



Approved by  
Resolution № 733 of the  
Academic Council of GTU  
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the Academic Council of GTU  
dated October 12, 2020

## Master's Educational Program

### Program Title

საინჟინრო გეოდეზია

Engineering Geodesy

### Faculty

სამთო - გეოლოგიური

Mining and Geology

### Program Head/Heads

Associate Professor Marekh SADUNISHVILI

### Qualification to be Awarded

Master of Geodesy and Geoinformatics 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, who is enrolled based on the results of the master's exams (general master's exam and exam/exams determined by GTU) has the right to study in the master's program.

Those wishing to enroll in the program must present a relevant certificate confirming knowledge of a foreign language (English, German, French, Russian) at least at the B2 level or must pass an exam at the GTU exam center.

Exam questions/tests will be posted on the website of the Department of Education of GTU at least one month before the exams.

Enrollment in the program without passing the master's exams is possible according to the rules established by the Ministry of Education, Science, Culture and Sports of Georgia.

## Program description

The program is compiled using the European credit transfer system ECTS. 1 credit is equal to 25 hours, including contact and independent work hours. The distribution of credits is presented in the program curriculum. The program lasts in 2 years.

The program includes teaching and research components.

Educational component (educational courses), compulsory - 70 ECTS, optional - 20 ECTS.

Research component - 30ECTS.

## Program Objective

- ✓ To provide students with deep and systematic knowledge in the field of engineering geodesy and geoinformatics about geodetic and geoinformatics provision of research objects.
- ✓ In accordance with the requirements of the labor market, to develop the ability to design networks, assess accuracy, process measurements, record and carry out deformation research independently.
- ✓ To develop the ability to find original ways to solve complex problems in the field of geodesy and surveying using the latest methods and approaches.

## Learning Outcomes/Competences (general and sectoral)

Discusses the methods of mathematical processing of geodetic measurements and high-precision measurement of the gravity field, support, elevation and planar networks in engineering geodesy and marking, underground orientation works, software processing of vector and raster images and surfaces in geoinformation systems.

Explains the methods of tracing the geometrical parameters of the object, the ecological, economic and legal aspects of the land resources management and land development project, the methods, methods and principles of Estate relations regulation.

In the process of engineering geodetic assurance, he uses the appropriate processing methods, the legal basis of Estate relations, land cadastre, land control and monitoring organization methods, geoinformation system.

Justifies the accuracy of geodetic support networks, mine surveyor services during mine construction and operation, accuracy of geodetic measurement processing, protection and rational use of land fund.

independently solves engineering geodetic tasks, problems arising in the design of supporting geodetic networks, mine surveyor tasks in the mine construction and operation processes using classical methods and modern technologies, tasks related to spatial data processing;

Taking into account the types of engineering objects, selects geodetic support networks, their tracking and modern methods of processing geodetic measurements;

Prepares proposals on ways of processing geodetic measurement of networks with appropriate methods, development of complex management of land resources.

participates in making decisions related to the management of land resources; land development, land cadastre, land monitoring, Planning and organization of cadastral works.

Determines the components of the spatial information system of the land, the results of the works carried out on the quarries.

Shares the norms approved by the state in the field of geodesy, formulates his own opinion and business proposals both orally and verbal.

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

Lecture  Seminar (group work)  Practical  Laboratory  Practice  
 Course work/Project  Master's Thesis  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,
- collaborative work,
- demonstration,
- induction,
- deduction,
- synthesis,
- writing work,
- explanation,
- action-oriented learning,
- project development and presentation,
- verbal or oral work

## 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 examination is indicated, not less than 5 days after the announcement of the results. In addition, the grade obtained on the exam is considered as an improvement to the grade obtained in the assessment.

## **Fields of employment**

- ✓ Oil and gas exploration and production companies;
- ✓ Companies that collect, process, analyze, visualize and exchange spatial data.
- ✓ Mining enterprises: shafts, mines, quarries. Organizations engaged in the design, construction and operation of shafts, mines and other underground structures.
- ✓ Organizations of civil and industrial construction profile: high-rise buildings, bridges and tunnels, pipelines, high-voltage transmission lines. Organizations engaged in the design, construction and safe operation of ropeways, technological lines, dams and others.
- ✓ Organizations engaged in: registration, study and conservation of cultural heritage monuments; with cadastral works.
- ✓ State structures:
  - ✓ Ministry of Regional Development and Infrastructure of Georgia,
  - ✓ Ministry of Justice of Georgia,
  - ✓ Ministry of Economy and Sustainable Development of Georgia,
  - ✓ Ministry of Agriculture for Environmental Protection of Georgia,
  - ✓ Ministry of Defense of Georgia, and municipalities

## **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: 28**