



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Computer aided design

### Course

Field of study

Construction and Exploitation of Means of Transport

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

9

Laboratory classes

18

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

Piotr Posadzy Ph.D.

Responsible for the course/lecturer:

second person allowed

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Faculty of Mechanical Engineering

Institute of Applied Mechanics

Division of Virtual Engineering

Jana Pawła II str. 24, 60-965 Poznań

### Prerequisites

KNOWLEDGE: Basics of engineering and computer graphics. Basic knowledge of general mechanics and material strength.

SKILLS: The ability to use various sources of information, including manuals and technical documentation. Ability to model 3D parts and assemblies in CAD systems (e.g. Solid Works, Inventor, Catia)



**SOCIAL COMPETENCES:** The student is able to work in a group, assuming different roles. The student demonstrates independence in solving problems, acquiring and improving his knowledge and skills.

### Course objective

Learning the basic tools and methods of mechanical CAD design. Mastering the tools of integrated design.

### Course-related learning outcomes

#### Knowledge

Basic knowledge of the basics of machine construction. Has a basic knowledge of the standardized rules of notation of structures and engineering graphics

#### Skills

Student can obtain information from literature, the Internet, databases and other sources. Can integrate the obtained information, interpret and draw conclusions from it, as well as create and justify opinions

Student is able to use integrated with the packages for spatial modeling, programs for calculating mechanical structures with the method of elements

Student is able to use popular packages for editing technical drawings and 3D modeling to the extent enabling the creation of drawing documentation in accordance with applicable drawing standards and models of virtual machines in three-dimensional space

Student can prepare a technical descriptive and drawing documentation of an engineering task

#### Social competences

Student is ready to critically assess his knowledge and received content

Student is ready to recognize the importance of knowledge in solving cognitive and practical problems and consult experts in the event of difficulties in solving the problem on its own

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written credit for the lecture (test). Ongoing assessment of the state of knowledge in the laboratory.

### Programme content

Definition of computer aided design. Solid modeling. Technical documentation 3D vs. 2D. Structure parameterization. Variation in the construction process. Using databases of standard elements. 3D simulations. Strength analyzes (FEM). Rapid Prototyping methods. 3D scanning

### Teaching methods

Lecture with multimedia presentation

Laboratory - work on a computer in the Solid Works environment

### Bibliography



Basic

O.C. Zienkiewicz: Metoda Elementów Skończonych. WNT Warszawa 1977

M. Kleiber: Komputerowe Metody Mechaniki Ciał Stałych, PWN 1995, ISBN 83-01-11740-0

Additional

Didactic materials of the Department of Virtual Engineering (Institute of Applied Mechanics)

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	96	4,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes, preparation for tests) <sup>1</sup>	58	2,0

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