

COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Mechanical Engineering									
Field of study	Biomedical Engineering							Degree level and programme type	Bachelor's degree
Specialization/ diploma path	Constructions and medical materials							Study profile	""
Course name	Polymers and composites							Course code	IS-MER0020W IS-MER0020S
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter/summer
	30		15					No. of ECTS credits	4
Entry requirements	Materials science								
Course objectives	Familiarization students with basic methods of testing of physicochemical and technological properties of plastics and composites. Training of methods and equipments for plastics and composite testing machines. Familiarization students with rules of selection polymers for different applications.								
Course content	<p>Lecture: Classification of plastics and composites. Methods of producing powder and fiber composites. Physicochemical and rheological properties of polymers. Mechanical properties of plastics and composites.</p> <p>Laboratory: 1) Introduction. Safety work. Preparation polymers for hydrolytical degradation 2) Methods of plastics identification. 3)Thermomechanical properties of plastics: Martens and Vicat. 4) Evaluation of MFR and MVR indexes of polymers. 5,6) Preparing and testing of powder and fiber composites. 7) Investigations of hydrolytical degradation of polymers.</p>								
Teaching methods	lecture, power point presentations, laboratory classes								
Assessment method	Lecture - written exam; Laboratory class - evaluation of reports, class preparedness tests								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	Student has general knowledge in field of polymer materials							IBK_W07	
LO2	Student performs basic tests of physicochemical and mechanical properties of plastics and composites							IBK_U11, IBK_U12, IBK_K03	
LO3	Student is able to select materials and methods of forming of polymer's products							IBK_W08, IBK_U02, IBK_K02	
LO4	Student knows and respect rules of safety work							IBK_W18 IBK_U22, IBK_K07	
LO5	Student is able to work in a group							IBK_W18 IBK_U22,	

		IBK_K07	
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed	
LO1	written exam	L	
LO2	written exam, evaluation of laboratory report	L, LC	
LO3	written exam	L	
LO4	evaluation of the work during laboratory classes	LC	
LO5	evaluation of the work during laboratory classes	LC	
Student workload (in hours)		No. of hours	
Calculation	lecture attendance	15	
	laboratory classes attendance	15	
	preparation to laboratory classes	21	
	preparation of laboratory reports	21	
	participation in student-teacher sessions	10	
	preparation for and participation in exams/tests	15	
	TOTAL:	97	
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		40	1,5
Student workload – practical activities		77	2,5
Basic references	1. Ataff. B.: Composite materials in medicine and nanotechnology. INTECH, Rijeka, 2011. 2. Changa M., Roy K. S.: Plastics Fundamentals, Properties and Testing, CRC Press Taylor&Francis Group, 2009. 3. Mittal V.: Optimization of polymer nanocomposite properties, Weinheim, Wiley-VCH, 2010.		
Supplementary references	1. Sikora J.W.: Selected problems of polymer extrusion, Lublin, Lublin University of Technology, 2008. 2. Imielińska K.: Degradation and damage of advanced laminate polymer composites due to environmental effects and low velocity impact, Gdańsk, Wyd. Politechniki Gdańskiej, 2005.		
Organisational unit conducting the course	Institute of Biomedical Engineering	Date of issuing the programme	
Author of the programme	Joanna Mystkowska, PhD (Eng), DSc, Assoc. Prof.	9.10.2020	

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

S – seminar

Please notice!

Depending on number of students enrolled for the subject hours of tuition are as follows (for each 30 hours given in course description card):

1 – 2 students - 8 hours of tuition hours;

3 – 4 students - 12 hours of tuition;

5 – 6 students - 17 hours of tuition;

7 – 8 students - 21 hours of tuition;

9 and more students - hours of tuition given by a teacher as regular classes.