COURSE DESCRIPTION CARD - SYLLABUS

Course name
Technologia organiczna

Course

Field of study
Technologia Chemiczna

Year/Semester
I/2

Area of study (specialization)
Technologia organiczna (Organic Technology)

Profile of study
general academic

Level of study
Second-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
30	45	
Tutorials	Projects/seminars	

Number of credit points

7

Lecturers

Responsible for the course/lecturer:
prof. dr hab. inż. Juliusz Pernak
e-mail: juliusz.pernak@put.poznan.pl
Faculty of Chemical Technology
4 Berdychowo Street, 60-965 Poznań
tel. (61) 665-3682

Responsible for the course/lecturer:

Prerequisites

Student has a systematic, theoretically based knowledge of key issues in chemical technology.

Student is able to obtain information from literature, databases and other sources connected with chemical sciences, is able to interpret them, draw conclusions and formulate own opinions.

Student understands the need for further education and improvement of his professional and personal competences.

Course objective

Developing and consolidating knowledge in the field of chemical technology.

Course-related learning outcomes

Knowledge

1. Student has a broad and in-depth knowledge of chemical technology and other related areas of science, allowing to formulate and solve complex tasks related to organic chemical technology. [K_W2]

2. Student has a well-established knowledge of occupational health and safety. [K_W10]

3.Student has knowledge of selected issues of contemporary chemical knowledge and aspects of copyright and industrial property. [K_W14]

Skills

1. Student has the ability to obtain and critically evaluate information from literature, databases and other sources and formulate opinions and reports on this basis. [K_U1]

2. Student is able to determine the directions of further education and to implement self-education. [K_U5]

3. Student has the ability to assess the technological suitability of raw materials and to select the technological process in relation to product quality requirements. [K_U16]

4. Student is able to critically assess the practical utility of using new developments in chemical technology. [K_U17]

Social competences

1. Student is aware of the need for lifelong learning and professional development. [K_K1]

2. Student is well aware of the limitations of science and technology related to chemical technology, including environmental protection. [K_K2]

3. Student professionally recognizes problems and makes the right choices related to the profession, in accordance with the principles of professional ethics. [K_K3]

4. Student observes all rules of teamwork; is aware of the responsibility for joint ventures and achievements in professional work. [K_K4]

5. Student represents a high moral level in relation to social and professional problems. [K_K5]

6. Student is able to think and work creatively. [K_K6]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture - written exam; assessment criteria: 3 - 50.1-70.0%; 4 - 70.1-90.0%; 5 - from 90.1%

Laboratory: current control during laboratory classes, oral/written response, reports from laboratory exercises, evaluation of work in a team;

evaluation criteria: 3 - basic theoretical and practical preparation, ability to prepare reports from the laboratory exercises at the basic level; 4 - practical preparation supported by theoretical knowledge, ability to formulate appropriate conclusions, active participation in classes supported by the desire to obtain additional knowledge; 5 - very good preparation for classes, ability to formulate conclusions at an

advanced level, precise performance of entrusted tasks, independent search for additional theoretical knowledge, coordination of work in a research team.

Programme content

Technological principles with examples (the principle of potential difference, the principle of best use of raw material, the principle of best use of energy, the principle of best use of apparatus, the principle of technological moderation). The principle of patent purity with selected examples. Biomass - raw material for chemical synthesis and fuel production (examples, technological schemes, efficiency of biomass use, new trends with the participation of biomass in chemical industry). Odors and their neutralization (types, examples on selected plants, oxidation as an effective method). Clean coal processing (production of organic compounds, biological sulphur removal).

Teaching methods

Lecture - multimedia presentation, illustrated with examples given on the board.

Laboratory - educational materials for the laboratory in the form of pdf files, practical exercises.

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	175	7,0
Classes requiring direct contact with the teacher	90	3,6
Student's own work (literature studies, preparation for the laboratory classes, preparation for the exam, elaboration of research results and preparation of reports from the laboratory classes) [1]	80	3,4

[1] delete or add other activities as appropriate