



საქართველოს ტექნიკური უნივერსიტეტი  
GEORGIAN TECHNICAL UNIVERSITY

Approved by  
Resolution № 733 of the  
Academic Council of  
GTU dated July 6, 2012

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Resolution № 01-05-02 of the  
Academic Council of GTU dated  
December 29, 2022

## Master's Educational Program

### Program Title

გარემოსდაცვითი ინჟინერია

Environmental Engineering

### Faculty

ქიმიური ტექნოლოგიისა და მეტალურგიის ფაკულტეტი

Chemical Technology and Metallurgy

### Program Head/Heads

Professor Leila GVERDTSITELI

### Qualification to be Awarded

Master of Environmental Engineering

*Will be awarded upon completion of at least 120 credits of the educational program*

### Language of Teaching

Georgian

### Prerequisite for Admission to the Program

A person with at least a Bachelor's degree or an academic degree equivalent to it has the right to study at the Master's degree (from the following broad areas of the field of study classifier: 06 Information and communication technologies; 05 Natural sciences, mathematics and statistics; 07 Engineering, production and construction; 08 Agriculture, forestry, fisheries, veterinary medicine), which will be enrolled based on the results of the master's exams according to the rules established by the legislation of Georgia (the general master's exam and the exam/exams of the specialty determined by GTU). Exam questions/tests will be posted on the website of GTU Teaching Department at least one month before the exams.

The applicant must have a certificate confirming the knowledge of one of the foreign languages (English language, German language, French language, Russian language) of at least B2 level, or must have a document of completion of a corresponding training course of B2 level. In the absence of a similar certificate or other similar document, the applicant will be tested in a foreign language at the GTU testing center. Enrollment in the program without passing the master's exams is possible according to the rules established by the Ministry of Education and Science of Georgia.

External mobility. Enrollment in the educational program is also possible on a mobility basis, in accordance with the "Procedure for transferring from a higher educational institution to another higher educational institution" approved by Order No. 10/N of the Minister of Education and Science of Georgia dated February 2, 2010;

Internal mobility. Applicants will also be admitted to the educational program on the basis of internal mobility. The terms and procedures of internal mobility are determined by the order of the rector of the university and the information is posted on the university's website;

## 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 according to subjects is presented in the curriculum.

The duration of the Master's program is 2 academic years, i.e. 4 semesters and includes 120 credits; (4 semesters, each semester includes 30 credits); According to the student's individual workload, the number of credits in one year can be less or more than 60 credits, but not more than 75 credits.

The program includes teaching and research components

Educational component (educational courses), mandatory and elective - 90 credits;

(85 compulsory, 5 credits elective), the block of elective courses includes three courses, from which the student chooses 1 course - 5 credits.

In the program, the study course "Environment and Human Rights" is presented in Georgian and English languages according to the student's choice.

The research component is defined in the IV semester, which provides for the execution and defense of a Master's thesis - 30 credits.

The study schedule, mid-semester and final/supplementary exam dates are determined at the beginning of each semester by the order of the rector, based on the "Instructions for managing the educational process at the Georgian Technical University".

Detailed information about the master's degree is available on the GTU website:

"Regulations of the Georgian Technical University on Master's Degree",

"Procedure for transferring from a higher educational institution to another higher educational institution".

Organization of the educational process, evaluation of student achievements, signing of educational and financial agreements with students, accumulation of credits by students, mobility and other necessary information is given in the "Instructions for managing the educational process at the Georgian Technical University", which is posted on the website of GTU.

## Program Objective

The goal of the Master's program is as follows:

- Preparation of a Master of Environmental Engineering, who will have deep, systematic knowledge to search for new, original ways to solve environmental protection problems, to implement modern environmental technologies;
- Training of a specialist with competencies corresponding to the requirements of the modern labor market, which will be focused on the correct management of environmental laws and conventions, measures of rational nature use, protection of ecological and economic efficiency, as well as waste management and environmental management;
- Assessment of problems in the field of environmental engineering and attitudes towards their values, participation in preventive measures, striving to establish new values and development of appropriate skills.

## Learning Outcomes/Competences (general and sectoral)

- Will select preventive measures of environmental technologies through the development of new original ideas based on deep and systematic knowledge in the direction of sustainable development of environmental engineering;
- Develops the main stages and perspectives of solving the problems of rational nature use while mastering aspects of environmental management;
- Determines the ecological condition of the environmental objects of the regions of Georgia and the economic-ecological changes caused by anthropogenic impact;
- Evaluates the qualitative and quantitative indicators of the condition of production facilities in compliance with the applicable environmental laws, norms, rules and standards;
- Uses modern techniques to control the cleanliness of environmental components and reduce pollution;
- Perfects ecologically safe technological process schemes;
- Predicts the distribution of pollutant concentration values in environmental objects (atmospheric air, hydrosphere, soil) using mathematical and numerical modeling;
- Presents his own conclusions and arguments based on the results of research work in the field of environmental engineering to the academic and professional community and presents them;
- Independently plans further study directions and directs the process of developing/enhancing one's own learning.

## Methods of achieving learning outcomes (teaching-learning)

Lecture  Seminar (group work)  Practical  Laboratory  Practice  Course work/Project  Consultation  Independent work  Master's Thesis

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; brain storming; demonstration; analysis; verbal or oral; written work; practical; explanatory; project development and presentation.

## 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.

In case of receiving FX, an additional exam is planned, not less than 5 days after the announcement of the results. The number of points obtained in the final assessment is not added to the grade received by the student in the additional exam. The grade obtained on the additional exam is the final grade and is reflected in the final grade of the educational program component. In case of receiving 0-50 points in the final evaluation of the educational component, taking into account the evaluation received at the additional exam, the student is assigned an F-0 score.

### Fields of employment

Factories producing industrial products, the Ministry of Environmental Protection and Agriculture of Georgia, the National Environmental Agency of Georgia, organizations and institutions whose practical work is determined by the issues of environmental engineering and ecological safety

### Opportunities for continuing education

PhD 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: 27