



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Engineering drawing

### Course

Field of study

Year/Semester

Aerospace Engineering

Area of study (specialization)

Profile of study

general academic

Level of study

First-cycle studies

Course offered in

polish

Form of study

Requirements

full-time

compulsory

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

30

Tutorials

Projects/seminars

### Number of credit points

4

### Lecturers

Responsible for the course/lecturer:

dr inż. Maciej Berdychowski

Responsible for the course/lecturer:

dr inż. Dominik Wilczyński

email: maciej.berdychowski@put.poznan.pl

email: dominik.wilczynski@put.poznan.pl

tel. 61 224 4512

tel. 61 224-4512

Wydział Inżynierii Mechanicznej

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ul. Piotrowo 3, 60-965 Poznań

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### Prerequisites

Fundamental knowledge on geometry and stereometry.

Fundamental knowledge on theory of machines and machine parts.

### Course objective

Mastership of basic principles of image construction of spatial objects on the plane. Training of spatial imagination.

Learning the methods and principles of engineering drawing. Practical skills of preparing the technical documentation. Skills of "reading" the engineering drawing.



### Course-related learning outcomes

#### Knowledge

1. has knowledge in the field of technical drawing and machine construction
2. has expanded knowledge necessary to understand profile subjects and specialist knowledge related to the preparation of technical documentation illustrating the construction, construction of aircraft and their safety systems
3. has basic knowledge about the technical description of devices, facilities and technical systems in the field of aviation engineering

#### Skills

1. is able to communicate in a professional environment and other environments using the techniques of recording construction (the so-called technical drawing), concepts and definitions of the scope of the studied field of study
2. can prepare a diagram and drawing of a simple machine element in accordance with the principles of technical drawing
3. can create a schematic of the mechanical, aerodynamic, automatic, electrical and electronic system components of aircraft machines or devices [

#### Social competences

1. is aware of the importance of maintaining the principles of professional ethics
2. understands the need for critical assessment of knowledge and continuous learning
3. is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the associated responsibility for the decisions taken

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam from lecture, passing laboratories on the basis of completed tasks / exercises.

### Programme content

1. Introduction, standardization in engineering drawing.
2. Projection of 3D objects on the plane of the drawing.
3. Presentation of object interior with the use of sectional views, types of sectional views.
4. Presentation of object cross-section with the use of revolved section.
5. The application of geometrical constructions for drawing the objects.
6. Lines of intersection of typical solids.



7. Dimensioning.
8. Tolerances for production drawings and fits for assembly drawings.
9. Geometrical Product Specification.
10. Production drawings for shaft and hub. Splines.
11. Production drawings for gear wheels.
12. Assembly drawings of screw joints and splined connections.
13. Simplifications for rolling bearings drawings.
14. The principles of drawing welds and welded joints.
15. The design of bearing modulus.
16. The analysis ("reading") of assembly drawings.

PART-66

#### MODULE 7A. MAINTENANCE ACTIVITIES

##### 7.5 Engineering drawings, charts and standards

Types of technical drawings, charts, their symbols, dimensions, tolerances and projections; Information identifying title tablets; Microfilms, microcards and computer presentations; Specification 100 of the American Air Transport Association (ATA); Aviation and other applicable standards along with ISO, AN, MS, NAS and MIL; Electrical installation graphs and schematic diagrams. [2]

##### 7.6 Fitting and clarifying

Drill sizes for screw holes, fit classes; Commonly used fit and clarification system; Fit and clarification schedule for aircraft and engines; Limits on bending, twisting and abrasion; Standard methods for checking shafts, bearings and other parts. [2]

#### Teaching methods

1. Lecture: multimedia presentation, supplemented with examples given on the board
2. Laboratories: Illustrated teaching boards or multimedia presentations, supplemented with examples on the board; performing the tasks given by the teacher – practical exercises

#### Bibliography

Basic

1. Dobrzański T., Rysunek techniczny maszynowy, WNT, W-wa 1997.
2. Lewandowski T., Rysunek techniczny dla mechaników, WSiP, W-wa 2009.



3. Bajkowski J., Podstawy zapisu konstrukcji, Oficyna Wyd. Polit. Warszawskiej, 2014
4. Bober A, Dudziak M., Zapis konstrukcji, PWN, W-wa 1999.
4. Jankowski W. Geometria Wykreślna. Wydawnictwo P.P. 1999 r.
6. Korczak J., Prętki Cz. Przekroje i rozwinięcia powierzchni walcowych i stożkowych. Wydawnictwo P.P. 1999 r.
7. Loska J., Zbiór zadań ćwiczeniowych z rysunku technicznego, Wyd. Politechniki Śląskiej, Gliwice 1982

Additional

1. Freuch T.E., Vierck C.I., Fundamentals of engineering drawing, McGraw-Hill Book Co., New York 1960.
2. Freuch T.E., Vierck C.I., Engineering drawing and graphic technology, McGraw-Hill Book Co., New York 1972.

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	104	4,0
Classes requiring direct contact with the teacher	50	2,0
Student's own work (literature studies, preparation for laboratory classes, preparation for lecture test) <sup>1</sup>	54	2,0

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