

| STUDY MODULE DESCRIPTION FORM | | |
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| Name of the module/subject Polymer Chemistry | | Code 1010702211010720506 |
| Field of study Chemical Technology | Profile of study (general academic, practical) (brak) | Year /Semester 1 / 1 |
| Elective path/specialty Polymer Technology | 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: 2 Classes: - Laboratory: 3 Project/seminars: - | | No. of credits 5 |
| 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 Technical sciences | | ECTS distribution (number and %) 5 100% 5 100% |
| Responsible for subject / lecturer: prof. dr hab. inż. Ewa Andrzejewska email: ewa.andrzejewska@put.poznan.pl tel. +48 61 665 3737 Faculty of Chemical Technology ul. Piotrowo 3 60-965 Poznań | | |
| Prerequisites in terms of knowledge, skills and social competencies: | | |
| 1 | Knowledge | Knowledge of the basic principles of general, organic, physical chemistry, and chemical engineering. 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: -Gaining of knowledge in the area of polymerization processes and chemical reactions of polymers 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 and modification 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 - [[K_U01, K_U06, K_U08] | | |
| 2. Student has the ability of presenting the results of laboratory exercises in concise and proper manner. - [-] | | |
| 3. Student is able to choose the synthesis method and the process parameters in order to obtain a polymer with requested properties. - [-] | | |
| Social competencies: | | |
| 1. Student is conscious of limitations of science and technology in the area of polymer chemistry, including environment protection - [_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. - [-] | | |
| 3. Students can work in a team and are aware of their responsibility for their work and responsibility for the results of the teamwork. - [-] | | |

| Assessment methods of study outcomes | | |
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| -Written exam from the area of polymer chemistry, evaluation of laboratory exercises and reports. | | |
| Course description | | |
| <p>Processes of polymer synthesis and reaction mechanisms. Thermodynamics of polymerization. Radical polymerization (initiators, steps of reaction, polymerization kinetics), linear polymerization, polymerization with crosslinking, copolymerization, controlled (?living?) radical polymerization. Ionic polymerization (anionic, cationic, living). Kinetics of ionic polymerization. Coordination polymerization (process characteristics, catalysts, mechanisms). Polycondensation (polycondensation control, kinetics of chain formation, polycondensation of di- and multifunctional monomers, gel point, Flory's distribution). Polyaddition. Chemical reactions of polymers, degradation and stabilization of polymers.</p> | | |
| Basic bibliography: | | |
| <p>1. Chemia polimerów, J. Pielichowski, A. Puszyński, TEZA, Kraków, 2004 2. Chemia polimerów tom I, . Praca zbiorowa pod red. Z. Floriańczyka i S. Penczka, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1995</p> | | |
| Additional bibliography: | | |
| <p>1. Principles of Polymerization, 4-th edition, G. Odian, Wiley-Interscience:Hoboken, New York, 2004 2. Principles of Polymer Chemistry, 2-nd edition, A.Ravve, Kluwer Academic/Plenum Publishers, New York, 2000</p> | | |
| Result of average student's workload | | |
| Activity | Time (working hours) | |
| 1. Lectures | 30 | |
| 2. Laboratory exercises | 45 | |
| 3. Preparation for exam, exam | 30 | |
| 4. Preparation for laboratory exercises | 10 | |
| 5. Preparation of reports from labor. exercises. | 10 | |
| Student's workload | | |
| Source of workload | hours | ECTS |
| Total workload | 125 | 5 |
| Contact hours | 75 | 3 |
| Practical activities | 45 | 2 |