საქართველოს ტექნიკური უნივერსიტეტი
GEORGIAN TECHNICAL UNIVERSITY

Approved by
Resolution № 01-05-04/196 of
the Academic Council of GTU
dated November 28, 2023

Bachelor's Educational Program

Program Title

ნიადაგისა და წყლის რესურსების ინჟინერია
Soil and Water Resources Engineering

Faculty

აგრარული მეცნიერებების და ბიოსისტემების ინჟინერინგის ფაკულტეტი
Faculty of Agricultural Sciences and Biosystems Engineering

Program Head/Heads

Associate Professor Mtvarisa TANANASHVILI
Visiting Professor Maia KUPRAVISHVILI

Qualification to be Awarded and the Extent of the Program in terms of Credits

Bachelor of Engineer/BEng Agricultural Engineering

will be awarded by combining at least 230 credits of the education program's primary specialty and 10 credits of free components if at least 240 credits are completed

Language of Teaching

Georgian

Prerequisite for Admission to the Program

Only the holder of a state certificate proving complete general education, or a document equivalent to it enrolled in accordance with the procedure established by Georgia law, shall have the right to study at the Bachelor's Educational Program.

Program Description

The program is based on the ECTS system; 1 credit is equal to 25 hours, which includes both contact and independent work hours. The distribution of credits is presented in the program curriculum. The program lasts 4 years (8 semesters) and includes 240 credits (ECTS). One semester includes 20 weeks, of which the learning process takes place over a period of 15 weeks. The rector of the GTU issues an

academic calendar before the beginning of the semester, which is published on the website.
The distribution of 240 credits in the Bachelor's educational program Soil and Water Resources Engineering is as follows: Courses with the content relevant to the primary field of study - 230 credits, free components - 10 credits. Courses in the primary field of study 230 credits are represented by compulsory courses - 200 credits, elective foreign language courses - 20 credits, elective courses in humanitarian sciences - 5 credits and elective courses in the specialty - 5 credits.
Detailed information about the learning process is provided in the Instructions for Managing the Educational Process at Georgian Technical University at the following electronic address.
Similar educational programs of the Bachelor's educational program Soil and Water Resources Engineering are the following:
1. 40% matching to the Soil and Water Resources Engineering program, Department of Agricultural and Biosystems Engineering. Iowa State University.
https://catalog.iastate.edu/collegeofengineering/agriculturalengineering/#fouryearplanslandandwaterresourcesoptiontext
2. 50% matching with similar programs of Indian universities and colleges.
https://collegedunia.com/courses/bachelor-of-technology-btech-soil-and-water-conservation-engineering
3. 60 % matching with Soil and Water Resources Engineering Program, University of Nebraska-Lincoln.
https://engineering.unl.edu/agen/agen-natural-resources-and-irrigation-engineering/

Program Objective

The objective of the Bachelor's educational program Soil and Water Resources Engineering is to prepare an agro-engineer with competitive highly qualified engineering and design knowledge, oriented in a dynamically changing environment, both at an additional level of education and in a wider labor market who will know how to protect soils and improve their fertility; protect and improve natural water resources and integrated management; design and operate modern agro-engineering systems taking into account natural and anthropogenic risk factors.

Learning Outcomes/Competences (general and professional)

1. Has a broad knowledge of natural and computer science to identify and solve agronomic problems;
2. Conducts laboratory work to determine the water-physical and chemical-biological composition of soils;
3. Determines in the laboratory the quality of natural and waste water by physical-mechanical and chemical-bacteriological composition;
4. Effectively implements environmental protection measures in agribusinesses using agricultural machinery technology;
5. Utilizes agricultural machinery technology to improve soil conditions and increase crop yields;
6. Designs drainage and irrigation systems to improve soil water and air regime according to predetermined principles;
7. Designs a water management complex taking into account the technical-economic and natural-climatic conditions of the site, in accordance with predetermined standards;
8. Establishes communication in an appropriate form with specialists and non-specialists on ways to solve existing problems in the field of soil and water resources engineering using information technologies;

9. Independently plans continuing professional development and the need for further education;
10. Responsibly manages development-oriented activities of an agro-engineer in a complex, unpredictable work environment, observing the principles of professional ethics.

Methods of Achieving Learning Outcomes (teaching-learning)

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

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

Discussion/debate, cooperative learning, collaborative work, demonstration, analysis, synthesis, laboratory, practical, verbal or oral method, written work, explanation, project development and presentation, industrial internship/practical training, brain storming, deduction, induction, problem-based learning (PBL), case study.

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 to pass – 41-50 points, which means that the student needs more work to pass and is allowed to take an additional exam once with independent work;
- (F) - Failed - 40 points or less, which means that the work done by the student is insufficient and he/she will have to study the subject again.

Detailed information about the learning process is provided in the Instructions for Managing the Educational Process at Georgian Technical University at the following electronic address https://gtu.ge/Study-Dep/Forms/Forms.php

Fields of employment

- Ministry of Environment Protection and Agriculture of Georgia;
- Ministry of Regional Development and Infrastructure of Georgia;
- Georgian Amelioration LLC;
- United Water Supply Company of Georgia LLC;
- Georgian Water and Power;
- District municipalities;
- Sectoral commissions;
- JSC Georgian Water Project;
- Vocational and state colleges relevant to the field;
- Institutions of higher education;

- Private and public institutions in the field;
- Farms, agro-firms, water users' organizations.

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: 75