

FACULTY OF CHEMISTRY					
SUBJECT CARD					
Name of subject in Polish	Chemia związków makromolekularnych				
Name of subject in English	Macromolecular chemistry				
Main field of study (if applicable):	Chemia i analityka przemysłowa				
Specialization (if applicable):					
Profile:	academic				
Level and form of studies:	1 st , full time				
Kind of subject:	obligatory				
Subject code					
Group of courses:	NO				
	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30		30		
Number of hours of total student workload (CNPS)	90		60		
Form of crediting	crediting with grade		crediting with grade		
For group of courses mark (X) final course					
Number of ECTS points	3		2		
including number of ECTS points for practical (P) classes			2		
including number of ECTS points for direct teacher-student contact (BU) classes	1,3		1,4		
PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES					
1. Basic knowledge of organic and inorganic chemistry. 2. Ability of perform basic chemical calculations.					
\SUBJECT OBJECTIVES					
C1 To provide students with basic knowledge of polymers structure. C2 To provide students with knowledge of main polymerization mechanisms and techniques as well as chosen methods of chemical modification of macromolecules. C3 To acquaint students with the most important groups of polymers. C4 To teach basic methods of polymerization and chemical modification of polymers					
SUBJECT LEARNING OUTCOMES					
relating to knowledge: PEK_W01 PEK_W02 ...					
relating to skills:					

Student, who has completed the course: PEK_U01 knows and follows the main safety rules in chemical laboratory. PEK_U02 knows basic polymerization mechanisms and techniques. PEK_U03 can apply chosen polymerization techniques and mechanisms to obtain popular polymers. PEK_U04 is able to change polymer properties using chemical modification.		
PROGRAMME CONTENT		
Lectures		Number of hours
Lec 1		
Lec 2		
Lec 3		
Lec 4		
Lec 5		
....		
	Total hours	
Laboratory		Number of hours
Lab 1	Discussion about course program and main evaluation requirements; presentation of safety rules valid in chemical laboratory	2
Lab 2	Radical polymerization – bulk technique	4
Lab 3	Cationic polymerization – synthesis in solution	4
Lab 4	Copolymerization	4
Lab 5	Polycondensation	4
Lab 6	Chemical modification of polymer functional groups	4
Lab 7	Polymer crosslinking	4
Lab 8	Analysis of obtained products, time for make up for	4
	Total hours	30
TEACHING TOOLS USED		
N1. N2. simple experiments of synthesis and polymer modification N3. written or oral examination in the area of the experiments carried out N4. detailed reports from experiments – (laboratory book/reports)		
EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT		
Evaluation (F – forming (during semester), P – concluding (at semester end))	Learning outcomes number	Way of evaluating learning outcomes achievement
P1 (lecture)		
F1 (laboratory)	PEK_U02- PEK_U04	written or oral examinations from each subject
F2 (laboratory)	PEK_U03- PEK_U04	reports containing basic information about experiment

		and obtained results with final conclusions
P2 (laboratory) = (F1 + F2)/2		
PRIMARY AND SECONDARY LITERATURE		
<u>PRIMARY LITERATURE:</u>		
[1] Florjańczyk Z., Penczek S., Chemia polimerów, tom I, II i III, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1998.		
[2] Pielichowski J., Puszyński A., Chemia polimerów, Wydawnictwo Oświatowe FOSZE, Rzeszów 2012.		
[3] Rabek J.F., Współczesna wiedza o polimerach, Wyd. Naukowe PWN, 2008		
<u>LITERATURA UZUPEŁNIAJĄCA:</u>		
[1] Pielichowski J., Puszyński A., Technologia tworzyw sztucznych, WNT, Warszawa 2003.		
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)		
<u>Lecture:</u>		
Prof. dr hab. inż. Andrzej Trochimczuk, andrzej.trochimczuk@pwr.edu.pl		
<u>Laboratory:</u>		
Dr inż. Anna Jakubiak-Marcinkowska, anna.jakubiak@pwr.edu.pl,		
Dr inż. Sylwia Ronka, sylwia.ronka@pwr.edu.pl		