GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Electric Circuit III, PG_00026038		
Field of study	Electrical Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Katedra Elektrotechniki i Inżynierii Wysokich Napięć -> Faculty of Electrical and Control Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Joanna Wołoszyn	
	Teachers	dr hab. inż. Jacek Horiszny	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	10.0	0.0	0.0	0.0	20

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	20	6.0	74.0	100

Subject objectives

Mastering the analysis of electrical circuits with periodic non-sinusoidal source. Mastering the analysis of electrical circuits in transient states in the time. Understanding the phenomena in electrical circuits with distributed parameters and their analysis by substitution schemas.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U04	The student is able to design the parameters of the electric circuit in order to achieve the required assumptions.	[SU3] Assessment of ability to use knowledge gained from the subject
K6_W03	The student analyzes electric circuits with non-sinusoidal periodic excitations and electric circuits in transient states of electric circuits. Can pay in electrical circuits with parameters distributed using the method of equivalent diagrams.	[SW3] Assessment of knowledge contained in written work and projects
K6_K05	The student is able to react in emergency situations resulting from the operation of devices in emergency situations.	[SK2] Assessment of progress of work

Subject contents

Non-sinusoidal periodic signals. The development of the signal in the Fourier series. Discrete amplitude and phase characteristics. Parseval's theorem. Wartośœć effective signal. Powers of periodic non-sinusoidal circuits. Analysis of circuits with non-sinusoidal periodic excitations. Description electrical circuits transients in the time domain. Troubleshooting circuits Level I and II transients with extortion, constants, sinusoidal and complex. Description of circuits with distributed parameters (long lines) in the time domain. Solutions d'Alambert long line equations. Incident and reflected waves. Conditions at the end of a long line. Analysis of the phenomena in a long line diagrams using substitutes.

Prerequisites and co-requisites

Knowledge of the subject Introduction to Mathematics (04 11 10 01 07) Knowledge of the subject Mathematics (04 11 10 02 08) Knowledge of the subject electrical circuits (04 11 10 01 16)

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Tests during the semester	60.0%	35.0%
Final exam	60.0%	65.0%

Recommended reading	Basic literature	1. Bolkowski S.: Teoria obwodów elektrycznych. WNT, Warszawa 2009. 2. Bolkowski S. i in. : Zbiór zadań z elektrotechniki teoretycznej. WNT, Warszawa 2009. 3. Krakowski M.: Elektrotechnika teoretyczna, tom. 1. PWN, Warszawa 1999. 4. Krakowski M.: Elektrotechnika teoretyczna, tom. 1. PWN, Warszawa 1999.
	Supplementary literature	1. Kurdziel R.: Podstawy elektrotechniki. WNT, Warszawa 1973. 2. Mikołajuk K., Trzaska Z.: Elektrotechnika teoretyczna - analiza i synteza elektrycznych obwodów liniowych. PWN,Warszawa 1987
	eResources addresses	Adresy na platformie eNauczanie: OBWODY ELEKTRYCZNE III [Niestacjonarne][2022/23] - Moodle ID: 25107 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25107
Example issues/ example questions/ tasks being completed	1. Remove formulas to determine the mean value and the effective signal expressed by a Fourier series. 2. Solve the given circuit, which compulsion is expressed in the form of a Fourier series. Calculate the mean value and the effective value of the specified voltage or current waveforms. 3. For example, the RL series circuit being connected to a source of alternating sinusoidal SEM to determine the conditions under which the transition state in the solution does not occur bezokresowa component. What the so-called maximum value. surge current may occur in this case? 4. For a given circuit "first order" to write the differential equation and determine the initial conditions. 5. Determine the designated parameter in the given circuit "second order" (D, L, or C) in a transition to occur in the vibration. 6. In what should be a requirement that the wave when it reaches the end of a long line, there was no reflected wave? Give reasons.	
Work placement	Not applicable	