Admission Prerequisites

- A Master's degree or an equivalent academic degree in engineering, informatics, mathematics, physics or other related specialities;
- A candidate wishing to enrol in the programme must submit: a research project outlining the applicant's research aim and direction;
- Submission of an internationally recognised certificate/document confirming proficiency in English at no lower than B2 level is mandatory. An applicant who is unable to submit such a certificate is required to take an English language test at the GTU Computer Centre. Applicants who have received higher education at any level in English are not required to pass the examination or present a certificate;
- If a positive assessment in English is obtained, the applicant is interviewed by the Temporary Faculty Commission. During the interview, consideration is given to scientific publications and/or inventions, participation in scientific conferences, completed trainings and other teaching/research experience, confirmed by the relevant offprints, patents, certificates, diplomas, etc. The procedure for admission to doctoral studies and the conditions of enrolment are available on the University website: https://www.gtu.edu.ge/migheba/programebi/migheba-saphekhurebis-mikhedvith/doqtorantura/doqtorantura-migheba/

Applicants are also admitted to the educational programme by way of internal mobility. The time frames and procedures for internal mobility are established by order of the Rector of GTU, and the information is published on the University website, www.gtu.edu.ge

Enrolment in or transfer to 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

To prepare highly qualified personnel in the field of control systems, automation and test engineering for scientific research and pedagogical activities, who will be able to:

- Understand the latest achievements of modern computer control equipment and information technologies;
- Develop research and analytical methods and approaches oriented towards the creation of new knowledge;
- Independently plan, implement and supervise innovative research;
- Independently plan and conduct the teaching process.

Learning Outcomes/Competences (General and Professional)

1. **Demonstrates** in-depth knowledge of new methods of systems analysis, system identification, optimisation, decision-making and information processing in the field of control systems, automation and test engineering, which enables the student to expand existing knowledge and apply innovative methods;
2. **Discusses** issues of evaluating and predicting the effectiveness, quality and reliability of complex (automatic control, measurement) systems, as well as the possibilities of independently planning, implementing and supervising research;

3. **Classifies** problems of systems analysis, system identification, optimisation, decision-making and information processing, and discusses the possibilities of developing novel research and analytical methods and approaches, algorithms and software for solving them;
4. **Conducts** active and passive experiments and measurements with deterministic and random input signals of the system, and processes the obtained data for the identification and control of controlled objects;
5. **Uses** new research and analytical methods and approaches, algorithms and software for solving problems of systems analysis, system identification, optimisation, decision-making and information processing, and for independently planning and conducting the teaching process;
6. **Compares** methods of measurement, experimental data processing, function approximation, system identification, controllability and observability, system stability, and optimal, adaptive and robust control for the design and construction of control systems, automation and test engineering systems;
7. **Explains** the need to develop systems oriented towards the problems of identification, control, decision-making and optimisation of complex objects of various nature, together with their supporting intelligent methods, algorithms and software;
8. **Develops** novel research and analytical methods and approaches, algorithms and software tools for solving problems in the field of control systems, automation and test engineering (at the level of the standard required for international peer-reviewed publication);
9. **Determines**, taking into account the specific features of the processes occurring in the system, a deterministic or stochastic approach for solving problems of the analysis and synthesis of control systems, automation and test engineering systems by innovative methods;
10. **Reasons and draws conclusions** on the use of a type of control system according to the control objectives and the constructed mathematical model, and on the results of theoretical and experimental research, when participating in thematic discussions held at local and international level.

Student Knowledge Assessment System

Assessment is carried out on a 100-point scale.

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.

A student who disagrees with the assessment of learning outcomes is entitled, within five working days of being informed of the assessment result, to apply to the Dean with a substantiated complaint and re-

quest a review of the results.

Detailed information is available on the GTU website: Instruction on the Management of the Educational Process at Georgian Technical University https://www.gtu.edu.ge/uploads/2026/03/educational-process2-1.pdf

The research component is assessed once, at the dissertation defence stage, by a final assessment.

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.

Subject	**Credits**
Scientific Communication Techniques	4
Scientific Research Methods in Control Systems, Automation and Test Engineering	7
Teaching Methods	6
Elective Block 1	
Applied Numerical Methods for Control Problems	5
Measurement Technologies	
Elective Block 2	
Computer Technologies in Scientific Research	5
Analysis and Synthesis of Control Systems	
Elective Block 3	
System Identification by Probabilistic-Statistical Methods	5
Virtual Modelling	
Elective Block 4	
Control in a Totally Integrated Automation Environment (TIA)	5
Microsensors	

Elective Block 5	
Oscillatory Systems	5
Optimisation Methods in System Control Problems	
Elective Block 6	
Modern Software for Engineering Computations	5
Architecture, Analysis and Security of IoT Systems	
Basic Concepts of Information Protection and Cybersecurity Systems	8
Professor's Assistantship in Control Systems, Automation and Test Engineering	5
Total	**60**