

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Polymers and polymer composites		Code 1010702211010702974
Field of study Chemical Technology	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 1
Elective path/specialty Composites and Nanomaterials	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 15 Classes: - Laboratory: 15 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 technical sciences		ECTS distribution (number and %) 3 100%
Responsible for subject / lecturer: prof. dr hab. inż. Ewa Andrzejewska email: ewa.andrzejewska@put.poznan.pl tel. 616653637 Faculty of Chemical Technology ul. Berdychowo 4 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Knowledge of the basic principles of general, organic and physical chemistry. Knowledge of subjects taught at ?Chemical technology ? polymeric materials? lecture.
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: To get basic knowledge of polymers (chemistry, properties, applications).		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Student has a well established knowledge of synthesis, properties, application of polymers - [K_W02, K_W11]		
Skills: 1. Student has the ability of analyzing and interpreting of the results of experiments from the area of polymer chemistry and technology - [K_U01, K_U10] 2. Student has the ability of presenting the results of laboratory exercises in concise and proper manner - [K_U06]		
Social competencies: 1. Technology, including environment protection - [K_K04, K_K02] 2. Student is conscious of limitation of his knowledge and understands the need of further continuous education in area of polymer chemistry and technology - [K_U01] 3. Students can work in a team and are aware of their responsibility for their work and responsibility for the results of the teamwork. - [K_U04]		
Assessment methods of study outcomes		
Written exam in the subject of polymeric materials presented at lectures, evaluation of laboratory exercises and reports.		
Course description		

<p>Basic concepts (linear, branched and crosslinked polymers, molecular weight, tacticity). Basic characteristics of chain polymerization reaction: types, mechanisms, examples of polymers. Copolymerization and copolymers. Basic characteristics of step polymerization; mechanism, examples of polymers. Polymer morphology. Classification of polymeric materials (thermoplastics, thermosets, elastomers, thermoplastic elastomers). Polymer blends. Commodity, engineering and performance polymers. Thermal properties of polymers (thermal transitions, DSC measurements). Mechanical properties of polymers (tensile properties, stress-strain behavior failure, viscoelasticity, rheological models).</p>		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. G. Odian, Principles of Polymerization, 4th ed., Wiley, 2004 2. H.R. Allcock, F.W. Lampe Contemporary Polymer Chemistry, 2nd ed., Prentice Hall, 1990. 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. L.H. Sperling Introduction to Physical Polymer Science, 4th ed., Wiley, 2006 2. Handbook of Plastics Technologies, C.A. Harper. Ed., 2006, e-book. 		
<p>Result of average student's workload</p>		
<p>Activity</p>	<p>Time (working hours)</p>	
<ol style="list-style-type: none"> 1. Lecture 2. Consultations to lecture 3. Laboratory 4. Consultations to laboratory 5. Preparation for laboratory 6. Preparation of reports 	<p>15</p> <p>10</p> <p>15</p> <p>10</p> <p>20</p> <p>5</p>	
<p>Student's workload</p>		
<p>Source of workload</p>	<p>hours</p>	<p>ECTS</p>
Total workload	75	3
Contact hours	50	0
Practical activities	15	0