



VILNIUS COLLEGE OF TECHNOLOGIES
AND DESIGN

Energy Engineering

State code: 6531EX020

Study field: Energy Engineering

Study mode and scope of the study programme: Part-time – 4 years

Specializations:

- Electrical Energetics
- Renewable Energy
- Thermal Energy

Study aims

The aims of the Energy Engineering study programme is to prepare highly qualified energy engineering specialists who are competitive in the labour market of the Republic of Lithuania and the European Union, who are able to work independently and apply the latest technological knowledge, and solve professional problems in the field of energy engineering.

Study outcomes

- Understanding of the general processes and phenomena of natural sciences and mathematics in order to understand the fundamental basics of energy engineering study field.
- Awareness of the most important concepts of energy engineering study field and ability to understand their content.
- Awareness of the basic knowledge of energy engineering which is important in practice.
- Awareness of the context of adjacent study fields and their solutions.
- Ability to apply knowledge and understanding on how to solve problems of energy engineering study field, to creatively apply familiar methods.
- Ability to apply knowledge and understanding in the analysis of engineering tasks and choose appropriate methods, experimental and industrial equipment in order to solve these tasks.
- Ability to apply analytical and modelling methods in solving qualitative and quantitative tasks of energy engineering study field.

- Ability to find appropriate professional information using databases and other scientific and engineering information sources.
- Ability to conduct necessary experiments in order to solve engineering tasks, process their results and provide practical conclusions of these results.
- Skills in operating technological equipment used in energy engineering study field.
- Ability to select engineering solutions as well as means and equipment needed to carry out these solutions.
- Ability to combine theoretical and applied knowledge in solving engineering problems.
- Understanding of ethical, environmental and commercial implications of engineering activities.
- Awareness of the principles for the organisation of engineering activities; awareness of the main occupational and fire safety requirements.
- Ability to apply engineering knowledge and understanding in energy engineering study field in defining and performing design tasks according to intended requirements.
- Understanding of design methodologies and ability to apply them.
- Ability to solve engineering tasks as an individual and as a member of a team.
- Ability to communicate with the engineering community and the public.
- Understanding of the impact of engineering solutions on the public and the environment, compliance with the rules of professional ethics and of engineering activities and awareness of responsibility for engineering activities.
- Knowledge of the principle project management and business aspects at engineering level.
- Understanding of the importance and preparedness for independent life-long learning.

The student will:

- work in various branches of electrical engineering;
- work in electricity network management and electricity network reconstruction companies;
- work in electricity network design and operation companies;
- work in the companies' operating and developing renewable energy sources;
- work in the companies operating in the heat economy sectors;
- pursue further higher education at the University.

SUBJECT TITLE	ECTS CREDITS	ASSESSMENT
Semester I (22 Credits)		
Speciality Language Culture	3	D
Mathematics	4	
Physics	3	
Applied Software	3	D
Technological Practice 1	6	D
<i>Optional study subjects</i>		
Sociology	3	E
Sustainable Development	3	E
Psychology	3	E
Semester II (23 Credits)		
Mathematics	2	E
Physics	3	E
Engineering Mechanics	3	D
Electrical Engineering Materials	3	D
Engineering Graphics	6	D
Electrical Measurements	3	D
<i>Choice (choose one):</i>		
Foreign Language (English)	3	D
Foreign Language (French)	3	D
Foreign Language (Russian)	3	D
Foreign Language (German)	3	D
Semester III (22 Credits)		
Sustainable Environment and Human Safety	3	E
Electric Circuit Analysis	4	
Applied Research	3	D
Engineering Thermodynamics	3	D
Electronics	3	E
Programming	3	
<i>Choice (choose one):</i>		
Foreign Language (English)	3	E
Foreign Language (French)	3	E
Foreign Language (Russian)	3	E
Foreign Language (German)	3	E
Semester IV (23 Credits)		
Electric Circuit Analysis	2	E
Power Electronics	3	E
Electrical Safety	3	E
Basics of Automatic Control and Controller	3	
Programming	3	D
Technological Practice 2	6	D
<i>Choice (choose one):</i>		
Electricity Market	3	D
Science Workshop Project	3	D
Power Engineering History	3	D
Semester V (22 Credits)		
Basics of Automatic Control and Controller	3	E
Electrical Machines and Drives	6	E
Production Practice 1	6	D
<i>One subject is studied, depending on the chosen specialization:</i>		
Electrical Networks and Systems	4	
Renewable Electrical Energy Sources	4	
Heat Generating Systems	4	

Choice (choose one):		
Lighting engineering	3	D
Interdisciplinary Project	3	D
Biomass Power Engineering	3	D
Semester VI (23 Credits)		
Project Management	3	D
Law	3	E
One subject is studied, depending on the chosen specialization:		
Electrical Networks and Systems	2	E
Renewable Electrical Energy Sources	2	E
Heat Generating Systems	2	E
One subject is studied, depending on the chosen specialization:		
Electrical Equipment	3	
Design of Renewable Energy Systems	3	
Heat Supply	3	
One subject is studied, depending on the chosen specialization:		
Relay Protection and Automation	3	E
Hybrid Energy Sources	3	E
Refrigerating engineering	3	E
One subject is studied, depending on the chosen specialization:		
Power Plants and Substations	6	E
Electrical Networks	6	E
Maintenance of Energetic Systems	6	E
Choice (choose one):		
Robotics	3	D
Lightning Protection	3	D
Modern Electrical Systems	3	D
Semester VII (22 Credits)		
Systems of Buildings Microclimate	3	E
Autonomous Power Systems	4	
Economics of Engineering	3	D
Production Practice 2	6	D
One subject is studied, depending on the chosen specialization:		
Electrical Equipment	3	E
Design of Renewable Energy Systems	3	E
Heat Supply	3	E
One subject is studied, depending on the chosen specialization:		
High Voltage Engineering	3	E
Alternative heat production technologies	3	E
Basics of Cogeneration	3	E
Semester VIII (23 Credits)		
Autonomous Power Systems	2	E
Economics of Engineering	3	E
Final Practice	6	D
Final Project	12	D

E - Exam

D - Independent work