



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Identification of Organic Compounds

		Course
Field of study		Year/Semester
Environmental Protection Technologies		III/5
Area of study (specialization)		Profile of study
-		general academic
Level of study		Course offered in
First-cycle studies		polish
Form of study		Requirements
full-time		compulsory

			Number of hours
Lecture	Laboratory classes		Other (e.g. online)
30	0		0
Tutorials	Projects/seminars		
0	0		
Number of credit points			
1			

		Lecturers
Responsible for the course/lecturer:		Responsible for the course/lecturer:
prof. dr hab. inż. Adam Voelkel		

Prerequisites
Basic physical, inorganic, organic and analytical chemistry on academic level; Can use basic laboratory techniques of separation and cleaning of chemical compounds

Course objective

Gaining the skills of the application of spectroscopic methods for identification of organic compounds and determination of their structure.

Course-related learning outcomes

Knowledge

1. knowledge in the field of techniques, methods connected with identification of organic pollutants in the environment - [K_W07, K_W09]
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_W05, K_W12, K_W13]



Skills

1. Student can select the proper spectroscopic technique for basic qualitative and quantitative determination of organic compounds - [K_U11, K_U12, K_U13]
2. has basic skills for maintenance of basic tools (methods) for solving the problem in the field of environment analysis - [K_U15, K_U18]
3. Student can use specialist English . - [K_U03, K_U05, K_U08]

Social competences

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]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Final written control work. In case of stationary work 10-15 open questions. In case of on-line work through eKursy approx. 10 open questions and approx. 5 closed questions.

Programme content

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, NMR and MS. The possibilities and limitations of these techniques are presented and discussed. Sample preparation methods are discussed. Experimental technique is presented on level enabling the self-maintenance of popular equipment and contact with the operator of more sophisticated equipment..

Teaching methods

lecture

Bibliography

Basic

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

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.

Breakdown of average student's workload

	Hours	ECTS
Total workload	40	1,0
Classes requiring direct contact with the teacher	30	
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) ¹	10	

¹ delete or add other activities as appropriate