

## COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Mechanical Engineering									
Field of study	Mechatronics						Degree level and programme type	Bachelor	
Specialization/ diploma path	general						Study profile		
Course name	Additive techniques of manufacturing						Course code	IS-FME-00220S	
							Course type	obligatory	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	15			30				No. of ECTS credits	3
Entry requirements	Manufacturing Techniques I, Materials science, Cax systems								
Course objectives	Presentation of the most important additive manufacturing methods, 3D modelling (CAD), machine equipment and layering material. Preparation of models for printing.								
Course content	Description of Additive Manufacturing. 3D modelling software (Computer Aided Design). Machine equipment and layering material. Different technologies (3D Printing, Rapid Prototyping, Direct Digital Manufacturing). Stereolithography. Fused Deposition Modeling. Multi-Jet Modeling. Selective Laser Sintering. Material Extrusion. Directed Energy Deposition. Material Jetting. Binder Jetting. Sheet Lamination. Vat Polymerization. Powder Bed Fusion.								
Teaching methods	power-point presentations, discussion, project examples, other documents given by the teacher								
Assessment method	lecture – written exam, oral exam or test; project – performance the project								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	Basic knowledge of manufacturing techniques								
LO2	Basic knowledge of materials science								
LO3	practical skills needed to develop and project different elements with support of Solid Works								
LO4	Basic knowledge of modelling parts ready to preparation								
Symbol of learning outcome	Methods of assessing the learning outcomes							Type of tuition during which the outcome is assessed	
LO1	written exam, project evaluation, activity during classes								

LO2	written exam, project evaluation, activity during classes		
LO3	project evaluation, student activity on project classes		
LO4	project evaluation, student activity on project classes		
Student workload (in hours)		No. of hours	
Calculation	lecture attendance	15	
	participation in lecture, project	30	
	working on projects, reports, etc.	20	
	participation in student-teacher sessions related to the classes /project	30	
	implementation of project tasks and preparation for and participation in exams/tests	30	
	TOTAL:	125	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		60	2
Student workload – practical activities		65	2.5
Basic references	1. J. O. Milewski, Additive manufacturing of metals : from fundamental technology to rocket nozzles, medical implants, and custom jewelry, Springer International Publishing, 2017 2. T.S. Srivatsan, T.S. Sudarshan, Additive manufacturing: innovations, advances, and applications, Taylor & Francis, 2015 3. P. Rusek, Innovative manufacturing technology. 2., Kraków, 2012		
Supplementary references	1. P. Radhakrishnam, S. Subramanyan, V. Raju, CAD/CAM/CIM, London: New Age International Ltd., 2018.		
Organisational unit conducting the course	Department of Applied Mechanics and Computer Science	Date of issuing the programme	
Author of the programme	Anna Falkowska, PhD	24.03.2021	

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