

COURSE DESCRIPTION CARD

Faculty of Mechanical Engineering									
Field of study	Automatic Control and Robotics Mechanics and Construction of Machinery Mechatronics						Degree level and programme type	Bachelor's degree Master's degree	
Specialization/ diploma path	-						Study profile	general	
Course name	Design of pneumatic system						Course code	IS-FME-00210S	
							Course type	obligatory/elective	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	Summer
				30				No. of ECTS credits	6
Entry requirements									
Course objectives	Introduction students with the basic concepts of pneumatic drive and control of the pneumatic systems. Introduction with graphic symbols and naming of basic pneumatic elements used for designing drive systems. Teaching the principles of reading with the understanding of pneumatic diagrams of machine drives and industrial automation systems. Teaching the basics of designing drive and control systems of technological processes consisting of unified elements								
Course content	Designing basic pneumatic manual control systems, control systems enabling changing the parameters of the piston movement of the actuator, systems performing logic functions, sequential control systems								
Teaching methods	Multimedia design classes. Design system on computers								
Assessment method	Project: observation of work, discussion, activity, report								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	student: names and classifies the basic components of pneumatic and hydraulic drive and control systems,							K_U03, K_U12	
LO2	correctly reads and draws pneumatic diagrams of drive and control systems							K_U03, K_U12	
LO3	correctly recognizes graphical symbols of pneumatic elements							K_U03, K_U12	
LO4	able to work in a team							K_K04	
LO5									
Symbol of learning	Methods of assessing the learning outcomes							Type of tuition during which the outcome is	

outcome		assessed	
LO1	project classes – observation of work, report	P	
LO2	Project classes – observation of work, report	P	
LO3	Project classes – observation of work, report	P	
LO4	Project classes – observation of work, report	P	
LO5			
Student workload (in hours)		No. of hours	
Calculation	participation in project classes	30	
	preparation for project classes	40	
	preparation a report for the project	60	
	participation in student-teacher sessions related to the project classes	40	
	TOTAL:	170	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		70	6
Student workload – practical activities		100	
Basic references	1. Beater P.: Pneumatic Drives: System Design, Modelling and Control, Springer-Verlag, 2007. 2. Igor Lazar Krivts, German Vladimir Krejnin: Pneumatic actuating systems for automatic equipment structure and design, CRC Press, 2006. 3. Pneumatic and hydraulic symbols: British and International Standards e.g. BS 2917, PN-ISO 1219-2 (2009), ISO 9461 (Hydraulics), CETOP, RP68P, ISO 5599 (Pneumatics)		
Supplementary references	Scientifics journals connected with pneumatic and hydraulic drive and control systems.		
Organisational unit conducting the course	Department of Automatic Control and Mechatronic Systems	Date of issuing the programme	
Author of the programme	Rafał Grądzki, Ph.D.	30.06.2020	

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