Admission Prerequisite

Admission to a Bachelor's degree programme is open only to holders of a state certificate confirming complete general education or an equivalent document who are admitted in accordance with the procedure established by the legislation of Georgia.

Programme Objective

The educational programme aims to:

- Provide students with broad knowledge of modern technologies for producing, transmitting, distributing and consuming thermal and electrical energy and converting them into other forms of energy. This includes general engineering education, and the design, installation, commissioning, testing and operation of thermal, hydro and electric power equipment, power stations and substations, electrical machines and apparatus, electrical materials, energy-efficient technologies and their components and assemblies;

- Develop students' practical engineering skills to solve tasks and problems in industrial and commercial enterprises, and to install, maintain, repair and diagnose faults in electrical wiring and equipment in domestic settings;

- Equip graduates with competences compatible with labour market requirements in energy and establish a foundation for further study and professional development.

Learning Outcomes/Competences (General and Professional)

The Bachelor of Energy and Electrical Engineering:

1. Describes types of energy sources and conditions for their efficient use; classifies energy facilities.

2. Explains the purpose and operating principles of thermal, hydro and electric power equipment; masters modern methods of calculating their operating conditions.

3. Analyses electrical, thermal and hydrodynamic processes in energy equipment in accordance with predetermined instructions and formulates appropriate conclusions.

4. Uses relevant knowledge of physics, mathematics and engineering, computer technologies, and modern practical engineering methods and tools to solve calculation and analysis tasks involving electrical equipment, facilities and systems.

5. Solves basic practical tasks in accordance with calculations of electric power equipment operating conditions and characteristics.

6. In accordance with predetermined instructions, designs and/or installs, commissions, tests and operates components of electric, thermal and hydropower equipment.

7. Determines methods of reducing energy consumption, considering electrical and thermal loads and energy-efficient and energy-saving technologies.

8. Modernises energy facilities and their individual equipment together with a group of specialists; works effectively in a team in a complex, unpredictable working environment, considering social and ethical standards.

9. Prepares a written report/presentation on ways of solving existing problems for both energy specialists and non-specialists, using modern communication technologies.

10. Conducts development-oriented activities in energy and electrical engineering in accordance with environmental, occupational safety, electrical safety and technical operation standards; takes responsibility for personal activities, plans continuous professional development and identifies learning needs.

Student Knowledge Assessment System

Assessment is based 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) - Did Not Pass - 41-50 points, meaning that the student needs more work to pass and is entitled to take one additional examination after independent study;

- (F) - Fail - 40 points or less, meaning that the work completed by the student is insufficient and the student must retake the course.

If a student receives an FX grade, an additional examination is scheduled no earlier than 5 days after the results are announced. The grade obtained in the additional examination is not added to the score obtained in the final assessment. 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.pdf

Course	Credits
Engineering Mathematics 1	5
Physics 1	4
General Chemistry Course	4
Descriptive Geometry	3
Materials Science 1	3
Information Technologies 1	4
Foreign Language (English) - B1.1	5
Foreign Language (German) - B1.1	
Foreign Language (French) - B1.1	
Free component (Elective)	3
Foreign Language (English) - B1.2	5
Foreign Language (German) - B1.2	
Foreign Language (French) - B1.2	
Elective Humanities	
Introduction to Sociology	3

History of Georgia	
Fundamentals of Philosophy	
Introduction to Psychology	
Electric Circuit Theory 1	5
Engineering Mathematics 2	5
Physics 2	4
Projection Drawing	3
Free component (Elective)	4
Electric Circuit Theory 2	4
Engineering Mathematics 3	5
Environmental Protection and Ecology	3
General Electronics	4
Fundamentals of Applied Hydroaeromechanics	5
Renewable Energy Sources	3
Engineering Thermodynamics	5
Power Stations and Substations	4
Fundamentals of Electromechanics	5

General Electricity Supply	4
Energy Conversion Technologies Using Hydropower Installations	5
Fundamentals of Occupational Safety	3
Electric Lighting	3
Electromagnetism 1	4
Free component (Elective)	3
Thermal Energy Conversion Technologies 1	5
Electrical Machines	5
Electricity Consumption Technologies	5
Thermal Processes and Installations	5
Fundamentals of Theoretical Mechanics	3
Electrical Engineering Materials	5
Computer Engineering Graphics	3
Power Electronics	5
Thermal Energy Conversion Technologies 2	5
Hydropower and Hydromechanical Equipment of Hydroelectric Power Stations	5
Power Transmission Networks	4

Free component (Elective)	5
Practice	5
Hydrogenerators	5
Fundamentals of Electrical Machine Design	5
Manufacturing Technology of Electrical Apparatus (Elective)	5
Power Transformers and Autotransformers (Elective)	
Introduction to the Bachelor's Project	5
Project Management Free Component (Compulsory)	4
Free component (Elective)	5
Manufacturing Technology of Electrical Machines	5
Electrical Apparatus for Low- and High-Voltage Switchgear	5
Electrical Machines for Automatic Devices	5
Bachelor's Project	7
Free component (Elective)	9

Total	240