



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

CAD systems in digital prototyping of technical objects

### Course

Field of study

Electrical Engineering

Area of study (specialization)

Energy conversion and control systems in mechatronics

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

4/8

Profile of study

general academic

Course offered in

polish

Requirements

elective

### Number of hours

Lecture

20

Laboratory classes

10

Other (e.g. online)

Tutorials

Projects/seminars

10

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Krzysztof Kowalski

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### Prerequisites

Basic knowledge of electrical engineering, electrical machines and system Windows. Basics of engineering structures at a general level. Ability to effectively self-education in a field related to the chosen field of study. The need to broaden their competence, willingness to work together as a team.

### Course objective

Acquiring the ability to use software for computer-aided prototyping of technical objects and creating graphic documentation. Acquiring the skills of computer visualization of technical construction elements in two-dimensional and three-dimensional systems.

### Course-related learning outcomes

Knowledge

Orderly and theoretically grounded general knowledge in the field of key IT issues necessary for an



electrical engineer. Basic knowledge of the graphic representation of the structure, knows the rules of the projection, creating sections, dimensioning engineering applications.

#### Skills

He can formulate an algorithm uses a programming language and related software tools used in electrical engineering. The use of properly chosen development environments, simulators and software tools to support the design serving to simulate, design and analysis of simple electrical circuits.

#### Social competences

Ability to act in an entrepreneurial manner in the area of electrical engineering.

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge of the lecture is verified during the exam which consists of the task of checking the student's skills. Passing threshold: 50% of points.

Project: Acquired knowledge is verified by completing a project task. Passing threshold: 50% of points.

Laboratory: Skills from laboratory exercises are verified on the basis of current tasks carried out during classes and control work. Passing threshold: 50% of points.

#### Programme content

Lecture: Technical objects in computer graphic technology. Basics of technical drawing in electrical issues. Basics of creating and modifying technical documentation. Characteristics of modern CAD packages. Basic elements and tools of the AutoCAD program. Two- and three-dimensional issues in the computer graphic technology. Digital modeling and prototyping of technical objects.

Project: Implementation of a design task using the AutoCAD program. Basics of parameterization of model of technical object. Extracting design data and exchanging data between different CAD systems.

Laboratory: Parametric modeling of two and three-dimensional technical objects. Work with 3D models in terms of their visualization and preparation for simulation calculations. Creating technical construction documentation.

#### Teaching methods

Lecture: multimedia presentation, illustrated with examples, initiating discussions during the lecture. Additional educational materials for students.

Project: performing project tasks, initiating discussions during classes. Additional educational materials for students.

Laboratory: implementation of design exercises using the modeling and visualization tools learned.

#### Bibliography



Basic

1. Jaskulski A. Autocad 2016 / LT2016 / 360 +. Kurs projektowania parametrycznego i nieparametrycznego 2D i 3D, Wydawnictwo Naukowe PWN SA, Warszawa 2015
2. Fołęga P., Wojnar G., Czech P.; Zasady zapisu konstrukcji Maszyn, Wydawnictwo Politechniki Śląskiej, Gliwice 2014.
3. Chlebus E. Techniki komputerowe CAx w inżynierii produkcji, WNT, Warszawa 2000.
4. Documentation of AutoCAD system.

Additional

1. Documentation of CAx programs on websites.

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	75	3,0
Classes requiring direct contact with the teacher	55	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	20	1,0

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