the educational program, the student must accumulate 240 credits to qualify. The undergraduate program in construction gives the student a wide choice to plan their own profile. The program consists of mandatory and optional components. The elective component includes both training courses and a practical and research component. The program also provides free credit. The standard duration of study for the undergraduate program in construction 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. The student accumulates 228 credits in the compulsory study component. Including: Research component (undergraduate thesis) - 18 credits; Practical component - 9 credits; And in the free (optional) component the student accumulates 12 credits. The student can accumulate a free (elective) component from the Informatics and Engineering School (with free elective courses offered by the program) or from another academic program of the same

level at the Georgian-American University Ltd.; From an academic educational program of the same level accredited in another higher education institution of Georgia; From the academic program of the same level in a foreign higher education institution, if these credits will be recognized accordingly in accordance with the legislation of Georgia.

Language of instruction

Georgian language

The purpose of the program

One of the important roles in the modern development process of Georgia is assigned to the construction sector, the development of which requires the study of theoretical and practical issues that will allow the graduate to take an active part in the design of civil, industrial, special purpose buildings - construction, technological and organizational work.

Therefore, the goal of the undergraduate program in construction is:

1. Prepare a Bachelor of Civil Engineering focused on construction-design activities, who with solid basic knowledge and transfer skills will be able to orient in a dynamically changing environment and compete in the international market with foreign specialists of similar profile.
2. To prepare a qualified, competitive, highly morally qualified specialist in accordance with modern requirements for a decent career, who will be motivated to achieve more from a professional point of view.
3. To study the principles, methods and mechanisms of fulfillment of the main tasks of the construction-design activity in compliance with the current construction norms and rules, using modern technologies.
4. To study the rules and methods of purposeful, safe use of construction materials, goods and machinery in the construction.
5. To study the rules of rational organization and management of construction, ways and conditions for solving problems related to the field in a substantiated and reliable manner, based on an understanding of the risk factors arising in construction.
6. Develop the ability to make connections between the formation of architectural forms and constructive thinking, and to present the results obtained to specialists and non-specialists.
7. To study the methods of selection and delineation of optimal construction schemes of civil and industrial buildings in compliance with Euronorms and norms in force in Georgia, as well as to carry out a practical project using modern computational programs.
8. To study modern methods of engineering equipment and energy efficiency of buildings.
9. Develop the ability to act in accordance with the social and democratic values of human rights, professional ethics and within it, high social and moral responsibility.

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

The bachelor can be successfully employed in all organizations whose activities are related to construction, in particular: design firms; construction firms; building materials and merchandise manufacturing firms; building restoration firms; scientific research laboratories; in services subordinated to the Ministry of Culture and Monument Protection of Georgia; state institutions that supervise urban planning, construction, construction supervision, production of construction materials and goods, construction quality control, monitoring of buildings, etc.

Learning Outcomes

1. Describes the main features and principles of modern construction methods, some of the latest methods of building design and construction processes, modern methods of building engineering equipment and energy efficiency.
2. Describes the complex issues of the field (design, production of construction materials and goods, organization of construction production and its commissioning).
3. Explains the importance of physical-mechanical properties of building materials and goods; Methods of calculating building structures; Rules for the use of information technology and computer design issues in construction; Construction norms and rules in force in Georgia; Principles of application of Euronorms; Key issues in economics and management.
4. Explains the importance of occupational safety in the field of construction and the issues of professional responsibility of a specialist in the field.
5. Identifies hazards in the work environment, identifies risks and develops preventive measures to rationally organize and manage construction.
6. Creates a research (bachelor) thesis according to pre-defined instructions.
7. Executes a project of a practical nature based on the solutions of construction schemes.
8. Finds information on modern materials, technologies, machines and mechanisms in the field of construction in the native and foreign languages and draws conclusions taking into account the ethical principles characteristic of the construction profession.
9. Takes into account the interest of specialists and non-specialists in presenting information, own arguments using construction terminology in written and oral form in a logical, consistent and clear manner; Has the ability to respond quickly and adequately, taking into account respect for different views; Effectively uses communication technologies.
10. Continuously updates knowledge in the field of construction in accordance with labor safety and legislative changes in construction norms.
11. Evaluates one's own and others' capabilities, effectively manages time and resources by planning and implementing continuous professional development.
12. Recognizes the scope of the builder's work ethic, assumes social and moral responsibility, takes and implements initiative.

Teaching-learning methods

☒ Lecture
☒ Group work
☒ Seminar
☒ Practical work
☒ Bachelor thesis
☒ Training practice
☒ Homework/assignment
☐ Essay
☐ E-learning
☐ 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.

Evaluation system

Acceptance / accumulation of credits in the relevant learning component by the student involves active participation in the teaching 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 final assessment - 100 points.

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 test, oral / written survey, practical / theoretical work, homework, etc.). Assessment components integrate assessment methods (test, essay, presentation, 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.

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.
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.

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;
- Laboratory of Occupational Safety and Building Materials.

