COURSE DESCRIPTION CARD - SYLLABUS

Course name
Organic technology [S2TCh2-PTiB>TO]

Course

Field of study
Chemical Technology

Year/Semester
1/2

Area of study (specialization)
Technological Processes and Bioprocesses

Profile of study
general academic

Level of study
second-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
45

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

6,00

Coordinators

dr hab. inż. Katarzyna Materna prof. PP
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Lecturers

Prerequisites

Student has knowledge of general, organic and inorganic chemistry, knows basic methods, techniques and tools used in chemical analysis. Student is able to obtain information from literature, databases and other sources, is able to interpret obtained information, draw conclusions and formulate opinions. Student is able to apply the acquired knowledge in practice, both during his professional work and during further education. Student is able to cooperate and work in a group. Student is able to adequately determine priorities for the realization of a given task.

Course objective

Obtaining the extended knowledge of organic technology.

Course-related learning outcomes

Knowledge:
1. Student has knowledge of complex chemical processes, including appropriate selection of materials, raw materials, methods, techniques, apparatus and equipment for implementation chemical processes and characterization of products obtained. [K_W03]
2. Student has an extended knowledge of environmental problems related to the implementation

ofchemical processes [K_W08]
3. Student has a well-established and extended knowledge of the chosen specialization. [K_W11]

Skills:
1. Student is able to determine the directions of further education and to implement self-education. [K_U05]
2. Student explains, on the basis of general knowledge, basic phenomena related to important processes in chemical technology. (K_U16)

Social competences:
1. Student understands the need for further education and improvement of his professional and personal competences. [K_K01]
2. Student is aware of the responsibility for his own work and willingness to submit to teamwork and take responsibility for jointly performed tasks. [K_K04]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - written examination; evaluation criterium: 3 - 50.1-70.0%; 4 - 70.1-90.0%; 5 - from 90.1%
Laboratory: current control during laboratory classes, oral/written response, reports of laboratory exercises, oral/ written response, evaluation of teamwork; evaluation criterium: 3 - basic theoretical and practical preparation, the ability to prepare reports from laboratory exercises; 4 - practical preparation supported by theoretical knowledge, the ability to formulate appropriate conclusions, active participation in classes supported by the desire to obtain additional knowledge; 5 - complete preparation for teaching classes, the ability to formulate conclusions at an advanced level, precise performance of the tasks entrusted, independent search for additional theoretical knowledge, coordination of work in a research team.

Programme content

1. Organic chemical technology: tasks of modern chemical technology, main directions of raw material processing, discussion of the main directions of natural resources processing (hard coal, oil, natural gas, renewable resources).
2. large-scale organic synthesis: synthesis gas, methanol, acetylene, acetaldehyde, styrene, ethanol, phenol, etc.
3. Surfactants: types, effects and application of ZPC, methods of preparation, discussion of major groups of ZPC: alkylbenzene sulphonates, oxyalkylated fatty alcohols, oxyalkylated alkylphenols, alkyl ether sulphates, alkyl sulphates, ZPC in cosmetic raw materials, household chemicals (washing powders and liquids, disinfectants, dishwashing agents, hand washing agents).
4. Dyes: classification of dyes, speaking the most important groups: azo, triphenylmethane, anthraquinone, indigoid, sulfur, reactive, food dyes.
5. Chemistry of medicines: development of chemical process, production of chemicals: salicylic acid acetylation, production of sulfonoamides, antibiotics - penicillin production.
6. Aroma agents - groups, preparation methods, application.

Teaching methods

Lecture - multimedia presentation,
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Laboratory - educational materials foffrotohretlhaebolarbaotorarytoinrythinetfhoermforomf podffpfdilefsfi,lepsr,apctriacaaclteicxaelrcises.
exercises. calculation tasks solving rom organic chemical technology

Bibliography

Basic:
1. E. Grzywa, J. Molenda: Technologia podstawowych syntez organicznych, T. 1 i 2, WNT, Warszawa 2008.
2. E. Kociołek-Balawejder (red.): Technologia chemiczna organiczna: wybrane zagadnienia, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, 2013.
3. M. Taniewski: Technologia chemiczna - surowce, Wydawnictwo Politechniki Śląskiej, Gliwice 1997.

4. M. Stasiewicz (red.): Technologia chemiczna organiczna, ćwiczenia laboratoryjne, Wydawnictwo Politechniki Poznańskiej, Poznań, 2013.
5. B. Burczyk: Biomasa. Surowiec do syntez chemicznych i produkcji paliw, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2011.
6. B. Burczyk: Zielona chemia. Zarys, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2014.

Additional:
1. J.A. Moulijn, M. Makkee, A. van Diepen: Chemical Process Technology, Wiley-Blackwell, Chichester 2013.
2. M. Taniewski: Przemysłowa synteza organiczna.Kierunki rozwoju, Wydawnictwo Politechniki Śląskiej, Gliwice 1991.
3. P. Wasserscheid, T. Welton: Ionic liquids in synthesis, Wiley-VCH, Weinheim 2003.

Breakdown of average student's workload

	Hours	ECTS
Total workload	150	6,00
Classes requiring direct contact with the teacher	79	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	71	3,00