



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Process equipment [S1IChiP1>AP2]

Course

Field of study

Chemical and Process Engineering

Year/Semester

2/4

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

2,00

Coordinators

dr hab. inż. Szymon Woziwodzki prof. PP
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Lecturers

Prerequisites

knowledge of graphic symbols of equipment used in the creation of technological schemes in accordance with the PN EN standard; knowledge of momentum exchange process equipment; principles of design documentation; basis of materials science and mechanical engineering; selection of momentum exchange process equipment; The student is aware of the advantages and limitations of individual and group work in solving the problems of an industrial nature and design; The student knows the limits of his knowledge and sees the need to deepen their knowledge.

Course objective

Obtaining knowledge about apparatus used in mass exchange unit operations performed in the chemical and related industries

Course-related learning outcomes

Knowledge:

1. knowledge of the basic types of apparatus used in the mass exchange processes and other. - [k_w13, k_w14]
2. knowledge of advantages and disadvantages of major process equipment. - [k_w13, k_w14]

Skills:

1. the graduate can analyze and evaluate the way of functioning of basic processes and individual operations in chemical and process engineering - [k_u16]
2. the ability to select the basic mass transfer equipment - [k_u19]

Social competences:

1. the graduate understands the need to develop and improve his/her professional and personal competencies. - [k_k01]
2. the graduate knows the limits of his own knowledge and understand the need for continuing of education. - [k_k01]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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The knowledge acquired as the lecture is verified by the exam in the form of a multiple-choice test carried out on the penultimate lecture. The exam takes place in a stationary or remote mode and consists of 20-25 questions (closed) and the threshold is 50% of the points. The test takes place in a stationary or remote mode. In the case of the remote mode, students solve tasks in a specially prepared activity in the eKursy.

Programme content

design of heat exchangers; evaporators; principles of distillation and principles of operation and selection of distillation equipment and rectification columns, installations of extractive and azeotropic distillation, reactive distillation, construction of tray columns, types of trays and types of flow on trays; principles of absorption, construction of packed columns, types of packings, unfavourable phenomena on packing, principles of extraction, construction of tray and packing extraction columns, stirred extraction columns, and pulsed extraction columns; periodic dryers; crystallizers of liquids and gases; chemical reactors: tank and tubular; energetic reactors and wind turbine.

Course topics

none

Teaching methods

Multimedia presentation, presentation illustrated with examples on the table, and resolving tasks provided by the lecturer

Bibliography

Basic

1. J. Warych, Aparatura chemiczna i procesowa, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2004
2. H. Błasiński, B. Młodziński, Aparatura przemysłu chemicznego, WNT, Warszawa, 1983
3. J. R. Couper, W. R. Penney, J. R. Fair, S. Walas, Chemical Process Equipment - Selection and Design, Elsevier 2010.

Additional

1. Aparatura chemiczna, Pikoń J., Państwowe Wydawnictwa Naukowe, Warszawa, 1983

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	25	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	25	1,00