



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Chemia organiczna (Organic Chemistry)

### Course

Field of study

Technologia chemiczna (Chemical Technology)

Area of study (specialization)

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Level of study

First-cycle studies

Form of study

full-time

Year/Semester

II/3

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

Projects/seminars

Tutorials

30

0

Other (e.g. online)

0

### Number of credit points

5

### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Łukasz Chrzanowski

Responsible for the course/lecturer:

### Prerequisites

At the beginning of the course, the student should have a basic knowledge of general chemistry. The student should know the symbols of the elements and the principles of chemical bonds formation, and should comprehend and discuss selected issues of inorganic chemistry at ease - catalytic properties of metals, complexes formation. The student should have the ability to associate facts and to obtain information from indicated sources.

### Course objective

Mastering basic knowledge of structural formulae, synthesis methods and properties of aliphatic (alkane, alkene and alkyne), cyclic and aromatic hydrocarbons. The detailed objectives are to familiarize the student with the relationship between the structure of a chemical compound and its properties, radical substitution, stereochemistry, electrophilic addition and multistep synthesis on the example of benzene derivatives.

### Course-related learning outcomes

Knowledge



K\_W03 has the knowledge of chemistry necessary to understand chemical phenomena and processes  
P6S\_WG

K\_W08 has a structured, theoretically underpinned general knowledge of general and inorganic, organic, physical and analytical chemistry P6S\_WG

K\_W09 has the necessary knowledge of both natural and synthetic raw materials, products and processes used in chemical technology, and the directions in chemical industry development (in the country and worldwide) P6S\_WG P6SI\_WG

#### Skills

K\_U01 is able to obtain the necessary information from literature, databases and other sources related to chemical sciences, to properly interpret them, draw conclusions, formulate and justify opinions  
P6S\_UW

K\_U24 predicts the reactivity of chemical compounds based on their structure, estimates the thermodynamic and kinetic effects of chemical processes P6S\_UW

K\_U20 uses basic laboratory techniques for the synthesis, secretion and purification of chemicals  
P6S\_UW P6SI\_UW

#### Social competences

K\_K06 can think and act in an entrepreneurial way P6S\_KO

K\_K01 understands the need for further education and improvement of professional, personal and social competences P6S\_KKK

K\_K04 is able to properly define priorities for the implementation of the designated task P6S\_KR

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

##### Lecture:

The knowledge acquired during the lecture is verified by an exam at the end of the semester. The exam is two-stage. The first part consists of 30 test questions in the Moodle system. Passing the test requires a total of >50% of points. The second part is an oral exam, during which the student is asked 4 questions from the scope of the lectures.

##### Exercises:

Test of knowledge presented during the lectures and extended with additional examples during the seminar classes. Passing the exercises requires a total of >50% points.

#### Programme content

The following issues are discussed: the relationship between the structure of a chemical compound and its properties, stereochemistry, radical substitution, reactions of production of alkanes, alkenes, dienes,



alcohols, alicyclic hydrocarbons, benzene and its derivatives, and their properties. Particular emphasis on electrophilic substitution and electrophilic addition reactions, in the context of multistep reactions.

### Teaching methods

Lecture with a multimedia presentation, discussion with students.

Seminar exercises with practical examination of the ability to write chemical reactions and bind individual reactions into organic synthesis schemes.

### Bibliography

Basic

1. Robert Morrison, Robert Boyd, Chemia organiczna, Wydawnictwo Naukowe PWN
2. John McMurry, Chemia organiczna, Wydawnictwo Naukowe PWN

Additional

1. Arthur Vogel, Preparatyka organiczna, Wydawnictwo Naukowe PWN
2. Susan McMurry, Chemia organiczna, Wydawnictwo Naukowe PWN
3. Jerry March, Chemia organiczna. Reakcje, mechanimy, budowa. Wydawnictwa Naukowo-Techniczne
4. Daniela Buza, Aleksandra Ćwil, Zadania z chemii organicznej z rozwiązaniami. Oficyna Wydawnicza PW
5. Polskie Towarzystwo Chemiczne, Nomenklatura Związków Organicznych

### Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	75	3,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	50	2,0

<sup>1</sup> delete or add other activities as appropriate