

KLAIPEDA STATE UNIVERSITY OF APPLIED SCIENCES

Faculty of Technologies

STUDY PROGRAMME: ELECTRICAL AND AUTOMATION ENGINEERING

STUDY SUBJECT: ELECTRICAL TECHNOLOGY EQUIPMENT

SUBJECT CODE: TF – EA – 2 – 027

Subject group*	Subject type**	Form of studies	Structure***				Hours, total	Credits
			T	P	K	S		
SK	A	Full-time (NL)	30	40	5	58	133	5
		Part-time (I)	14	12	49	58		

*Subject group: BS—general study subjects; SK—subjects of the study field.

**Subject type: P—compulsory subject; A—optional subject (alternative).

***Structure T—theory; P—seminars, placements, laboratory works; K—consulting; S—self-studying.

Annotation

The subject analyses the concept of electrical equipment, examines electrical technology methods used in modern technological processes, provides technical equipment for devices used for the implementation of electrical technology processes, describes their operation principle and control diagrams, provides the design of an electrical device.

Links between the learning outcomes of the programme and the outcomes of the study subject as well as the study methods and the student performance assessment methods

Learning outcomes of the programme	Learning outcomes of the study subject	Study methods	Student performance assessment methods
2.2. Able to apply his/her knowledge and understanding in analysing and interpreting the sources of engineering information in cases of design, modernisation, production and management, to make reasoned decisions in designing, testing and operating electrical and automation equipment.	2.2.1. Applies knowledge of electrotechnical engineering materials and equipment when making decisions on electrical work technology.	Lecture, discussions, demonstration, design, literary analysis.	Test (1), course project control according to the schedule, written examination.
	2.2.2. Able to evaluate changes in the parameters of electrical technology processes and their impact on the control system.		
2.3. Able to select and apply appropriate analytical methods, simulate electrical network, hydraulic and pneumatic systems, simulate technological processes.	2.3.1. Able to simulate lighting electrical equipment by using lighting calculation software.	Lecture, discussions, document analysis, modelling, design, group work.	Coursework control according to the schedule, written examination.
	2.3.2. Able to calculate the heating capacity of premises and choose the necessary electrical equipment.		
3.1. Able to apply engineering knowledge and understanding to the design of electrical network and automated control systems and to assess engineering solutions from an economic, social, environmental and human safety perspective.	3.1.1. Able to choose clean electrical equipment for heating premises.	Lecture, design, individual practical work.	Test (2), defence of practical work (1, 2), course project control according to the schedule, written examination.
	3.1.2. Able to design electrical equipment with regard to environmental and human safety.		
4.1. Able to independently search for professional information, use and analyse information sources, perform experiments necessary for engineering tasks, process their results and present practical conclusions of these results.	4.1.1. Able to present work results, discuss electrical engineering issues.	Submission of results of a course project.	Presentation/defence of coursework results.
4.2. Able to plan electrical works and coordinate the installation works of electrical systems and automation equipment by choosing	4.2.1. Able to independently find information and perform electrical technology analysis.	Independent work	Coursework control

and applying advanced technological and organisational measures.			
6.3. Able to independently plan and organise the learning process, learn and improve in personal and professional activities throughout the entire life.	6.3.1 Able to independently organise the learning process, improve personal and professional activities.	Independent work	Coursework control

Subject content and scope

Topic name and content description	Number of contact hours, full-time			Number of contact hours, part-time			S	Hours, total
	T	P	K	T	P	K		
1. Concept of an electrical technology process.	2	0	0	2	0	0	4	6
2. Electrophysical technology equipment.	4	0	0	2	0	2	6	10
3. Electrochemical technology equipment.	4	0	0	2	0	2	5	9
4. Electrical welding equipment.	4	0	0	2	0	2	5	9
1 test	2	0	0	0	0	2	2	4
5. Electric lighting and heating equipment. <i>1 placement.</i> Electric lighting modelling by using computer design software. <i>2 placements.</i> Indoor electric heating test.	8	8	0	4	4	8	8	24
6. Application of optical radiation.	4	0	0	2	0	2	6	10
7. Design of electrical technology device (KD) Design of lighting by using software ArcGIS Pro.	0	32	0	0	8	24	10	42
2 test	2	0	0	0	0	2	2	4
Preparation for examination	0	0	5	0	0	5	10	15
Total number of hours	30	40	5	14	12	49	58	133

Evaluation system for subject learning outcomes

Subject learning outcome No.	Subject learning outcome evaluation criteria
X1	
2.2.1, 2.2.2	Knows and applies electrotechnical materials and equipment, adopting technology solutions for electrical works, and evaluates changes in the parameters of electrical technology processes and their influence on the control system.
2.3.1	Simulates lighting electrical equipment by using lighting calculation software. Calculate the heating capacity of premises and choose the necessary electrical equipment.
2.3.2	Calculate the heating capacity of premises and choose the necessary electrical equipment.
3.1.1	Selects and applies clean electrical equipment for heating premises.
3.1.2	Adopts solutions when designing electrical equipment with regard to environmental and human safety.
4.1.1, 4.2.1	Finds information independently and performs the analysis of electrical technology equipment, discusses electrical technology issues and presents work results.
6.3.1	Improvement in personal and professional activities.
X2	
2.2.1, 2.2.2, 2.3.1, 2.3.2, 4.1.1, 4.2.1, 6.3.1	Knows electrical technology methods used in modern technological processes as well as devices used to implement electrical technology processes. The coursework is prepared on a selected electrical technology device.

Assessment procedure

A ten-point criterion scale and cumulative assessment are applied.

$$IKV = 0.5X_1 + 0.5X_2$$

X_1 —assessment of 2 tests (20 %), assessment of 2 placements (20%), assessment of coursework (60%).

X_2 —examination score.

Recommended literature and other sources of information

Key literature and sources of information			
No.	Literature and sources of information	Number of copies	
		At the library of the Faculty of Technologies	At other libraries of the University
1.	Aleksa V. Galvanauskas V. (2008). <i>Technologijų procesų automatizavimas ir valdymas</i> . Vadovėlis. Technologija, Kaunas.	9	-
2.	Isoda G. (2014). <i>Elektros technologijos žinynas</i> . Energy Training Centre, Vilnius.	2	-
3.	Musial E. (2001). <i>Elektros energetiniai įrengimai ir instaliacija</i> . Šviesa, Kaunas.	16	-
4.	Kvedaras A. (2007). <i>Priešgaisrinė signalizacija ir automatika</i> . Vilnius Gediminas Technical University, Vilnius.	14	-
5.	Ostaševičius V., Dundulis R. (2004). <i>Technologiniai įrenginiai ir įrankiai</i> . Technologija, Kaunas.	26	-

Additional literature and sources of information	
No.	Literature and sources of information
1.	<i>Darbo vietų apšvietimas. Europos standartas EN 12464 – 1. (2010). Gaudrė, UAB, Vilnius.</i>
2.	Čėsna A. et al. 2001). <i>Suvirinimo darbų technologija</i> . Vadovėlis. Vilnius.
3.	<i>Elektros įrenginių įrengimo bendrosios taisyklės. (2012), Energetika, Vilnius.</i>

Subject description drawn up by:

Lecturer
(position)

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