COURSE DESCRIPTION CARD - SYLLABUS

Course name
Engineering graphics [S1MwT1>GI]

Course

Field of study
Mathematics in Technology

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
30

Laboratory classes
30

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

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Lecturers

mgr inż. Robert Salamon
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Prerequisites

The student starting this subject should have basic knowledge in geometry. He should also have the ability to think logically and using information found in the library and on the Internet, and be willing to cooperate as part of a team.

Course objective

Getting to know the basics of engineering graphics covered by program content, acquiring the skills to shape and develop spatial imagination, practical creation of drawing technical documentation.

Course-related learning outcomes

Knowledge:
•has systematized and theoretically founded knowledge of computer science, including numerical methods; knows at least one software package or ap rogramming language;
•has a basick nowledge of engineering graphics;
•knows and understands engineering technologies and is familiar with the latest development trends in the field of study.
Skills:

•can formulate an engineering problem, conduct detailed research using analytical or simulation or experimental methods, interpret the results obtained and draw conclusions;
•is able to develop documentation or prepare a speech along with a multimedia presentation related to the implementation of an engineering task using specialized terminology;
•can work individually and in a team and interact with other people; knows how to estimate the time needed to complete the task; is able to develop and implement a work schedule to ensure that the deadline is met.
Social competences:
•is aware of the level of their knowledge in relation to research in exact and natural sciences as well as engineering and technical sciences;
•is aware of the deepening and expansion of knowledge to solve newly created technical problems;
•is aware of their social role as a graduate of a technical university, is ready to pass on popular science content to the public and to identify and resolve basic problems related to the field of study.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures: knowledge acquired during the lecture is verified by the exam during the session; the exam consists of several dozen questions (test and open), variously scored; passing threshold: 50% of points. Exam issues, on the basis of which questions are prepared, will be sent to students by e-mail using the university e-mail system.

Laboratory classes: skills acquired as part of the laboratory classes are verified on the basis of a final test, consisting of 3-5 tasks dierently scored depending on their level of diculty and on the basis of prepared reports on selected classes. Passing threshold: 50% of points.

Programme content

Lectures:
• introduction to engineering graphics (discussion of basic concepts such as technical drawing and its types, cross-section, layout, scale, line and dimensional number;
• mapping of 3D objects on the drawing plane (projection and axonometry);
• views, cross-sections, layouts and their types;
• principles Dimensioning;
• geometric features of the surface structure and their recording in the drawing (wavy, roughness, directionality of the surface’s geometric structure, heat treatment);
• dimensional tolerances, shape and position and fit. pins, splined elements);
• rolling and plain bearings;
• welds and joints;
• gear wheels and mechanical gears. Assembly drawing and its properties.

Laboratory classes:
• introduction to the CAD system and its characteristics. Use of basic drawing functions: line, polyline, circle, arc, polygon, ellipse;
• using the basic functions of changing shape and position: copy, move, stretch, mirror, scale, round, cut, erase, smash, style;
• dimensioning in the CAD system;
• defining layers and the ability to draw using appropriate drawing lines (thin, thick, hidden lines, symmetry axes, etc.);
• projection in CAD (ability to present 3D objects and draw a missing view);
• using the hatch function to draw cross-sections and sets of 3D objects (half-section, broken section, ability to draw missing sections);
• ability to draw threaded connections;
• creating technical documentation of simple elements of detailed drawings;
• ability to model 3D objects (using the extrusion function, logical operations on solids, cross-sectional planes, etc.);
• the use of dimensional numbers scaling and drawing details in the increased scale.

Teaching methods

Lectures: lecture with audiovisual aids supplemented with interactive, problem-based discussion.

Laboratory classes: laboratory supplemented with audiovisual aids, using software available for students at home.

Bibliography

Basic
• Dobrzański T., Rysunek techniczny maszynowy, WNT, W-wa 1997.
• Lewandowski T., Rysunek techniczny dla mechaników, WSiP, W-wa 2009.
• Jankowski W. Geometria Wykreślna. Wydawnictwo P.P. 1999.
Additional
• Bober A, Dudziak M., Zapis konstrukcji, PWN, W-wa 1999.
• Korczak J., Prętki Cz. Przekroje i rozwinięcia powierzchni walcowych i stożkowych. Wydawnictwo P.P. 1999.
• Freuch T.E., Vierck C.I., Engineering drawing and grafic technology, McGraw-Hill Book Co., New York 1972.
• Freuch T.E., Vierck C.I., Fundamentales of engineering drawing, McGraw-Hill Book Co., New York 1960.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	60	2,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	40	1,50