

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Chemical Technology - Polymer Materials		Code 1010704261010721709
Field of study Chemical Technology	Profile of study (general academic, practical) (brak)	Year /Semester 3 / 6
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 20 Classes: - Laboratory: - Project/seminars: -		No. of credits 3
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer: dr hab. inż. Sławomir Borysiak email: Sławomir.Borysiak@put.poznan.pl tel. 61 665-35-49 Faculty of Chemical Technology ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of organic and inorganic chemistry.
2	Skills	Student knows and applies good practices of laboratory work, is able to operate the scientific equipment. He or she is able to search for information in scientific literature, databases and other properly chosen sources.
3	Social competencies	Student is conscious of the effects of engineering activity.
Assumptions and objectives of the course: Gaining of knowledge in the area of polymerization processes, chemical reactions of polymers, processing techniques and properties of plastics on a specialistic level.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student has a well-established and expanded knowledge in the field of methods and mechanisms of synthesis of polymers as well as properties and processing of plastics - [K_W08]		
2. Student has basic knowledge on developments of polymeric materials and the application in plastic industry - [K_W09]		
3. Student knows a basic methods and tools applied during solving basic problems of polymer technology - [K_W15]		
Skills:		
1. Student has the ability to acquire information from literature, database, other carefully selected sources - [K_U01]		
2. Student has the ability of applied basic laboratory techniques in the field polymer chemistry and properties of plastics - [K_U20]		
3. The student is able to work both individually and as a team in a professional environment - [K_U02]		
Social competencies:		
1. Student is conscious of limitation of his knowledge and understands the need of further continuous education in area of polymer chemistry. - [K_K01]		
Assessment methods of study outcomes		

1.	Rating of written exam (K_W08, K_W09, K_W15)		
2.	Rating of completion test (K_W08, K_W15)		
3.	Rating of activity during seminar classes (K_U01, K_K01)		
4.	Evaluation of laboratory exercises and reports (K_U20, K_U02)		
Course description			
Basic concepts of polymers. Polymer structure. Plastics. Molecular weight. Processes of polymer synthesis. Basic steps and mechanisms: radical polymerization, polycondensation and polyaddition. Industrial methods of polymerization and polycondensation. Crosslinking reaction of polymers. Properties and application of plastics. Phase states and characterizing temperatures of plastics. Mechanical properties of polymers and relation structure-properties. Processing of plastics. Recycling of plastics. Degradable polymers. Polymer composites.			
Basic bibliography:			
1. Z. Floriańczyk, S. Penczek, Chemia Polimerów, t.I i II, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2001			
2. W. Szlezyngier, Tworzywa sztuczne, Oficyna Wydawnicza Politechniki Rzeszowskiej, Rzeszów 1996			
3. J. Pielichowski, A. Puszyński, Technologia tworzyw sztucznych, WNT, Warszawa 2003			
4. J. Pielichowski, A. Puszyński, Chemia polimerów, TEZA, Kraków 2004			
5. J.F. Rabek, Współczesna wiedza o polimerach, PWN, Warszawa 2008			
6. B. Łaczyński, Tworzywa wielkocząsteczkowe: rodzaje i własności, WNT, Warszawa 1982.			
Additional bibliography:			
1. I. Gruin, Materiały polimerowe, PWN, Warszawa 2003			
2. D. Żuchowska, Polimery konstrukcyjne, WNT, Warszawa 2000			
3. K. Czaja, Poliolefiny, WNT, Warszawa 2005			
Result of average student's workload			
	Activity	Time (working hours)	
1.	Lectures	20	
2.	Seminar classes	10	
3.	Laboratory	20	
4.	Preparation of reports	10	
5.	Preparation for laboratory	20	
6.	Preparation for completion test	20	
7.	Preparation for exam	30	
8.	Participation in consultations related to the implementation of the education process	10	
Student's workload			
	Source of workload	hours	ECTS
	Total workload	150	5
	Contact hours	60	3
	Practical activities	40	2