

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Organic chemical technology		Code
Field of study Chemical and Process Engineering	Profile of study (general academic, practical) general academic	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) full-time	
No. of hours Lecture: 30 Classes: - Laboratory: 30 Project/seminars: -		No. of credits 4
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 %) 4 100% 4 100%
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		
Sources of energy (from coal to nuclear power). Technological principles (principle of the potential difference, the best use of raw materials, the best use of energy, the best use of equipment, technological moderation). The principle of non-infringement. The chlorination process (basic reactions, chlorinating agents, the basics of organic chemistry, thermodynamics and kinetics, examples of wastes and their disposal, technological schemes). Alkylation process (reactions, alkylating agents, the process of Friedel-Crafts, high-octane gasoline, and waste management, technological schemes). Technology neutralization. Biomass as chemical feedstock (fats and oils, lignocellulosic products, soaps, fatty acids, glycerin, products with biological activity, technological schemes). Ionic liquids (synthesis, properties, applications, recycling, green solvents).		
Basic bibliography:		
<ol style="list-style-type: none"> 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:		
<ol style="list-style-type: none"> 1. K. Weissmehl, 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 lectures	30	
2. Participation in laboratories	30	
3. Preparation for the laboratory	15	
4. Participation in the consultation	10	
5. Preparation for the exam and the exam	15	
Student's workload		
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	70	3
Practical activities	30	1