

COURSE DESCRIPTION CARD

Faculty of Electrical Engineering									
Field of study	Electrical and Electronics Engineering							Degree level and programme type	Bachelor's degree
Specialization/ diploma path	-							Study profile	-
Course name	Electrical Circuits 2							Course code	IS-FEE-10027S
								Course type	elective
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	15	30	15					No. of ECTS credits	6
Entry requirements	Electrical Circuits 1 or relevant								
Course objectives	To receive the abilities to perform an analysis of linear AC circuits with coupling elements, 3-phase systems and transient states. To provide experiments related to these topics and measure and calculate currents, voltages and powers. Students discuss problems with the use of good terminology.								
Course content	Self inductance and mutual inductance. Analysis of circuits with magnetic coupling. Air transformer. Calculations and measurement of power in 3-phase systems. Balanced and unbalanced 3-phase circuits, Analysis of transients in linear RC and RL circuits.								
Teaching methods	Problem-based-learning, consultations, self-work, laboratory experiments								
Assessment method	Problems are presented for students at the beginning of semester. The evaluation is performing during personal discussion on several problems concerning all indicated topics.								
Symbol of learning outcome	<i>Student who has passed this course :</i>							Reference to the learning outcomes for the field of study	
LO1	uses the proper concepts for analysis of relevant topics from the electrical circuits domain								
LO2	classifies the 3-phase circuits and applies the proper methods for analysis								
LO3	provides experiments concerning the electric circuits with the use of proper instrumentation and explain the results								
LO4	calculates the transient states in the circuits, makes the comments of expected results and presents them in graphical forms								

Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
LO1	evaluating the student's solutions of presented problems, quizzes at lecture	L, C	
LO2	quizzes at lectures and final evaluation	L	
LO3	evaluating the student's solutions of presented problems, personal assessment on the base of partial evaluations	LC	
LO4	evaluating the student's solutions of presented problems, personal assessment on the base of partial evaluations	C	
Student workload (in hours)		No. of hours	
Calculation	lecture attendance	15	
	attending the class sessions	30	
	self-working on learning and preparing the problems solutions	39	
	preparation for and participation in exams/tests	25	
	attending the laboratory sessions	15	
	preparation for lab experiments and elaboration of reports	25	
	participation in student-teacher sessions related to the classes and lecture	10	
TOTAL:		150	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		60	2
Student workload – practical activities		110	4
Basic references	1. Thomas R.E., Rosa A. J., Toussaint G.J.: The Analysis & Design of Linear Circuits. 6th ed, Wiley Inc. 2009; 2. Tung L.J., Kwan B.W.: Circuit Analysis. World Scientific 2001; 3. Irvin J.D., Nelms R.M.: Basic Engineering Circuits Analysis. International Student Version. John Willey&Sons.Inc. 2008 4. https://www.khanacademy.org/science/electrical-engineering		
Supplementary references	1. Michael E. Auer: Three Phase Circuits (https://pl.scribd.com/document/248006055/1-Three-Phase-Circuits-pdf); 2. https://www.youtube.com/watch?v=9wrAoE1fXC0 ; 3. https://www.google.com/search?client=firefox-b&q=micro+cap+manual 4. https://www.google.com/search?client=firefox-b&q=pspice+manual+9.1 ;		
Organisational unit conducting the course	Department of Electrotechnics, Power Electronics and Electrical Power Engineering	Date of issuing the programme	
Author of the programme	Jaroslav Makal, Ph.D. Eng.	12.01.2022	

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar