



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Metody analizy związków organicznych (Methods of organic compounds analysis)

Course

Field of study

Year/Semester

Technologia chemiczna (Chemical Technology)

4/7

Area of study (specialization)

Profile of study

general academic

Level of study

Course offered in

First-cycle studies

Polish

Form of study

Requirements

part-time

compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

20

10

Tutorials

Projects/seminars

10

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Number of credit points

4

Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr hab. inż. Karolina Wieszczycka, prof. PP

Prerequisites

Basic physical, inorganic, organic and analytical chemistry on academic level

Course objective

The student acquires the ability to use spectroscopic methods for the analysis of organic compounds, the ability to analyze spectroscopic data, and identify compounds based on UV-VIS, FT-IR, NMR and MS spectra

Course-related learning outcomes

Knowledge

Has the necessary knowledge in the field of techniques and methods for characterizing and identifying chemical substances [K_W11]

Skills

Is able to obtain necessary information from literature, databases and other sources related to chemical sciences, correctly interprets it, draws conclusions, formulates and justifies opinions [K_U01]



Uses computer programs that support the implementation of tasks typical of chemical technology and engineering, plans chemical experiments, examines the course of chemical processes and correctly interprets the results obtained [K_U07]

Is able to assess the usefulness of routine methods and techniques appropriate to solve practical engineering tasks in chemical technology, can also choose and apply the appropriate method and technique [K_U14]

Selects analytical methods for qualitative and quantitative determination of chemical compounds [K_U21]

Selects analytical methods and techniques for process control and quality assessment of raw materials and products [K_U32]

Social competences

Understands the need for further training and improving their professional, personal and social competences [K_K01]

Is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its impact on the environment and the associated responsibility for decisions [K_K02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - evaluation of knowledge and skills acquired on the basis of a written exam (4 problem tasks based on the content of the lecture program).

Tutorials: written verification of spectra interpretation skills

Laboratories: Tests checking preparation for a selected experiment, evaluation of report containing an interpretation of results.

Programme content

The lecture covers the discussion of spectroscopic methods as basic instruments for studying the structure of organic compounds. Ultraviolet and visible light (UV-Vis) spectroscopy, infrared (IR) spectroscopy, nuclear magnetic resonance spectroscopy, mass spectrometry (MS) are discussed in detail.

Tutorials enable students to acquire skills in interpreting UV, FT-IR, HNMR, MS spectra.

Laboratories enable students to acquire skills in analyzing specific chemical compounds using spectroscopic methods (UV, FT-IR) and interpretation of results.

Teaching methods

Multimedia presentation (lectures)



Spectroscopic correlation tables, multimedia presentation (tutorials)

Spectroscopic correlation tables (laboratories)

Bibliography

Basic

1. R.M. Silverstein, F.X. Webster, D.J. Kremler, Spektroskopowe metody identyfikacji związków organicznych, PWN, Warszawa, 2007
2. L.A. Kazicyna, N.B. Kupletska, Metody spektroskopowe wyznaczania struktury związków organicznych, PWN, Warszawa, 1974
3. W. Zieliński, praca zbiorowa, Metody spektroskopowe i ich zastosowanie do identyfikacji związków organicznych, WNT, Warszawa, 1995.

Additional

1. M. Szafran, Z. Dega-Szafran, Określanie struktury związków organicznych metodami spektroskopowymi, PWN, Warszawa, 1988
2. A. Płaziak, Spektroskopia mas związków organicznych, wyd. UAM, Poznań, 1997

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	44	2,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tutorials, preparation for exam) ¹	56	2,0

¹ delete or add other activities as appropriate