



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Chemical Industry Equipment - Design of Sedimentation Tank

### Course

Field of study

Chemical Technology

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

II/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

Responsible for the course/lecturer:

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Wydział Technologii Chemicznej

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### 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 are to obtain skills and knowledge about design of the sedimentation



tank as well as training of ability to creation of flowsheets of process installations as well as obtaining skills to create process flow diagrams

### Course-related learning outcomes

#### Knowledge

1. Student knows construction of various sedimentation tanks - [K\_W12]
2. Student knows the legal basis for the purification of liquids - [K\_W07]
3. Student knows methods and principles of design of sedimentation tanks [K\_W12]
4. Student knows creation of process flow diagrams [K\_W14]

#### Skills

1. Student knows how to design a basic installation for sedimentation process - [K\_U15]
2. Student knows how to solve computational problems appearing during the design. - [K\_U33]
3. Student can collect information from literature data and from catalogues [K\_U01]
4. Student can create technological schemes od installations [K\_U03]

#### Social competences

1. Student has the awareness and understanding of aspects of the practical application of knowledge. - [K\_K01]
2. Student knows the limits of his own knowledge and understands the need for continuing education. - [K\_K02]
3. Student knows the limitation of work in groups. [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. 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 sedimentation tanks and installation; principles of sedimentation; selection of flocculants and coagulants; models of sedimentation; calculation of sedimentation area (settling velocity method); selection of pumps; calculation of drop pressure in pipelines; selection of pipelines fittings; creation of flow sheet diagrams.

### 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
3. García M.H., Sedimentation Engineering - Processes, Measurements, Modeling, and Practice, ASCE, 2008.

### Additional

1. J. Bandrowski, H. Merta, J. Ziolo, Sedymentacja zawiesin. Zasady i projektowanie, Wydawnictwo Politechniki Śląskiej, Gliwice, 2001.

## Breakdown of average student's workload

	Hours	ECTS
Total workload	45	2,0
Classes requiring direct contact with the teacher	25	1,1
Student's own work (literature studies, preparation fo classes, preparation for defence/exam, project preparation) <sup>1</sup>	20	0,9

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