

Admission Prerequisites

The right to study in the doctoral educational programme is granted to a person who holds a Master's degree or an equivalent academic degree in one of the following broad fields of the Classifier of Fields of Study: 05 Natural Sciences, Mathematics and Statistics; 07 Engineering, Manufacturing and Construction;

A candidate wishing to enrol in the programme must submit:

1. A research project outlining the applicant's research aim and direction;
2. A relevant international certificate confirming knowledge of English at no lower than B2 level, or successfully pass a B2-level English language test organised and administered by GTU. A candidate who has completed a recognised English-language educational programme at any level of higher education is not required to pass the examination or present a certificate (completion of an English-language programme is confirmed by the relevant qualification document, i.e. a diploma);
3. Document(s) confirming previous work/publications in the relevant field and/or participation in scientific research projects and events and/or at least 2 years of work experience in the relevant field;
4. Other documentation/information predetermined by the University on the basis of the Regulations on Doctoral Studies of the LEPL Georgian Technical University.

A candidate whose submitted documentation fully meets the formal requirements is interviewed by the Temporary Faculty Commission. In accordance with the procedure established by the legal acts of GTU, the Temporary Faculty Commission ensures the assessment of persons wishing to be admitted to the programme in compliance with the principles of objectivity, fairness and transparency. Consideration is given to the assessment of the candidate's experience and abilities necessary for the successful completion of the doctoral educational programme, including (where available) the candidate's scientific publications, experience of participation in scientific conferences, and other documents and materials related to teaching/research activities (certificates, diplomas, patents, etc.).

Full information on the procedure for admission to doctoral studies and the conditions of enrolment, as well as sample(s) of the English language examination tests, is available on the official website of the University: <https://www.gtu.edu.ge/migheba/programebi/migheba-saphekhurebis-mikhedvith/doqtorantura/doqtorantura-migheba/>

Enrolment in the programme by way of mobility is possible twice a year, within the time frames established by the Ministry of Education, Science and Youth of Georgia, in compliance with the conditions and rules defined by the legislation of Georgia and the legal acts of GTU.

Enrolment in the programme from a recognised higher education institution of a foreign country is carried out in accordance with the procedure established by the legislation of Georgia.

Programme Goal

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- The goal of the doctoral programme is to prepare competitive, highly qualified specialists who meet international requirements and are oriented towards innovative activity in the field of the production, processing and practical application of materials.
- To develop an understanding of the influence of the physico-chemical and physico-mechanical conditions of various types of material processing on the service properties of structural materials.

- To impart the skills of a scientist-researcher, which will enable the doctoral student to independently plan and implement innovative projects using existing technologies for the production and processing of materials and the latest research methods.
- To develop the ability to identify and critically analyse problems in materials science. To teach the ways of improving the properties of the latest metallic and non-metallic structural materials used in engineering, including composite materials and nanomaterials, and the promising fields of their application.

Learning Outcomes/Competences (General and Professional)

1. In materials science, as a field of interdisciplinary research, **generates** new ideas on the basis of the critical analysis and evaluation of the latest scientific achievements;
2. **Defines** prospective technologies for creating new materials that are in demand on the labour market and have pre-designed properties, based on knowledge of the results of the latest research.
3. **Experiments** with technologies for the production and processing of high-quality materials that are in demand on the modern market by conducting fundamental and applied scientific research in the field of materials science;
4. **Discusses** new research methods and generalises them in independent scientific research activity in the field of materials science;
5. **Uses** modern laboratory and instrumental facilities to solve current problems, to develop new technologies and to obtain competitive materials that are in demand on the modern market;
6. In the field of materials science, independently plans and **develops** innovative research, analytical methods and approaches oriented towards the creation of knowledge in demand on the modern labour market, which is reflected in international peer-reviewed publications;
7. **Carries out** activities aimed at the development of knowledge in an academic and professional context and critically evaluates teaching/pedagogical and research activities;
8. **Conducts** pedagogical activities: lectures and seminars, laboratory work, peer review of scientific research, and preparation of publications;
9. Independently **makes** correct and effective decisions for solving problems of materials technology on the basis of new, complex and contradictory ideas and approaches;
10. In compliance with the principles of academic integrity and taking into account innovative methods based on the latest achievements in the field of materials science research, **prepares** research projects for the production, processing and application of materials that are in demand on the market.

Student Knowledge Assessment System

In the teaching of a study course defined by the programme, the student's performance is assessed in accordance with the assessment system approved by Order No. 3 of the Minister of Education and Science of Georgia of 5 January 2007 "On the Procedure for Calculating Higher Education Programmes with Credits".

The mastery of the topics envisaged by the programmes (syllabi) of the study courses defined by the educational programme is assessed on a 100-point scale. A study course is considered passed by the doctoral student if, as a result of the midterm assessments and the final examination, they accumulate 51 or

more points. A doctoral student who obtains at least 30 points in the midterm assessments is admitted to the final examination.

Assessment of the study component:

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) – Did not pass – 41–50 points, which means that the student needs more work to pass and is given the right to sit an additional examination once after independent work;
- (F) – Failed – 40 points or less, which means that the work carried out by the student is not sufficient and the subject must be studied anew.

Assessment of the scientific research component/components:

- a) Excellent (summa cum laude) – an outstanding piece of work;
- b) Very good (magna cum laude) – a result that exceeds the set requirements in every respect;
- c) Good (cum laude) – a result that exceeds the set requirements;
- d) Average (bene) – a work of average level that meets the main set requirements;
- e) Satisfactory (rite) – a result that, despite shortcomings, still meets the set requirements;
- f) Unsatisfactory (insufficient) – a work of unsatisfactory level that does not meet the set requirements due to significant shortcomings in it;
- g) Completely unsatisfactory (sub omni canone) – a result that completely fails to meet the set requirements.

The scientific research component of the doctoral educational programme is assessed once, by a final assessment. The assessment system of the scientific research component is available at the link:

<https://www.gtu.edu.ge/uploads/2026/03/edu-research-components.pdf>

Subject	Credits
Scientific Communication Techniques	4
Research Methods in Engineering Physics	5
Teaching Methods	6
Physical Metallurgy	5
Materials Processing	5
Powder Metallurgy	5
Theory of Rolling	5
Laser Welding	5

Professor's Assistantship	10
Elective Study Courses	5
Physics and Chemistry of Processes in the Me-C System under High-Pressure and High-Temperature (HP-HT) Conditions	5
Innovative Iron-Carbon Alloys and Technologies for Their Production	
Mathematical Modelling in Materials Science	
Total	55