Prerequisites for Admission to the Program

To be eligible for master's studies, an individual must have at least a bachelor's degree or an equivalent academic qualification. Admission is based on the results of master's exams and the exam(s) determined by Georgian Technical University (GTU). The topics/tests for university exams will be posted on the GTU Study Processes Department's website, https://gtu.ge/en/apply/tests.php, at least one month before the exams begin.

Applicants must have an internationally recognized certificate confirming knowledge of the English language at least at the B2 level or present a document proving completion of a corresponding B2 level course. If such a certificate or similar document is not available, the candidate will undergo English language testing at GTU's Computer Center. Applicants who have completed their previous higher education in English are exempt from taking the exam or presenting a certificate.

Program Objectives

The program aims to prepare highly qualified specialists with theoretical and practical knowledge that meets international market demands in the field of information technology. The objectives include:

1. Obtaining and processing data from complex systems; defining strategies, methods, and applications for developing engineering geometrical descriptions; adapting software packages to user tasks.
2. Decomposing complex systems and identifying hierarchical structures; evaluating topologies of engineering geometrical descriptions; selecting visualization platforms for Metaverse applications according to requirements.
3. Developing methods for solving the latest tasks in information technology based on existing knowledge; solving simulation and visualization tasks in engineering geometrical modeling; developing web and third-party software applications.
4. Identifying problems in the field of information technology, determining their causes, and developing solutions to eliminate them.
5. Deepening collaboration with international research organizations to ensure the interdisciplinarity and internationalization of the field.

Learning Outcomes/Competencies (General and Professional)

- Possess deep and systematic knowledge of informatics tasks related to nuclear research experiments.
- Utilize this knowledge to define the requirements of engineering geometrical modeling and select geometric models for simulation and visualization tasks.
- Assess the compatibility of software packages with user tasks and implement their customization.

- Analyze data from complex systems and interpret the results of comparative analysis of geometrical models using computer technology.
- Synthesize engineering-project bases for devices and differentiate software platforms for Metaverse applications.
- Generalize critical cases of experiment modeling applications.
- Evaluate the adequacy and performance of computer modeling processes through the analysis of programming methods for geometrical descriptions.
- Present personal viewpoints, research and activity results, substantiated conclusions, documentation, and scientific-technical publications in various scientific, educational, and commercial projects.
- Establishes communication with academic and professional communities in Georgian and foreign languages, adhering to the ethics norms of the academic community.

Student Knowledge Assessment System

The evaluation is conducted using a 100-point system.

Assessment of the Study Component:

Positive evaluations 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 evaluations are:

- **(FX) - Failed:** 41-50 points, meaning the student needs more work to pass and is given the right to take an additional exam after independent work.
- **(F) - Failed:** 40 points or less, meaning the student's work is not sufficient and they need to retake the course.

A student who disagrees with the assessment of their learning outcomes has the right to appeal to the dean with a justified complaint within five working days from the announcement of the assessment results and request a review of the results.

Detailed information is available on the GTU website: Study Process Management Instructions at Georgian Technical University.

The assessment of practice is carried out according to the rules and criteria described in the corresponding syllabus. The forms of assessment include intermediate (multiple) and final assessments. The assessment criteria are: practice diary and survey.

List of Courses with Credit Allocation		
№	**Course Title**	**Credits**
1	Computer Modeling of Artifacts and Assemblies	10
2	Computing and Engineering Geometric Modeling in High Energy Experiments	10
3	Programming Geometric Descriptions in Simulation Software Packages	10
4	Computer Technologies for Integration and Installation of Experimental Devices	10
5	Analytical Thinking and Reasoned Argumentation	5
6	Engineering Data Management Systems in HEP Experiments	5
7.1	Engineering Analysis of Experimental Devices	10
7.2	ECMAScript Programming Using Frameworks	
8	Approximate Calculations in Quantum Mechanics	5
9.1	Geometric Modeling for Visualization Applications	10
9.2	Third-party Programming and Customization	
10.1	Simplifying Geometric Descriptions for Physical Experiment Simulation	10
10.2	Programming Visualization Engines	
11.1	Academic Practice: Geometric Modeling and Integration of Experimental Devices	5
11.2	Academic Practice: Development of Parameterized Geometry Software Package	
12	Master's Thesis Completion and Defense	30