



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Design of centrifugal collector [S1TCh2>PC]

### Course

Field of study

Chemical Technology

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

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 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 in stationary mode or 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

Cyclone design issues.

### Course topics

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. 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. A. Heim, B. Kochanski, K.W. Pyć, E. Rzyński, Projektowanie aparatury chemicznej i procesowej, Wydawnictwo Politechniki Łódzkiej, Łódź 1993.
2. Ustawa z dnia 27 kwietnia 2001 roku Prawo ochrony środowiska, (Dz.U.2001.62.627 z dnia 20 czerwca 2001 r.)

### Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	10	0,50