COURSE DESCRIPTION CARD - SYLLABUS

Course name

Organic Chemical Technology

Course

Field of study

Chemical Technology

Year/Semester

III/6

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)

Tutorials

Projects/seminars

15

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

Prerequisites

Knowledge: Student starting this subject should:

1. Possess the necessary knowledge of mathematics to the extent that allows the use of mathematical methods to describe chemical issues and processes and to perform calculations needed in engineering activities

2. Have a systematic, theoretically founded general knowledge of general and inorganic, organic, physical and analytical chemistry

Skills: The student starting this subject should be able to:

1. Obtain the necessary information from literature, databases and other sources and other concerning chemical sciences, correctly interpret them, draw conclusions, formulate and justify opinions

2. Work both individually and as a team in a professional environment

3. Possess language skills in the fields and disciplines relevant to chemical sciences and chemical technology, in accordance with the requirements set out for level B2 of the European Language Training Description System

4. Use chemical terminology and chemical nomenclature correctly, also in English

Social competences: The student starting this subject should:

1. Be able to interact and work in a group, inspire and integrate engineering environments

2. Be able to properly set priorities for the implementation of the task

Course objective

Gain knowledge in the field of organic chemical technology.

Course-related learning outcomes

Knowledge

Student:

1. Has the necessary knowledge about both natural and synthetic raw materials, products and processes used in chemical technology, as well as about the directions of development of the chemical industry in the country and in the world (K_W09)

2. Possesses knowledge in the field of technology and chemical engineering, machine science and apparatus of the chemical industry (K_W13)

3. Knows the basic methods, techniques, tools and materials used to solve simple tasks in the field of chemical technology and engineering (K_W15)

Skills

Student:

1. 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)

2. Is able to use mathematical knowledge to simulate, design and optimize and characterize simple chemical processes and unit operations (K_U08)

3. Is able to make a preliminary technical and economic analysis of engineering activities undertaken in chemical technology (K_U11)

4. Based on general knowledge, explains the basic phenomena associated with relevant processes in chemical technology and engineering (K_U16)

Social competences

Student:

1. Is able to cooperate and work in a group, inspire and integrate engineering environments (K_K03)

2. Is able to properly set priorities for the implementation of the task (K_K04)

3. Understands the need for further training and improving his professional, personal and social competences (K_K01)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Elaboration of a project regarding the synthesis of an organic compound that will be evaluated.

Assessment Criteria:

very good - the developed project is complete and contains: a list of known methods for the synthesis of a selected chemical compound; a complete list of reagents used, schematic diagram, mass balance, Sankey diagram and designed installation scheme developed; student can very well justify the implementation of individual elements of the project

good - the project developed is incomplete, complete or contains small errors in the list of reagents used, the schematic diagram, mass balance, Sankey chart or scheme of the designed installation; student is able to justify the implementation of individual project elements well

fine - the project developed is incomplete complete or contains significant errors in the list of reagents used, the schematic diagram, mass balance, Sankey chart or scheme of the designed installation; the student cannot or is able to sufficiently justify the manner of implementation of individual elements of the project

Programme content

Searching for known methods of synthesis of selected organic compounds; analysis of criteria aimed at selecting the optimal synthesis route and selecting the appropriate scale of production, searching for criteria of selecting suppliers of reactants, developing a detailed methodology of the product synthesis, developing a schematic diagram of synthesis, mass balance, Sankey charts and the scheme of the designed installation.

Teaching methods

Computer lab - the use of computer applications in the course of the project

Bibliography

Basic

1. K. Weissermel, H.-J. Arpe: Industrial organic chemistry : important raw materials and intermediates, Weinheim ; New York, 1978

2. H. A. Wittcoff, B. G. Reuben, J. S. Plotkin, Industrial Organic Chemicals, John Wiley & Sons, 2013

3. E. Grzywa, J. Molenda: Technologia podstawowych syntez organicznych, WNT, Warszawa 1987

4. M. Taniewski: Technologia chemiczna - surowce, WPŚ, Gliwice 1997

Additional

1. P. Wiseman: An Introduction to Industrial Organic Chemistry, Applied Science, London, 1976

2. H. L. White: Introduction to Industrial Chemistry, John Wiley, New York, 1986

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,0
Classes requiring direct contact with the teacher	20	0,7
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation)[1]	10	0,3

[1] delete or add other activities as appropriate