



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

CAD

### Course

Field of study

Aviation and cosmonautics

Area of study (specialization)

-

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

1/1

Profile of study

practical

Course offered in

Polish

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

15

### Number of credit points

2

### Lecturers

Responsible for the course/lecturer:

mgr inż. Tomasz Staśkiewicz

tomasz.staskiewicz@put.poznan.pl

tel. (61) 665 2012

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, pok. 722, 60-965 Poznań

Responsible for the course/lecturer:

mgr inż. Mateusz Jüngst

mateusz.m.jungst@doctorate.put.poznan.pl

tel. (61) 665 2023

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, pok. 311, 60-965 Poznań

### Prerequisites

The student has a basic knowledge of the machine construction and their role in the modern world. The student is able to use technical drawing and has spatial imagination in order to read, understand and prepare three-dimensional models of technical objects and their documentation. The student is able to use the acquired knowledge to analyze specific phenomena and processes occurring in the operation of rail vehicles. The student is able to solve specific problems that arise during the construction of technical objects. The student is able to work in a group, taking different roles in it. The student is able to determine the priorities important in solving the tasks set before him. The student shows independence in solving problems, acquiring and improving the gained knowledge and skills.



## Course objective

The aim of the course is to learn how to use the CAD SolidWorks program on the example of designing rocket models. Students acquire the ability to make models of single parts, assemblies and technical documentation. Optionally, students can obtain the following certificates: Certified SolidWorks Associate and Certified SolidWorks Professional.

## Course-related learning outcomes

### Knowledge

The student has detailed knowledge of design tools for solid modeling, creating parametric models. The student has detailed knowledge of the operations used, geometrical relationships and the creation of correct construction models.

### Skills

The student is able to obtain information from literature, the internet, databases and other sources, in Polish and foreign languages, can communicate using various techniques in the professional environment and other environments using the formal notation of construction, technical drawing. Has the ability to self-educate with the use of modern teaching tools, such as remote lectures, internet sites and databases, teaching programs, books and electronic journals. Student is able to draw by hand machine elements and diagrams in accordance with the rules of technical drawing according to European standards.

### Social competences

The student understands the need and knows the possibilities of continuous training, knows the need to acquire new knowledge for professional development, is aware of responsibility for his own work and ready to submit to the principles of teamwork and responsibility for jointly performed tasks, is aware of transferring the acquired knowledge to society, undertakes efforts to make the information understandable.

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Passing a test in the form of a business rocket model presentation test, 2D construction documentation and model test flight. An additional component of the final grade in the subject is activity in the classroom and social skills while working in a group, assessed by the teacher.

## Programme content

- using the CAD program interface (adjusting it to user preferences), editing the view position, modifying the graphic representation of the designed object, built-in 3D visualization program tools
- using the OpenRocket program interface (creating a rocket concept, flight simulation, adjusting the structure to design requirements)
- reading technical drawings, creating and modifying 2D sketches, creating adaptive sketches, duplicating operations



- creation of solid elements by the extrude operations, their modification by cutting operations and the hole wizard, duplicating operations
- creating assemblies of many parts, creating mates between components
- creating technical documentation of designed technical objects, editing the sheet, inserting annotations

### Teaching methods

Lecture with a multimedia presentation, independent work with computers (Solidworks, OpenRocket software), credit for the multimedia presentation and the flight of the rocket model. Materials available on the Moodle platform.

### Bibliography

Basic

1. Domański J.: SolidWorks 2014. Projektowanie maszyn i konstrukcji. Praktyczne przykłady (ebook), Wydawnictwo Helion 2015.
2. SolidWorks user manual.
3. Babiuch M.: SolidWorks 2009 PL. Ćwiczenia, Wydawnictwo Helion 2009.

Additional

1. Dobrzański T., Rysunek techniczny maszynowy, Wydawnictwo Naukowo-Techniczne 2013.

### Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,0
Classes requiring direct contact with the teacher	30	1,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	30	1,0

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