COURSE DESCRIPTION CARD - SYLLABUS

Course name
Engineering of selected processes

Course

Field of study
Chemical and process engineering

Year/Semester
1/1

Area of study (specialization)
Chemical engineering

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
15

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars
30

Number of credit points

3

Lecturers

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

e-mail: sylwia.rozanska@put.poznan.pl

tel. 61 665 2789

Responsible for the course/lecturer:

Prerequisites

Course objective

Students starting this subject should have basic knowledge in fundamentals of chemical engineering, chemical technology, plastics processing and engineering graphics. They should also have the ability to use spreadsheets, performing statistical analysis of measurement results and be ready to work in a team.

Course-related learning outcomes

Knowledge

1. Student has expanded and in-depth knowledge in chemistry and other related areas of science, allowing to formulate and solve complex tasks related to chemical engineering [K_W03]

2. A student should be aware of the dangers and threats resulting from selected processes and reactions occurring in the processing industry [K_W09]

3. A student should independently solve a given technological problem regarding the design of process apparatus in the chemical industry and related industries, as well as properly select the apparatus and process parameters occurring in them [K_W09], [K_W04]

Skills

1. A student has the ability to present the project in the form of a report or a presentation [K_U06]

2. A student has the ability to work in a team [K_U02]

3. A student has a well-established knowledge in the range of chemical and process engineering and is able to use it to design and plan technological processes [K_U09]

4. A student is able to formulate simple conclusions based on the results of calculations and measurements made, and possibly improve or correct them [K_U13]

Social competences

1. A student is able to interact and work in a group, taking on different roles [K_K03]

2. A student is aware of the consequences of incorrect use of industrial waste affecting the environmentA student is aware of the consequences of incorrect use of industrial waste affecting the environment [K_K02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified during the exam. The exam consists of 5 open questions for the same number of points. Minimum threshold: 50% points

Exam issues, on the basis of which questions are formed, will be sent to students by e-mail using the university e-mail system.

Skills acquired as part of the project classes are verified based on the developed rectification column project and the multimedia presentation on the topic given by the teacher

Programme content

1. Manufacturing and technological production process, manufacturing system (basic definitions and divisions)

2. Selected mechanical processes

3. Size reduction (theoretical basis, size reduction theories, apparatus for size reduction), application

4. Granulation (theoretical basis, apparatus and equipment for pressure and non-pressure granulation), application

5. calculation of disk granulators and ball mills

6. Tableting and briquetting (theoretical basics, tableting and briquetting devices), application.

7. Plastics processing (division of plastics)

8. Basic methods of plastic processing (extrusion, injection, calendering, pressing, casting, laminating)

9. Rubber processing, vulcanization

10. Rubber waste recycling

11. Food additives (application, properties, division)

12. Flows through porous beds

Teaching methods

1. Lecture: multimedia presentation, illustrated with examples on the board.

2. Project: multimedia presentation, illustrated with examples on the board.

Bibliography

Basic

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

2. Ashok Gupta,Denis Yan, Mineral Processing Design and Operation: An Introduction, Elsevier, 2006

3. Imeson A., Food Stabilisers, Thickeners and Gelling Agents, John Wiley & Sons Ltd, United Kingdom, 2010.

4. Ochowiak, M., Woziwodzki, S., Doligalski, M., Mitkowski, P.T. Practical Aspects of Chemical Engineering, Springer, 2018

5. Berk Z., Food Process Engineering and Technology (3rd Edition), Elsevier, 2018

Additional

1. Vogelpohl A., Disstilation, The Gruyter, 2015

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	55	2,2
Student's own work (literature studies, preparation for classes, preparation for exam, project preparation) [1]	20	0,8

[1] delete or add other activities as appropriate