



საქართველოს ტექნიკური უნივერსიტეტი
GEORGIAN TECHNICAL UNIVERSITY

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Bachelor's Educational Program

Program Title

ბუნებრივი საფრთხეები, მდგრადი გარემო და დაცვა

Natural Hazards, Sustainable Environment and Protection

Faculty

მთის მდგრადი განვითარების ფაკულტეტი

Faculty of Mountain Sustainable Development

Program Head/Heads

Associate Professor Shorena KUPREISHVILI

Qualifications to be awarded and the extent of the program in terms of credits

Bachelor of Engineering in Environmental Engineering

Will be awarded by combining 225 credits of the main field of education in the program and 15 credits of free components, in case of completion of at least 240 credits.

Language of Teaching

Georgian

Prerequisite for admission to the program

Only the person with a state certificate confirming complete general education or a document equivalent to it, has the right to study at the bachelor's level who will be enrolled in accordance with the procedure established by the legislation of Georgia.

Program Description

In the educational program, the competences defined for the bachelor's degree and the requirements of the employment market are considered according to the framework of higher education qualifications. The preparation of the Bachelor's degree is carried out through credits determined by compulsory and free components. Compulsory components include: education courses and field practice.

The educational program is compiled using the ECTS system. 1 credit is equal to 25 hours, which includes both contact and independent work hours. The capacity of each semester is - 30 ECTS credits. The duration of the program is 4 years (8 semesters). One semester includes 20 weeks. The education process lasts 16 weeks. XVII week is assigned to the thematic project and exam preparation, XVIII-XIX week is the final exam. If necessary, XX week is assigned to an additional exam. A student passes the additional exam only if he/she has scored 41 to 50 points after passing the final exam. The capacity of the educational program is 225 compulsory credits and 15 credits of free components.

The maximum score for each course in each semester is 100. The maximum score for the midterm assessment is 60. The midterm assessment consists of 2 components: an ongoing activity and a midterm exam. The maximum grade of the current activity is 30 points, the minimum positive grade is 15 points, the maximum grade of the mid-semester exam is 30 points, the minimum positive grade is 7.5, the maximum grade of the final exam is 40 points, and the minimum is 10.

The duration of the first academic year is 2 semesters. During two semesters, the student will study 13 education courses (60 credits), of which one course (3 credits) is elective, and 57 credits is a compulsory education course.

The duration of the second academic year is 2 semesters. During two semesters, the student will study 12 compulsory courses (60 credits), of which one course (5 credits) is elective, and 55 credits is a compulsory education course.

The duration of the third academic year is 2 semesters. During two semesters, the student will study 12 education courses (60 credits), including field practice (5 credits), free component (10 credits), and 45 credits compulsory course.

The duration of the fourth academic year is 2 semesters. During two semesters, the student will study 12 compulsory courses (60 credits). Among them are field practice (5 credits), free components (5 credits), and 50 credits compulsory education course.

In Georgia, natural disasters, such as floods, water fall, landslides, avalanches, earthquakes, hailstorms, heavy rains, tornadoes and droughts, accompanied by a high level of risk and vulnerability, have a negative impact on the country's economy. During the last 40 years, 70% of the country's territory was affected by hydrometeorological and geological natural events; the resulting economic loss exceeded 14 billion US dollars.

The program is made in accordance with the strategic vision of the Government of Georgia for the education of young personnel. For the purpose of sustainability and protection of the development of highland regions.

- Highland and Glacier University of Scotland;
- University of Geneva;
- Altai State University where there is only a Faculty with a similar name.

In the development of the main educational models of the programs, the experience of the above-mentioned and various well-known European universities working on mountain problems is taken into account, in particular:

- ❖ Austria - Boku and Bio-Institute;
- ❖ Italy - Free University of Bolzano;
- ❖ From universities in Germany - Munich, Hohenheim, Kassel and others. Also from the

leading universities in the field of environmental protection of the United States of America

<https://www.bestcolleges.com/features/environmental-science-degree-pr>

Green Universities Programs in Engineering, Natural Resources, www.fao.org

Mountain Partnership Documents POLICY BRIEFS Considering the Impact of Climate Change and Natural Disasters

[https://www.cqu.edu.au/courses/bachelor-of-engineering-honours-and-diploma-](https://www.cqu.edu.au/courses/bachelor-of-engineering-honours-and-diploma)

