



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Technical Drawings with descriptive geometry and CAD

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### Course

Field of study

Environmental Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

1 / 1

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

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### Number of hours

Lecture

12

Tutorials

20

Laboratory classes

16

Projects/seminars

Other (e.g. online)

### Number of credit points

5

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### Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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### Prerequisites

Basic knowledge about geometry (high school level).



Basic knowledge about Windows operating system.

Ability to work in team. Awareness of the need to continually update and supplement one's knowledge and skills.

### Course objective

Learning to visualize three-dimensional objects on a plane, solving selected engineering problems using descriptive geometry.

Learning the skills necessary to prepare technical drawings, especially for HVAC and other building systems, using specialized CAD software.

### Course-related learning outcomes

#### Knowledge

Definitions and basic transformations in descriptive geometry.

Basic principles of machine technical drawing (side-view, cross-section, dimensions, comments).

Rules applicable in architectural and building utility systems drawings (cross-view, dimensions, symbols).

Principles of drawing and symbols used in technical diagrams and axonometric/isometric drawings of building utility systems.

Knowledge on how to use selected CAD software.

#### Skills

Student can prepare simple technical drawing, using descriptive geometry methods if necessary.

Student can draw single part of mechanical device using CAD software.

Student can draw simple building (plan view and cross-section) using CAD software.

Student can make a drawing of simple building utility installation as a plan drawing, simple technical diagram and isometric diagram, using CAD software.

#### Social competences

Awareness of the need to constantly acquire and expand knowledge in order to competently pursue the career in engineering.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures: final test

Checking and grading technical drawings made by student during the classes (tutorials and laboratories).

### Programme content

Lectures:



- basic information on descriptive geometry (definitions, objects, transformations),
- general principles of technical drawing - paper sizes, drawing scale, tables, comments, line thicknesses, types of lines,
- mechanical drawing principles - side-view, section, details, dimensioning, dimensional tolerance, comments,
- construction drawing principles - projections, cross-sections, dimensioning, types of lines, hatches, comments,
- building utility systems drawing principles - drawing HVAC systems on existing construction drawings, drawing simple diagrams, axonometric view, isometric view, symbols, descriptions, specifications.

#### Tutorials:

- practical drawing exercises in technical drawing and descriptive geometry.

#### Laboratory classes:

- practical drawing exercises based on the knowledge provided in lectures and tutorials, using CAD software.

#### Teaching methods

Lectures: multimedia presentation.

Exercises: practical drawing tasks performed by students.

Laboratory classes: multimedia presentation and practical tasks performed by students (drawing using CAD software).

#### Bibliography

##### Basic

Rysunek techniczny w mechanice i budowie maszyn, Paweł Romanowicz, PWN (available on IBUK web platform).

##### Additional

Polish standards concerning technical drawings.

Manuals and tutorials made available by CAD software providers.



### Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	48	2,0
Student's own work (preparation for tutorials and laboratory classes - studying literature, additional drawing exercises prepared by the teacher and made outside classes, preparation for tests) <sup>1</sup>	77	2,0

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