COURSE DESCRIPTION CARD - SYLLABUS

Course name
Oxygen-based organic compounds

Course

Field of study
Chemical Technology

Year/Semester
II/4

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
elective

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
	30	0
Tutorials	Projects/seminars	
	0	

Number of credit points

3

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. Based on the knowledge gained in the previous semester the student should also be aware of the dangers associated with working with organic compounds. Moreover the student should have knowledge and practical skills in assembling sets and apparatus used in the laboratory of organic chemistry. The student should know the names of the equipment and be able to assemble appropriate sets.

Course objective

The aim of the course is to become familiar with the basic techniques used in the synthesis of organic compounds, and methods of their isolation from the post-reaction medium on the example of organic oxygen compounds.

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:

Short tests of the theoretical knowledge (reaction mechanism) necessary for the safe performance of the laboratory exercise. Execution of planned experiments with further description of observations and correct execution of necessary preparative calculations. Crediting on the basis of the performance of the planned experiments and passing all tests from the theoretical knowledge.

Programme content

Within the course the student performs the synthesis of selected organic compounds containing oxygen: ethers, esters, acetate derivatives of organic compounds, products of aldol and Cleisen condensation.

Teaching methods

Oral questioning on preparation for synthesis and understanding of the reaction mechanisms. Individually preformed by student synthesis with further separation of the product from the post-

reaction medium. In addition, the student makes notes of changes occurring during the synthesis. The student makes reaction calculations and summarizes the whole work with appropriate conclusions.

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

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests) [1]	30	1,0

[1] delete or add other activities as appropriate