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 Construction

1. Describes the main features and principles of modern construction methods, some of the latest methods of building design and construction processes, modern methods of building engineering equipment and energy efficiency.
2. Describes the complex issues of the field (design, production of construction materials and goods, organization of construction production and its commissioning).
3. Explains the importance of physical-mechanical properties of building materials and goods; Methods of calculating building structures; Rules for the use of information technology and computer design issues in construction; Construction norms and rules in force in Georgia; Principles of application of Euronorms; Key issues in economics and management.
4. Explains the importance of labor safety in the field of construction and the issues of professional responsibility of a specialist in the field;

Target benchmark

In order to evaluate the achievement of learning outcomes 1, 2, 3, and 4, students are evaluated in the following courses:

- Basics of building design;
- Introduction to specialty: civil and industrial buildings;
- Basics of engineering equipment - parts of buildings;
- Basics of building design;
- Computer modeling of building structures;
- Materials Science: modern construction materials and goods;
- Construction economics;
- Soil mechanics and rootstocks;
- Construction machines and mechanisms;
- Organization, planning and management of construction production;
- Georgian construction norms and rules;
- Construction Euronorms;
- Construction Management;
- Construction production technology;
- Modern spatial constructions;
- Reinforced concrete structures;
- Reinforced concrete and stone constructions;
- Steel constructions;
- Wood and plastic constructions;
- Structures of steel, aluminum and light alloys;
- Labor protection.

Because in these courses, students' achievements will measure both their theoretical basic knowledge and practical skills.

5. Identifies hazards in the work environment, identifies risks and develops preventive measures to rationally organize and manage construction.

In order to evaluate the achievement of the 5th learning outcome, students are evaluated according to the following criteria:

Target benchmark:

5.1 Searching for laws and technical regulations in force in Georgia according to the given instructions;
5.2. Identify threats in a specific work environment;
5.3. Identify risks based on the identification of threats
5.4. Develop preventive measures.

Assessment methods/components: tests, cases, etc.

6. Creates a research (bachelor) thesis according to pre-defined instructions.

In order to evaluate the achievement of the 6th learning outcome, students are evaluated according to the following criteria:

Target benchmark:

6.1. The structure of the paper is preserved;
6.2.The issues are clear and sufficiently specific;
6.3. Explanatory card is drawn;
6.4. Graphic part (schematic drawings, tables) is processed;
6.5. Volumes and other characteristics are calculated;
6.6. Work process analysis is conducted, processed.

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

7. Executes a project of a practical nature based on the solutions of construction schemes.

In order to evaluate the achievement of the 7th learning outcome, students are evaluated according to the following criteria:

Target benchmark:

7.1. Analyzes individual assignments;
7.2. Performs practical project development according to priorly given information and characteristics;
7.3. Finds and uses relevant construction norms, materials and literature;
7.4. Completes the graphic part of the project;
7.5. Completes the test part of the project - explanation card.

Assessment methods/components: Assessment of an individual thesis (course work) is carried out according to the following criteria:

1. Compilation of an explanatory card
2. Processing of graphic part (schematic drawings, tables)
3. Calculation of volumes and other characteristics
4. Analyze, process and draw conclusions about the work process
5. Aesthetic design of the project

8. Finds information on modern materials, technologies, machines and mechanisms in the field of construction in the native and foreign languages and draws conclusions taking into account the ethical

principles characteristic of the construction profession.
Target benchmark:
8.1. Search for relevant information in the native language to complete the task;
8.2. Searching for relevant information in a foreign language to complete the task;
8.3.Analysis of information;
8.4. Formulation of an appropriate conclusion;
8.5.Protection of ethical responsibility.
Assessment methods / components: tests, abstract, homework, individual thesis (course work), study introductory internship, undergraduate internship, qualification thesis.
9. Takes into account the interest of specialists and non-specialists in presenting information, own arguments using construction terminology in written and oral form in a logical, consistent and clear manner; Has the ability to respond quickly and adequately, taking into account respect for different views; Effectively uses communication technologies.
Target benchmark:
9.1. Present information according to the interest of the listener;
9.2. Present the existing information and own arguments in writing logically, consistently and clearly;
9.3. Present existing information and own arguments orally, logically, consistently and clearly;
9.4.Use of construction terminology when presenting information;
9.5. Respect different views;
9.6. Effective use of communication technologies when presenting information.

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

10. Continuously updates knowledge in the field of construction in accordance with labor safety and legislative changes in construction norms.
Target benchmark:
10.1. Accounts for legislative changes;
10.2. Can find the necessary regulatory documentation;
10.3. Can update knowledge.
Assessment methods/components: tests, abstract, homework, study introductory internship, pre-diploma internship, qualification thesis.
11. Evaluates one's own and others' capabilities, effectively manages time and resources by planning and implementing continuous professional development.
Target benchmark:
11.1. Evaluates his/her own capabilities;
11.2. Evaluates the capabilities of others;
11.3. Has the ability to work in a team;
11.4. Can plan continuous professional development;
11.5. Manages time accordingly;
11.6. Manages the resources at his disposal accordingly.
Assessment methods/components: tests, abstract, homework, study introductory internship, pre-diploma internship, qualification thesis.
12. Recognizes the scope of the builder's work ethic, assumes social and moral responsibility, takes and implements initiative.

Target benchmark:
12.1. Knows the scope of the builder's work ethic;
12.2. Respects the opinions of others;
12.2. Is committed to facilitating the protection of the obligations of the employer and employees;
12.3. Acts in the interests of justice, social and democratic values.

Assessment methods/components: teaching introductory practice, pre-diploma practice.

Criteria for evaluating target benchmarks

	Criteria					
	A	**B**	**C**	**D**	**E**	**F**
Tarhet benchmarks	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 and Outcome Map.

Annex 2: CV – Otar Chakvetadze