



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Chemical Industry Equipment - design of centrifugal collector

### Course

Field of study

Chemical Technology

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

english

Requirements

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

Tutorials

Projects/seminars

15

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Szymon Woziwodzki

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Wydział Technologii Chemicznej

ul. Berdychowo 4, 61-131 Poznań

tel.: 61 665 2147

Responsible for the course/lecturer:

### Prerequisites



basics math, physics and chemistry; principles of engineering drawing; ability to use CAD software; ability to use calculation software; familiarity with the moodle.put.poznan.pl service; ability to create engineering design documentation; 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

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.Student knows the basic types of cyclones K\_W04
- 2.Student knows the regulations for gas treatment, K\_W07
- 3.Student knows the methods and principles of design of gas purification apparatus, K\_W16]

#### Skills

- 1.Student is able to design a cyclone for the solid-gas separation of the heterogeneous system, K\_U15
- 2.Student is able to solve computational problems that occur during design, K\_U15

#### Social competences

- 1.The student shall be aware and understood the aspects of the practical application of the acquired knowledge and skills in the design of equipments and related responsibilities, K\_K02
- 2.The student is aware of the advantages and limitations of group work, K\_K03

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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

### Programme content

During the course are discussed:

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. Couper J. R., Penney W. R., Fair, J. R., Walas, S. M., Chemical Process Equipment - Selection and Design (3rd edition), Elsevier 2012.
2. PN-EN ISO 10628 Schematy technologiczne instalacji przemysłowych. Zasady ogólne  
Towler G., Sinnott R., Chemical Engineering Design - Principles, Practice and Economics of Plant and Process Design (2nd Edition), Elsevier 2013.

### Additional

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.

## Breakdown of average student's workload

	Hours	ECTS
Total workload	40	2,0
Classes requiring direct contact with the teacher	20	1,0
Student's own work (literature studies, preparation fo classes, preparation for defence, project preparation) <sup>1</sup>	20	1,0

<sup>1</sup> delete or add other activities as appropriate