COURSE DESCRIPTION CARD - SYLLABUS

Course name
Chemical Engineering

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
compulsory

Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars
30

Number of credit points

2

Lecturers

Responsible for the course/lecturer:
dr hab. inż. Sylwia Różańska

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Responsible for the course/lecturer:
dr hab. inż. Jacek Różański, prof. PP

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Prerequisites

Students starting this subject should have basic knowledge in mathematics, physics, chemistry, engineering graphics, and materials technology. They should also have the ability to use spreadsheets, and be ready to work in a team.

Course objective

The aim of the course is to provide the ability to perform design calculations.

Course-related learning outcomes

Knowledge

1. The student has the necessary knowledge in the selection of construction materials used in the construction of devices, apparatus and chemical installations and knows the principles of their operation [K_W04]

2. The student knows the principles of construction, operation and selection of devices, reactors and apparatuses used in chemical technology [K_W12]

3. The student knows the basic methods, techniques, tools and materials used to solve simple tasks in the field of technology and chemical engineering [K_W15]

Skills

1. The student is able to work both individually and as a team in a professional and other environment [K_U02]

2. The student is able to use mathematical knowledge to simulate, design, optimize and characterize simple chemical processes and unit operations [K_U08]

3. The student is able, in accordance with the given specification, to design simple devices, apparatuses, objects, systems or plan processes typical for chemical technology, using appropriate methods, techniques and tools [K_U15]

Social competences

1. The student is able to cooperate and work in a group, inspire and integrate engineering environments [K_K03]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The skills acquired during the project classes are verified on the basis of a test, documentation of the project and defense of the project. The final grade is issued based on the arithmetic mean calculated from the grades obtained for the test and the grades obtained for the design and defense of the project (up to 2.74 - unsatisfactory; from 2.75 to 3.24 - sufficient; from 3.25 to 3.74 - a sufficient plus; from 3.75 to 4.24 - good; from 4.25 to 4.74 - a good plus; from 4.75 - very good). Colloquium will consist of 3-4 tasks. Minimum threshold: 50% points.

Examination will be in an online form on the same terms via the eMeeting platform or another platform recommended by the Poznań University of Technology.

Programme content

Course covers the following topics:

1. Convective heat and mass transfer

2. Condensation

3. Overall heat transfer coefficient

4. Calculation of heat transfer area

5. Overall mass transfer coefficient

Teaching methods

Multimedia presentation, illustrated with tasks solved on the board.

Bibliography

Basic

1. Serth R.W., Lestina T.G., Process Heat Transfer, Principles, Applications and Rules of Thumb, Elsevier, 2nd edition, 2014

2. Coulson J.M., Richardson J.F.: Chemical Engineering, vol. I-VI, Butterworth Heinemann, Oxford 1999-2002.

3. Manglik Raj, Heat Transfer Fluid Flow Data Books, Genium Publishing Corporation, 2015

4. André B. de Haan, Hans Bosch, Industrial Separation Processes, Fundamentals, Walter de Gruyter GmbH, Berlin/Boston, 2013

5. Richardson J.F., Harker J.H., Backhurst J.R., Chemical Engineering Volume 2 - Particle Technology and Separation Processes (5th Edition), Elsevier, 2002

6. Kothandaraman C.P., Fundamentals of Heat and Mass Transfer, New Age International Ltd. Publisher, 2006

Additional

1. Hobler Tadeusz., Mass Transfer and Absorbers, 1st edition, International Series of Monographs in Chemical Engineering, 1966

2. Sinnott R.K. Towler G.: Chemical Engineering Design, 5th Edition, Elsevier, 2009.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	40	1,6
Student's own work (literature studies, preparation for design classes, preparation for tests, project preparation) [1]	10	0,4

[1] delete or add other activities as appropriate