

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Organic chemical technology - laboratory		Code
Field of study Chemical and Process Engineering	Profile of study (general academic, practical) general academic	Year /Semester 4 / 7
Elective path/specialty	Subject offered in: Polish	Course (compulsory, elective) elective
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: Classes: - Laboratory: 15 Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) basic		(university-wide, from another field) university -wide
Education areas and fields of science and art technical sciences technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: prof. dr hab. inż. Juliusz Pernak e-mail: juliusz.pernak@put.poznan.pl tel. (61) 6653682 Wydział Technologii Chemicznej ul. Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has knowledge of general chemistry, organic and inorganic, knows the basic methods, techniques and tools used in chemical analysis.
2	Skills	Student can obtain information from literature, databases and other sources, can interpret the obtained information to draw conclusions and formulate opinions. Student is able to apply that knowledge in practice, both during the implementation work and the further education.
3	Social competencies	Student is able to interact and work in a group. Student is able to properly identify the priorities used to perform a specific task.
Assumptions and objectives of the course: Gaining knowledge of organic chemical technology.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Student has general knowledge in the field of chemical technology. [K_W04] 2. Student has knowledge of raw materials, products and processes used in the chemical industry. - [K_W09] 3. Student has ordered a general and detailed knowledge in the field of chemical technology of organic and organic chemical industry. - [K_W13]		
Skills: 1. Student is able to analyze and assess the functioning of the basic processes and unit operations in chemical technology. - [K_U16]		
Social competencies: 1. Student understands the need for further education and improve their professional competence and personal. - [K_K01] 2. Student has a sense of responsibility for their own work and the willingness to submit to work in a team and to take responsibility for collaborative tasks. - [K_K04]		
Assessment methods of study outcomes		
Current control during laboratory classes, the final written exam.		

Course description		
Biomass as feedstock in the chemical industry (fats in the production of biofuels, starches and starch preparations). Ionic liquids (synthesis, properties, applications, utilization, green solvents). Catalysis (phase transfer catalysis in the alkylation process, the hydrolysis of starch).		
Basic bibliography:		
1. E. Grzywa, J. Molenda: Technologia podstawowych syntez organicznych, WNT, Warszawa 1987. 2. R. Bogoczek, E. Kociolek-Balawejder: Technologia chemiczna organiczna. Surowce i półprodukty, Wydawnictwo Akademii Ekonomicznej we Wrocławiu, Wrocław 1992. 3. M. Taniewski: Technologia chemiczna - surowce, WPŚ, Gliwice 1997. 4. M. Stasiewicz (red.): Technologia chemiczna organiczna, ćwiczenia laboratoryjne, Wydawnictwo Politechniki Poznańskiej, Poznań, 2013. 5. B. Burczyk: Biomasa. Surowiec do syntez chemicznych i produkcji paliw, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2011. 6. B. Burczyk: Zielona chemia. Zarys, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2006.		
Additional bibliography:		
1. K. Weissermel, H.J. Arpe: Industrial organic chemistry, VCH, Weinheim, New York, Basel, Cambridge, Tokio, 1993. 2. G.T. Austin: Shreve's chemical process industries, McGraw Hill Professional, 1984.		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in laboratories	15	
2. Preparation for the laboratory	15	
3. Participation in the consultation	15	
Student's workload		
Source of workload	hours	ECTS
Total workload	45	2
Contact hours	30	1
Practical activities	15	1