[of-professional-practice-co-op-engineering](https://www.cqu.edu.au/courses/bachelor-of-engineering-honours-and-diploma-of-professional-practice-co-op-engineering)

[https://www.bachelorstudies.com/BEng-\(Hons\)-in-Civil-and-Environmental-Engineering/United-Kingdom/UWL/#duratio](https://www.bachelorstudies.com/BEng-(Hons)-in-Civil-and-Environmental-Engineering/United-Kingdom/UWL/#duratio)

Program Objective

To prepare a specialist who is competitive for the labor market, focused on theoretical and practical activities for the protection of the infrastructure of the mountainous environment, who can orientate in the dynamically changing conditions of the mountain, carry out environmental protection engineering measures based on the preventive measures taken in advance, predict natural risk factors in the mountain; Determining the causes of snow and avalanches; protection of mountain rocks from water erosion processes; Regulation of bed processes on mountain rivers and arrangement of embankment protection engineering structures. Focused on the requirements of the modern labor market.

Learning Outcomes/Competences (general and professional)

The Bachelor's educational program gives the student the opportunity to acquire knowledge, develop theoretical and practical skills in the following subjects:

Generalizes the natural events occurring in the mountains, their causes, related to infrastructure protection, namely: landslides, water erosion, landslides, avalanches, etc.;

Discusses the theoretical and practical issues of environmental sustainability and protection and necessary preventive measures;

Determines the causes of natural hazards; assesses and analyzes the sustainability of the environment;

Uses the acquired knowledge for the protection of mountain infrastructure; carries out specific measures necessary for the protection of environmental sustainability;

Justifies the necessity of measures to be taken for environmental sustainability; formulates own conclusions and proposals;

Inspects the existing engineering and technical facilities; practical measures and conclusions necessary for maintaining the sustainability of the natural environment;

Uses existing engineering mathematical modeling methods for mountain infrastructure protection; modern means of communication; information technologies;

Determines the environmental sustainability factors in the mountains; preventive measures to be taken to protect against ecological risks;

Plans the need to continue professional career at the next level of education; - multifaceted and consistent step-by-step assessment of learning outcomes;

Proves the values of professional engineering behavior: punctuality, objectivity, striving for organization and integrity, respect for the profession;

Methods of achieving learning outcomes (teaching-learning)

Lecture Seminar (group work) Practical Laboratory Practice
 Course work/Project Consultation Independent work

In the educational process, depending on the specifics of a particular study course program, the following teaching-learning methods are used, which are given in the relevant education course programs (syllabi):

Discussion/debates, cooperative, group (collaborative)work, problem-based learning (PBL), demonstration method, case study, inductive method, deductive method, analysis method, synthesis method, verbal or oral method, written work, explanatory method, project development and presentation, brain storming.

Student's Knowledge Assessment System

The student's knowledge is assessed on a 100-point scale.

Positive grades are:

- **(A)**-Excellent - 91-100 points;
- **(B)**-Very Good – 81-90 points;
- **(C)**-Good – 71-80 points;
- **(D)**-Satisfactory – 61-70 points;
- **(E)**-Sufficient – 51-60 points.

Negative grades are:

- **(FX)** - failed - 41-50 assessment points, which means that the student needs more work to pass and is allowed to take the additional exam once with independent work;
- **(F)** - Failed - 40 evaluation points and less, which means that the work done by the student is not enough and he/she has to study the subject again.

In case of receiving FX in the component of the educational programme, GTU will schedule an additional exam at least 5 days after the announcement of the results of the final exam. The number of points obtained in the final assessment is not added to the grade received by the student at the additional exam.

Fields of Employment

- Ministries of Regional Development and Infrastructure of Georgia, Environmental Protection and Agriculture of Georgia;
- Objects of nature protection importance;
- Tsothe Mirtskhulava Water Management Institute of the Georgian technical university;
- Local and international nature protection organizations;
- "Georgian Amelioration" - service centers;
- "United Water Supply Company of Georgia";
- "Georgian Water and Power";
- Construction and design organizations;
- Local municipal councils
- Private organizations in the field of environmental protection;
- International non-governmental organizations in the field of environmental protection;

Opportunities for continuing education

Master's degree educational programs

Human and material resources needed to implement the program

The program is provided with adequate human and material resources. For additional information, please find the attached documentation.

Number of attached syllabi: 78