COURSE DESCRIPTION CARD - SYLLABUS

Course name
Advanced methods of analysis of organic compounds

Course

Field of study
Chemical Technology
Area of study (specialization)

Level of study
First-cycle studies
Form of study
full-time

Year/Semester
3/6
Profile of study
general academic
Course offered in
Polish
Requirements
elective

Number of hours

Lecture
15
Laboratory classes
15
Other (e.g. online)

Tutorials
Projects/seminars

Number of credit points

2

Lecturers

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

Responsible for the course/lecturer:

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 (NMR and MS) 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_W03,K_W11]

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 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:

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

Permanent control before laboratory classes. Written reports from exercices

Programme content

New information will concern Raman spectroscopy, XPS and other techniques of surface investigation. . Possibilities and limitations of: UV/VIS, IR, NMR, MS and other techniques are discussed.

Teaching methods

lectures, laboratory classes

Bibliography

Basic

1. Spektroskopowe metody identyfikacji związków organicznych, R.M. Silverstein,

F.X. Webster, D.J. Kremle, 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	2,0
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