

COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Mechanical Engineering									
Field of study	Advanced Technology of Manufacturing						Degree level and programme type	Bachelor's degree Full-time	
Specialization/ diploma path							Study profile		
Course name	Advanced Technology of Manufacturing						Course code	IS-FME-00225W	
							Course type	elective	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter
	15		10					No. of ECTS credits	3
Entry requirements	Materials engineering, Technology of manufacturing								
Course objectives	Teaching students classification, terminology and various options and possibilities of production parts of machines and medical devices. To familiarize students with the advanced tools, systems and machines used for advanced production. Teaching the students a technological process of manufacturing typical elements of machine parts.								
Course content	Lecture: Innovative material engineering technologies. Modern techniques supporting design: rapid prototyping, reverse engineering. Electrochemical, electric discharge, laser treatment, loose abrasive. New trends in machining - high-speed machining. Modern methods of cutting materials. Modern techniques of melting and casting. Methods of manufacturing by powder metallurgy. Modern powder consolidation techniques: induction, microwave, SPS, HIP (hot isostatic pressing), MIM. Laboratory: Rapid prototyping techniques in the design and manufacture of machine parts (SLS, FDM). Electroerosion machining, wire cutting. Technologies of cutting with water-jet. Preparation of advanced materials by powder metallurgy route (PM).								
Teaching methods	Regular lectures: lecture with the use of a multimedia presentations, discussions Laboratory: experimentations in groups under supervision of a teacher, lab reports preparing, problem solving.								
Assessment method	Lecture - written pass or presentation Laboratory classes – pre-lab tests, lab reports evaluation								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	Student knows the theoretical background of process technology and manufacturing							IB2_W02, IB2_W06, IB2_U04	
LO2	Student defines, describes and determines the parameters of the process manufacturing of different elements and parts							IB2_W02, IB2_W07, IB2_U09	
LO3	Student knows principles of the process technology parameters and has creative thinking							IB2_W09, IB2_K05,	

		IB2_U09, IB2_U13	
LO4	Student can summarise the results, interpret it and withdraw conclusions	IB2_W06, IB2_U04, IB2_U13	
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
LO1	written pass or presentation, pre-lab tests	L, LC	
LO2	written pass or presentation, pre-lab tests	L, LC	
LO3	written pass or presentation, pre-lab tests	L, LC	
LO4	pre-lab tests	LC	
Student workload (in hours)		No. of hours	
Calculation	lecture attendance	15	
	participation in laboratory classes	10	
	preparation for classes and laboratory classes	20	
	working on reports	15	
	participation in student-teacher sessions related to the lectures and laboratory	5	
	preparation for lecture exam or presentation	10	
	TOTAL:	75	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		30h	1,0
Student workload – practical activities		10	0,4
Basic references	1. B. Choroszy, Machine technology, Wroclaw University of Technology Publishing House, Wroclaw, 2010. 2. N. R. Posinasetti, Manufacturing Technology, Vol. 2 Metal Cutting and Machine Tools, Edition: 3rd Edition, Publisher: McGraw Hill Education India ISBN: 978-1-25- 902956-1. 3. Wassa K et al., Sputtering of Compounds Materials, Springer-Verlag, Berlin, 2004. 4. Szweycer M., Nagolska D., Metallurgy and Foundry, publ. Poznan University of Technology, Poznań, 2012.		
Supplementary references	1. P. Belley, Foundry technology, Elsevier, 2001. 2. R. K. Miller, Waterjet cutting, Fairmont press, 1991.		
Organisational unit conducting the course	Biomedical Engineering	Date of issuing the programme	
Author of the programme	Zbigniew Oksiuta, PhD, DSc, Assoc. prof.	10.03.2021	

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

S – seminar

