



## RTU Course "Methods of Analysis and Calculation of Electronic Circuits"

11103 Industriālās elektronikas un elektrotehnol.katedra

### General data

Code	EEP319
Course title	Methods of Analysis and Calculation of Electronic Circuits
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Academic
Field of study	Power and Electrical Engineering
Responsible instructor	Nadežda Kuņicina
Academic staff	Oskars Krievs Ivars Raņķis
Volume of the course: parts and credits points	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN, RU
Possibility of distance learning	Not planned
Abstract	Mathematical calculation methods of electronic schemes, models and its application, conversions with voltage and current sources, resonance, Fourier function and integral, time and frequency characteristics of schemes, sensitivity, feedback loops and oscillation regimes, discrete conversions, stability, calculation methods
Goals and objectives of the course in terms of competences and skills	The goal of the course is to introduce students with calculations methods of electronic schemes, teach students to be able to make analysis of schemes. The main tasks is to introduce students with main principles of electronic schemes analysis and calculations
Structure and tasks of independent studies	Students has to develop computer models of schemes
Recommended literature	J.Greivulis, N.Kuņicina Analogo elektronisko shēmu analīzes un aprēķina metodes RTU tipogrāfija 2009, Rīga, 91.lpp. M.Golovatenko-Abramovs, A.M.Lapides Zadachi po elektronike (krievu val.) - M.: Energoatomizdat. 1992
Course prerequisites	Theoretical fundamentals of electrical engineering

### Course outline

Theme	Hours
Introduction	2
Mathematical methods for calculation of electronic schemes	2
Models and its application	2
Transformations with voltage and current sources	2
Fourier transformation	2
Fourier integral	2
Functionality of schemes, characteristics of time and frequency	2
Sensitivity	2
Feedback and oscillatory mode	2
Stability	2
Methods of calculation	2
Discreet equations	2
Lattice function	2
Examples of electronic schemes calculations	3
Examples of electronic schemes modelling	3

### Learning outcomes and assessment

Learning outcomes	Assessment methods
Students know elements of electrical schemes and its application	Students had acquired a themes, the examination answers are positive.
Students are able to analyse schemes' configuration ant its functions	Students had acquired a themes, the examination answers are positive.
Students are able to develop model of electronic scheme	Students had acquired a themes, the examination answers are positive.

### Study subject structure

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