



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Process equipment - design of cyclone [S1IChiP1>APpc]

Course

Field of study

Chemical and Process Engineering

Year/Semester

2/3

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

elective

Number of hours

Lecture

0

Laboratory classes

0

Other

0

Tutorials

0

Projects/seminars

15

Number of credit points

1,00

Coordinators

dr hab. inż. Szymon Woziwodzki prof. PP
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Lecturers

Prerequisites

basics math, physics and chemistry; principles of creation of design documentation; basis of materials science and mechanical engineering; principles of technical drawing; ability to use CAD software (AutoCAD); ability to use calculation software; ability to create a design documentation; ability to obtain information from international standards and catalogues; A student is aware of the advantages and limitations of individual and group work in solving the problems of an industrial nature and design; A student knows the limits of his knowledge and sees the need to deepen their knowledge

Course objective

The major objectives of the course is to obtain skills and knowledge about design of gas-solid separators (cyclone)

Course-related learning outcomes

Knowledge:

1. a student knows construction of cyclones - [k_w12, k_w15]
2. a student knows methods and principles of cyclones design - [k_w14, k_w15]

Skills:

1. a student knows how to design a cyclone for separation of gas-solid systems - [k_u06]
2. a student knows how to solve computational problems appearing during the design. - [k_u13]
3. a student knows how to optimize the size of cyclone and to estimate the costs of separator - [k_u20]

Social competences:

1. a student has the awareness and understanding of aspects of the practical application of knowledge. - [k_k01]
2. a student knows the limits of his own knowledge and understands the need for continuing education. - [k_k02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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The skills acquired in the project classes are verified in the form of a defense taking place in the last and penultimate classes or remote mode using eKursy system. The final assessment is the sum of the sub-points for documentation (40points) and project defense (60points). The credit threshold is 50 pts. For the remote defense mode, the student must turn on the camera and microphone.

Programme content

Issues related to the design of an apparatus for the separation of solid-gas systems.

Course topics

principles of construction of cyclones; principles of design of cyclones; calculation of separation efficiency; pressure drop in cyclone; selection, calculation and optimization of cyclone size; estimation of the costs.

Teaching methods

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

Bibliography

Basic

1. J. Warych, Procesy oczyszczania gazów. Problemy projektowo-obliczeniowe, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1999.
2. J. Warych, Oczyszczanie przemysłowych gazów odlotowych, WNT, Warszawa 1994.
3. J. Warych, Aparatura chemiczna i procesowa, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2004.

Additional

1. Aparatura chemiczna, Pikoń J., Państwowe Wydawnictwa Naukowe, Warszawa, 1983
2. A. Heim, B. Kochanski, K.W. Pyć, E. Rzyński, Projektowanie aparatury chemicznej i procesowej, Wydawnictwo Politechniki Łódzkiej, Łódź 1993.

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	5,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	5,00