

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Identification of Organic Compounds		Code 1010701151010700020
Field of study Chemical and Process Engineering	Profile of study (general academic, practical) general academic	Year /Semester 3 / 5
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: 15 Classes: - Laboratory: 15 Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) other		(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. Adam Voelkel email: Adam.Voelkel@put.poznan.pl tel. 0616653687 Wydział Wydział Technologii Chemicznej ul. Berdychowo 4 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic physical, inorganic, organic and analytical chemistry on academic level
2	Skills	Can use basic laboratory techniques of separation and cleaning of chemical compounds
3	Social competencies	Understands the need to supplement her/his education and increasing personal and professional competences
Assumptions and objectives of the course: Gaining the skills of the application of spectroscopic methods for identification of organic compounds and determination of their structure.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. knowledge in the field of techniques, methods connected with identification of organic pollutants in the environment - [K_W03, K_W11]		
2. 2. can describe methods, techniques, tools and materials used for the solution of simple problems connected with identification of substances during solving the problems connected with the field of study - [K_W07, K_W15]		
Skills:		
1. Student can select the proper spectroscopic technique for basic qualitative and quantitative determination of organic compounds - [K_U11, K_U16, K_U20]		
2. has basic skills for maintenance of basic tools (methods) for solving the problem in the field of environment analysis - [K_U07, K_U21]		
3. Student can use specialist English - [K_U03]		
Social competencies:		
1. Student understands the need to supplement her/his education and increasing professional competences - [K_K01]		
2. Student has the awareness to obey the engineer ethic rules - [K_K02, K_K05]		
3. Student can act and cooperate in the group accepting different roles - [K_K03]		
Assessment methods of study outcomes		

Written control work following lectures. Permanent control before laboratory classes. Written reports from exercises.		
Course description		
Problems of the course are connected with the application of the interaction of electromagnetic radiation with the molecules of organic compounds and its use for identification of organic species. The theoretical background enabling the understanding the rules of UV/VIS spectroscopy, IR and ¹ H NMR. The possibilities and limitations of these techniques are presented and discussed. Sample preparation methods are discussed and further used during laboratory classes. Experimental technique is presented on level enabling the self-maintenance of popular equipment and contact with the operator of more sophisticated equipment.		
Basic bibliography:		
1. Spektroskopowe metody identyfikacji związków organicznych, R.M. Silverstein, F.X. Webster, D.J. Kremler, PWN, Warszawa, 2007		
2. Metody spektroskopowe wyznaczania struktury związków organicznych, L.A. Kazicyna, N.B. Kupletska, PWN, Warszawa, 1974		
3. Określanie struktury związków organicznych metodami spektroskopowymi, M. Szafran, Z. Dega-Szafran, PWN, Warszawa, 1988		
4. Metody spektroskopowe i ich zastosowanie do identyfikacji związków organicznych, W. Zieliński, praca zbiorowa, WNT, Warszawa, 1995.		
5. Spektroskopia mas związków organicznych, A. Płaziak, wyd. UAM, Poznań, 1997.		
Additional bibliography:		
1. N.P.G. Roeges, A guide tot He complete interpretation of infrared spectra of organic structures, Wiley, Chichester, 1994.		
2. J.S. Splitter, F. Turecek, Application of mass spectrometry to organic stereochemistry, VCH, New York, 1994.		
Result of average student's workload		
Activity	Time (working hours)	
1. lecture	15	
2. lecture consultations	3	
3. lab consultations	3	
4. lab preparations	5	
5. laboratory classes	15	
6. credit preparation	10	
7. credit	1	
Student's workload		
Source of workload	hours	ECTS
Total workload	52	2
Contact hours	34	1
Practical activities	15	1