



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

ENGINEERING GRAPHICS

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### Course

Field of study

Year/Semester

Material Engineering

1/1

Area of study (specialization)

Profile of study

-

general academic

Level of study

Course offered in

First-cycle studies

English

Form of study

Requirements

full-time

compulsory

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### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

0

0

Tutorials

Projects/seminars

15

0

**Number of credit points**

0

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### Lecturers

Responsible for the course/lecturer:

Responsible for the course/lecturer:

dr hab. inż. Marek Zabłocki, prof. PP

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### Prerequisites

Knowledge: basic in mathematics, technology

Skills: using drawing instruments, logical thinking, obtaining information from the library

Social competences: understanding the need for learning and acquiring new knowledge

### Course objective

Knowledge of methods and practical ability to use and create technical drawing documentation - machine drawing

### Course-related learning outcomes

Knowledge



Has basic knowledge of engineering graphics, allowing designing objects, machine elements; formulate and analyze problems; look for solution concepts; select and evaluate solution options; use knowledge bases in engineering design, technical drawing; read drawings and diagrams of machinery, equipment and technical systems; describe their structure and operating principles.

#### Skills

Is able to obtain information from literature and other properly selected sources from material engineering.

Can communicate using various techniques in a professional environment and other environments.

Has the ability to self-study. Has the preparation necessary to work in an industrial environment.

#### Social competences

Understands the need for lifelong learning; can inspire and organize the learning process of others.

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

Learning outcomes presented above are verified as follows:

Lecture: Credit based on a test consisting of 2 detailed theoretical and drawing questions

Tutorials: Credit on the basis of a briefcase with drawings (drawings made in class and at home) and colloquium with drawing tasks

#### Programme content

1. Methods of recording the geometric form of the structure, standardized elements of recording, drawing economy
2. Executive drawing:
  - a) rectangular projection, views and cross-sections (European projection method (reference system, layout of projections, basic projections), projection rules, presentation rules: flat surfaces and repeating elements; auxiliary views; detail of the construction enlarged; straight cutting plane; bended cutting plane; half cutting plane; partial cutting plane; walls cutting plane, ribs in selection, wheel arms, etc.; permeation lines in a simplified and accurate manner (e.g. penetration of cylinders, cuboid with a cylinder, theoretical penetration lines));
  - b) dimensioning (including the principles of: dimensioning from machining bases; dimensioning from structural bases; dimensioning from measuring bases; non-closing the dimensional chain; principle of avoiding dimensions; principle of omitting obvious dimensions; dimensioning of curvilinear contours; dimensioning of identical repeating elements; dimensioning of cone and wedge) and bevelled edges; regular polygons with an even number of sides and objects shown in one plan; dimensioning of arcs of circles and the length of the object being bent);
  - c) tolerances, roughness, (normal tolerances of free and tolerated linear dimensions; fits; shape and position tolerances; surface roughness); determination of heat treatment and coatings



d) drawing simplifications of welded joints; threads and threaded connections; splined and multi-card connections; springs; gears and wheels

3. Assembly drawing

4. Kinematic schemes

### Teaching methods

1. Lecture with multimedia presentation (form of informative lecture with elements of problem and conversation lecture)

2. Tutorials - credit on the basis of colloquium, own homework and activity during classes (using classic methods, case study, discussion, practical exercises)

### Bibliography

Basic

1.Dobrzański T.: Rysunek techniczny maszynowy, WNT, Warszawa 2009

2.Bober A., Dudziak M.: Zapis konstrukcji; Wyd. Politechniki Poznańskiej, Poznań 1996

Additional

1.Rydzanicz I.: Rysunek techniczny jako zapis konstrukcji, WNT, Warszawa 2004

### Breakdown of average student's workload

	Hours	ECTS
Total workload	90	2,0
Classes requiring direct contact with the teacher	45	1,0
Student's own work (literature studies, preparation for tutorials, preparation for tests, project preparation) <sup>1</sup>	45	1,0

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