



Master's Educational Program

Program Title

მეტალურგია

Metallurgy

Faculty

ქიმიური ტექნოლოგიისა და მეტალურგიის

Faculty of Chemical Technology and Metallurgy

Program Head/Heads

Professor Izolda KAKHNIASHVILI

Qualification to be awarded

Engineering Master in Metallurgy

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 equivalent academic degree (from the following broad fields of the field of study classifier: 05 natural sciences, mathematics and statistics; 07 engineering, production and construction) has the right to study at the master's degree, who is enrolled based on the results of the master's examinations according to the rules established by the legislation of Georgia (general Master's degree examination and specialty examination/examinations specified 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 knowledge of one of the foreign languages (English language, German language, French language) of at least B2 level or must have a document of completion of the corresponding B2 training course. In the absence of a similar certificate or similar document, the applicant will be interviewed in one of the foreign languages (English, German, French, Russian). 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.

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 credits from them are mandatory and 5 credits are elective; research component - 30 credits.

The program is compiled in accordance with foreign analogues: www.masterstudies.com > [Universities > Italy](http://www.mtech.edu/academics/gradschool) <http://www.mtech.edu/academics/gradschool> USA <https://mse.utah.edu/metallurgical-engineering/met-e-phd-program/>

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

Plagiarism check of the master's thesis is a necessary condition for admission to the defense of the master's thesis.

The research component of the program is the Master's thesis. Detailed information on the requirements and evaluation of the research component is provided in the regulations of the Georgian Technical University on the Master's degree.

Organization of the educational process, assessment of student achievements, signing of educational and financial agreements with students, accumulation of credits by the student, mobility and other necessary information is provided in the “Instructions for managing the educational process at the Georgian Technical University”, which is located on the GTU website.

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”.

Program Objective

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

- Training of highly qualified specialists, equipped with deep and systematic knowledge, in demand in the labor market for the metallurgical sector, who will have the skills to perform and manage production-technological, computer-design and organizational works in relevant organizations for obtaining ferrous and non-ferrous metals, alloys and special materials;
- Graduates will acquire the skills to manage the technological processes of ferrous and non-ferrous metallurgy, taking into account the modern achievements of metallurgy.

Learning Outcomes/Competences (general and professional)

- Knows the main indicators of the world deposits of non-ferrous and ferrous metal ores, the principles of concentrate enrichment and exploitation of their cutting mechanisms, means of secondary raw material sorting.
- Applies special knowledge to obtain specific metals and alloys, to select raw materials and their processing methods, to check the chemical composition and quality of the initial raw materials and final products of technological processes.
- Calculates the number of cranes, loading machines, non-vertical and vertical grids, ladles, ladles, molds for optimal use, after releasing the desired quality liquid metal, the main parameters of the casting machine, such as metal temperature, speed of the conveyor belt movement of the machine and its geometric parameters.
- Determines the causes of disruption of technological processes and outlines ways to eliminate them and prospective environmental protection measures related to harmful gases released from metallurgical enterprises.
- Selects modern laboratory analysis methods in the management of metallurgical processes for the production of ferrous and non-ferrous metals, special steels.
- Justifies the validity of selecting specific technological schemes for obtaining ferrous and non-ferrous metals, alloys and special materials.
- Analyzes complex and incomplete information (including recent research) and draws appropriate conclusions based on critical analysis.
- Generalizes the findings to solve the problems of getting the highest quality metal; to select technological processes; About the danger of possible explosions in metallurgical enterprises, in order to avoid the accompanying ecological danger.
- Evaluates the influence of the selected technological processes and modes, the content of target metals in the raw materials on the quality of metal extraction, the composition and properties of the obtained metals, and environmental safety.
- Presents own conclusions, arguments and research results to both the academic and professional community in compliance with academic ethics standards.
- Independently plans further study directions and directs the process of developing/enhancing his/her own learning.

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):

group (collaborative);

verbal or oral; written

work;

analysis;

Demonstration

practical

discussion/debate;

mental attack;

Explanatory

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 the component of the educational program, in case of acceptance of FX, GTU is required to schedule an additional exam not less than 5 days after the announcement of the results.

Detailed evaluation system of training components and qualification paper is described in the instructions for managing the educational process of the Georgian Technical University and in the syllabi of the educational courses.

Research component: completion and defense of the master's thesis - a person who has completed all the educational components provided by the educational program will be allowed to defend the master's thesis. The completed qualifying thesis is the result of the master's research work. Submission, public defense and evaluation of the completed qualification paper are performed once, the evaluation is done on a 100-point scale. The evaluation rule and procedure are determined by the "Rule for evaluation of the research component of the Master's educational program" approved by the Academic Council of the University on June 26, 2012, by Resolution No. 704.

Fields of employment

Enterprises of direct reception of cast iron and iron; steel mills and workshops; outside the furnace processing areas for receiving high-quality steel in various metallurgical, aviation, machine-building companies; Production of ferroalloys, complex alloys, repair of metallurgical aggregates, furnaces, machines, construction companies, design organizations of factories, workshops, technological cycles and schemes, mining and metallurgical companies of mining enrichment enterprises, gold production enterprises, jewelry enterprises.

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.

Number of attached syllabi: 24