COURSE DESCRIPTION CARD - SYLLABUS

Course name
Fundamentals of chemical technology

Course

Field of study
Chemical technology
Area of study (specialization)
-
Level of study
First-cycle studies
Form of study
full-time

Year/Semester
3/5
Profile of study
general academic
Course offered in
English
Requirements
elective

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars
15

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
dr inż. hab. Katarzyna Staszak

Responsible for the course/lecturer:
dr inż. Monika Rojewska

Prerequisites

He has knowledge of mathematics to the extent that allows him to use mathematical methods to describe chemical processes and make calculations needed in engineering practice.

He can obtain information from literature, databases and other sources related to chemical sciences, he can interpret it, draw conclusions and formulate opinions.

Understands the need to improve their professional and personal skills.

Course objective

Gaining knowledge in the basics of chemical technology.

Course-related learning outcomes

Knowledge

The student has knowledge of mathematics in the scope allowing to use mathematical methods to describe chemical processes and make calculations needed in engineering practice He knows the basics of kinetics, thermodynamics and catalysis of chemical processes (K_W01, K_W03, K_W06, K_W07).

Skills

The student works individually and effectively in a team. He or she uses computer programs that support the realization of tasks typical for chemical technology (K_U01, K_U06, K_U07, K_U14).

Social competences

The student understands the need for further education and improvement of his/her professional and personal competences. He/she is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including their impact on the environment and the related responsibility for decisions taken (K_K02)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Semester evaluation of the completed projects, consisting of a preliminary pre-project analysis, the quality of the completed project and the preparation of the final report.

In the case of stationary classes, credit is given in a computer laboratory, while in the case of online classes credit is given using the university's network and computer infrastructure (VPN) via the Remote Desktop Protocol (RDP) using a remote desktop connection tool.

Programme content

During the classes, the students carry out projects related to mathematical description of chemical reactors described by systems of non-linear algebraic and differential equations including reactor operation mode, dosing method and thermal effects.

Teaching methods

Presentation of aproaches for equation resolution and nonlinear equation systems with the Mathcad tool. At this stage, the teacher assists students in using the CAD tool without solving any design problems.

During the completion of target credit projects, students are assisted in the functioning of the software, but they make their own design decisions for which they are responsible.

Bibliography

Basic

1. Conesa Juan A., Chemical reactor design, Wiley-VCH Verlag GmbH, 2019.

2. Trambouze P, Euzen J-P, Chemical Reactors - From Design to Operation, Knovel, 2004.

Additional

1. Complete Beginners Guide to PTC Mathcad, www.mathcad.com.

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 tutorials, projects preparation) [1]	10	0,3

[1] delete or add other activities as appropriate