COURSE DESCRIPTION CARD - SYLLABUS

Course name
Organic Chemistry

Course

Field of study
Chemical Technology

Year/Semester
2/3

Area of study (specialization)
-

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
English

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes

Other (e.g. online)
0

Tutorials
30

Projects/seminars
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 cration, 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 hydocarbons. 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 multistap 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:

Knowledge gained in lecture is verified by an exam at the end of the semester. Depending on the pandemic situation, the exam will take the following form:

Elective test in electronic form and ADDITIONALLY:

An oral exam in which the student is asked 4 questions from the lectures, OR

an electronic exam during which the student will answer 4 questions from 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, Organic Chemistry, Prentice Hall

2. John McMurry, Organic Chemistry, Cengage Learning

Additional

1. Arthur Vogel, Practical Organic Chemistry, Longmans

2. Susan McMurry, Organic Chemistry, Brooks

3. Michael Smith, Jerry March, March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure, Wiley

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	5,0
Classes requiring direct contact with the teacher	60	0,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	60	0,0

[1] delete or add other activities as appropriate