

COURSE DESCRIPTION CARD

Faculty of Electrical Engineering										
Field of study	Electrical Engineering							Degree level and programme type	bachelor's degree	
Specialization/ diploma path	-							Study profile	-	
Course name	Electrical Machines 1							Course code	IS-FEE-10005W	
								Course type	elective	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter	
	30				15			No. of ECTS credits	5	
Entry requirements	-									
Course objectives	Achievement of skills of analysis of asynchronous machines and transformers.									
Course content	Transformers: construction, principles of working, mathematical models. One-phase and three-phase transformers. Asynchronous motors: construction, principles of working, mathematical models. Transformations of co-ordinate systems, substitute scheme. Symmetrical steady state.									
Teaching methods	lecture, specialization workshop.									
Assessment method	lecture: written exam; specialization workshop: verification of preparation for classes.									
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study		
LO1	describes construction and explains the principle of operation of transformers and induction machines;									
LO2	identifies and suggests groups of connections of three-phase transformer, calculates voltages and currents in transformer windings;									
LO3	interprets the behaviour of induction machines and transformers in various conditions (various voltage, frequency, load);									
LO4	illustrates different ways of startup and speed control of induction motors, calculates speed and current of induction									

	motor in various work conditions (various voltage, frequency, load torque);		
L05	describes the actual status and construction development trends in electrical machines;		
L06	associates the connection of electrical machines with other areas of knowledge in the discipline of electrical engineering.		
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
L01	exam	L	
L02	evaluating the student's preparation for the classes, exam	L,SW	
L03	evaluating the student's preparation for the classes, exam	L,SW	
L04	evaluating the student's preparation for the classes, exam	L,SW	
L05	exam	L	
L06	exam	L	
Student workload (in hours)		No. of hours	
Calculation	participation in the laboratory	15	
	preparation for the laboratory	15	
	description of laboratory reports	15	
	participation in lectures	30	
	preparing to pass the exam	30	
	case studies/homeworks	40	
	TOTAL:	145	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		45	3
Student workload – practical activities		45	3
Basic references	1. Morris N.: Electrical & electronic engineering principles. Longman, 1994. 2. Ryff P. F.L: Electric machinery. Prentice Hall, 1988. 3. Wildi T.: Electrical machines, drives and power systems. Pearson Education, 2006.		
Supplementary references	1. Sen P. G.: Principles of electric machines and power electronics. J. Wiley & Sons, 1997. 2. Chapman S. J.: Electric machinery fundamentals. Mc Graw Hill, 2005. 3. Morris N. M.: Electrical and electronic engineering principles. Longman, 1994.		
Organisational unit conducting the course	Department of Electrotechnics, Power Electronics and Power Engineering	Date of issuing the programme	
Author of the programme	Adam Solbut, Ph.D. Eng.	07.02.2020	

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

S – seminar