



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Engineering Graphics

### Course

Field of study

Automatic Control and Robotics

Area of study (specialization)

-

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

2/4

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

### Number of hours

Lecture

8

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

18

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Paweł Drapikowski

Responsible for the course/lecturer:

dr inż. Adam Turkot

### Prerequisites

The student starting the subject should have expanded and in-depth knowledge of selected branches of mathematics. He should also be able to obtain information from specified sources and be willing to cooperate as part of a team.

### Course objective

Transfer of knowledge as well as education and development of skills regarding methods of preparing and reading technical drawings used in the documentation of elements of automation and robotics systems.

### Course-related learning outcomes

Knowledge



K1\_W3. Has ordered and theoretically founded general knowledge in the field of general mechanics: statics, kinematics and dynamics, including the knowledge necessary to understand the principles of modeling and construction of simple mechanical systems. Knows and understands typical engineering technologies, principles and techniques for constructing simple automation and robotics systems;

K1\_W20. Knows and understands typical engineering technologies, principles and techniques for constructing simple automation and robotics systems.

K1\_W23. Knows the methods, techniques, tools and materials used to solve simple engineering tasks in the field of automation and robotics.

#### Skills

K1\_U2. Can read and understand project technical documentation and simple technological diagrams of automation and robotics systems.

K1\_U24. Is able to assess the usefulness of routine methods and tools for the design of automation and robotics systems, and choose and apply the right method and tools.

K1\_U25. Is able to design simple mechanical components for various applications (including material properties).

#### Social competences

K1\_K5. Is aware of the need for a professional approach to technical issues, meticulous reading of documentation and environmental conditions in which devices and their components can function. He is ready to comply with the rules of professional ethics and to demand that of others, respecting the diversity of views and cultures.

K1\_K3. Is aware of the responsibility for own work and readiness to comply with the principles of teamwork and taking responsibility for jointly implemented tasks; can manage a small team, set goals and set priorities for achieving them; is ready to perform responsible professional roles.

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

Learning outcomes presented above are verified as follows:

Lecture: Credit in the form of a multiple-choice test.

Project: Evaluation of completed projects

#### Programme content

Lecture. Basic principles for preparing technical project documentation, including: selection of drawing type, projection principles, dimensioning, tolerance and surface roughness description. Modeling and representation methods of 3D objects used in CAD systems. Methods for modeling structures consisting of more elements and interactions between them (modeling mechanisms). Reverse engineering methods in the field of geometric features of objects (3D scanning) and methods of rapid prototyping (FDM, STL, SLS, DLP) will be presented.

Project.



It includes independent modeling of parts and mechanisms, their spatial graphic representation in the form of presentations and the implementation of two-dimensional technical drawings made with the help of the CAD Autodesk Inventor environment. Design and manufacture of elements by rapid prototyping techniques and the use of reverse engineering techniques to verify the quality of manufactured elements.

### Teaching methods

Lecture: multimedia presentation, illustrated with real examples of technical solutions.

Project: consultation with the teacher, presentations, implementation of projects.

### Bibliography

Basic

1. T.Dobrzański, Rysunek Techniczny Maszynowy, WNT Warszawa.
2. Dokumentacja i tutoriale środowiska Autodesk Inventor.

Additional

1. J. D. Foley i inni, Wprowadzenie do grafiki komputerowej, WNT Warszawa

### Breakdown of average student's workload

	Hours	ECTS
Total workload	90	4,0
Classes requiring direct contact with the teacher	26	1,5
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	64	2,5

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

