



RTU Course "Fundamentals of Electrical Engineering"

15E02 Avionikas katedra

General data

Code	TAA104
Course title	Fundamentals of Electrical Engineering
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Professional
Field of study	Transport
Responsible instructor	Trifonovs-Bogdanovs Pjotrs
Academic staff	Šļenska Nina
Volume of the course: parts and credits points	2 parts, 4.0 Credit Points, 6.0 ECTS credits
Language of instruction	LV, EN, RU, DE
Possibility of distance learning	Not planned
Abstract	Subject includes learning of principles of the electrical circuit's theory and their application in different calculations, analysis and understanding of electrical diagrams and systems, the basis of maintenance and diagnostic of multifunction of various aircraft electrical systems.
Goals and objectives of the course in terms of competences and skills	Acquire laws of electrotechnics and functioning of electrotechnical elements. Acquire working principles, construction and characteristics of electric machines. Acquire analysis and calculation methods of electrotechnical schemes.
Structure and tasks of independent studies	1. Working with the component catalogue, quest by technical dates (home task). 2. Working with component characteristics, parameters measurement (electrotechnical laboratory). 3. Electrotechnical component marking, circuit board reading (home task). 4. Calculation of DC and AC circuits (home task).
Recommended literature	1. Electrical System for A&Ps. Coiorado. Jeppesen Sanderson. 1992. 269 p. 2. J.Dirba, K.Ketners. Transporta elektriskās mašīnas. Rīga. RTU. 2001.367 lpp. 3. Z.Bunžs, S.Miesniece. Bezkontakta komutācijas aparāti. Rīga. RTU. 2008.308lpp. 4. A.Baltiņš, A.Kanbergs, S.Miesniece. Zemsprieguma elektriskie aparāti. Rīga. Jumava.2007.g.345lpp.
Course prerequisites	Physics, Mathematics.

Course outline

Theme	Hours
Electrotechnical terminology, electron, electricity.	4
Aviation electrotechnical elements and devices.	2
Direct current. Ohms and Kirchoff's laws.	10
Theory of direct current motors un generators.	16
Theory of alternating current. Capacitors. Coils.	8
Quadripolar. Equations and parameters.	3
Transition processes of electrical circuits.	3
Magnetism.	2
Transformers.	6
Alternating current generators and motors.	10

Learning outcomes and assessment

Learning outcomes	Assessment methods
Student knows fundamental laws of electrical circuits.	Subject control – examination.
Student understands physical processes of electric schemes and typical electrical units.	Laboratory works: constructions and schemes of aviation units.
Student is able to measure and analyze electrotechnical circuits.	The test. Work: analysis of electrotechnical schemes and electrical units.
Student is able to design and calculate simple diagrams.	Subject control – examination.

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	2.0	3.0	1.0	0.5	0.5		*	
2.	2.0	3.0	1.0	0.5	0.5		*	