COURSE DESCRIPTION CARD - SYLLABUS

Course name
Chemical Engineering

Course

Field of study
Chemical Technology

Year/Semester
3/5

Area of study (specialization)

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

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. Jacek Różański

e-mail: Jacek.Rozanski@put.poznan.pl

tel. 61 665 2147

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

e-mail: Sylwia.Rozanski@put.poznan.pl

tel. 61 665 2789

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. Student knows the fundamental methods of scale-up - [K_W13]

Skills

1. Student can to design equipments where momentum, heat and mass transfer take place - [K_U15]

Social competences

1. The student can cooperate and work in a team [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 (3-4 tasks), 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). 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. Zarzycki R.: Wymiana ciepła i ruch masy w inżynierii środowiska, WNT, Warszawa 2005.

2. Wiśniewski S., Wiśniewski T.S., Wymiana ciepła, WNT, Warszawa 2012.

3. Hobler T.: Dyfuzyjny ruch masy i absorbery, WNT, Warszawa 1976.

4. Hobler T.: Ruch ciepła i wymienniki, WNT, Warszawa 1986.

5. Koch R., Kozioł A., Dyfuzyjno-cieplny rozdział substancji, WNT, Warszawa 1994.

6. Palica M., Gierczycki A., Lemanowicz M., Operacje inżynierii chemicznej, część 1 i 2, Wydawnictwo Politechniki Śląskiej, Gliwice 2013.

7. Broniarz-Press L. i inni: Inżynieria Chemiczna i Procesowa. Materiały Pomocnicze. Części II-III. Wydawnictwo Politechniki Poznańskiej, Poznań 1999-2005.

8. Bandrowski J., Troniewski L.: Destylacja i rektyfikacja, Wyd. Politechniki Śląskiej, Gliwice 1996.

Additional

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

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

3. Pohorecki R., Wroński S.: Termodynamika i kinetyka procesów inżynierii chemicznej, WNT, Warszawa 1977.

4. Troniewski L.: Hoblerowskie ujęcie ruchu masy, Wydawnictwo WSI, Opole 1996.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	35	1,5
Student's own work (literature studies, preparation for design classes, preparation for tests, project preparation) [1]	15	0,5

[1] delete or add other activities as appropriate