



RTU Course "Special Parts of Electrical Engineering"

15E02 Avionikas katedra

General data

Code	TAA208
Course title	Special Parts 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	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN, RU, DE
Possibility of distance learning	Not planned
Abstract	Describes the nonlinear circuit physical processes. Sets out nonlinear circuit calculation methods. Set out the electromagnetic wave propagation patterns.
Goals and objectives of the course in terms of competences and skills	Acquire calculation methods of nonlinear electrical schemes. Acquire electromagnetic wave propagation patterns.
Structure and tasks of independent studies	Independently prepare reports on the topic - nonlinear electric schemes, calculation methods, electromagnetic wave propagation patterns. Performance analysis. Calculation methods. Working with the special literature. Lesson in the Aviation Institute's specialized lecture hall.
Recommended literature	1. Electrical System for A&Ps. Colorado. Jeppesen Sanderson. 1992g. 269 pp. 2. I.Dumiņš, Elektrotehnikas teorētiskie pamati, Rīga, Zvaigzne ABC., 2006g. 349 lpp. 3. K.Brivkalns, Elektrotehnikas teorētiskie pamati, Rīga. RTU. 2008g. 57 lpp. 4. A.S.Kasatkin and M.V.Nemtsov, Electrical Engineering, Mir, 1986, 527pp.
Course prerequisites	Physics, math, basics of electric engineering.

Course outline

Theme	Hours
Nonlinear DC circuit laws.	2
Nonlinear DC circuit calculation methods.	4
Magnetic circuit calculation methods.	4
Nonlinear AC circuit laws.	2
Nonlinear AC circuit calculation methods.	4
Maxwell's equations.	4
Electromagnetic waves.	2
Electromagnetic wave propagation in space.	4
Electromagnetic wave propagation along the cables and waveguides.	6

Learning outcomes and assessment

Learning outcomes	Assessment methods
The student understands the physical processes of nonlinear electrical schemes.	Seminars: Nonlinear circuit laws. Exam.
The student knows calculation methods of the nonlinear electrical schemes.	Seminars: Nonlinear circuit calculation method. Exam.
The student understands the electromagnetic wave propagation physical processes.	Seminars: electromagnetic wave propagation. Exam.
The student understands the electromagnetic wave propagation patterns.	Seminars: electromagnetic wave propagation. Exam.

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work
1.	2.0	3.0	1.5	0.0	0.5		*	