COURSE DESCRIPTION CARD - SYLLABUS

Course name
Computer-Aided Engineering Graphics [S1DSwB1>KGI]

Course

Field of study
Data Science in Business

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
15

Laboratory classes
15

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

The student should have knowledge of basic geometry and technical drawing.

Course objective

Familiarizing students with key concepts in technical drawing, considering Polish Standards (PN) and Computer-Aided Design (CAD). Based on mechanical drawing principles, the course introduces electrical, architectural, and machine construction drawings. Students will develop the ability to interpret technical drawings effectively.

Course-related learning outcomes

Knowledge:
Charakterizes different types of technical drawings, their formats, and standardized elements such as axes, shafts, bearings, couplings, and brakes [DSB1_W07].
Explains the principles of dimensioning, tolerance specification for dimensions, shape, and position, as

well as the notation of surface roughness and waviness on technical drawings [DSB1_W03].
Describes mechanical, hydraulic, and pneumatic schematics, along with fundamental elements of electrical, chemical, and architectural drawings [DSB1_W03].

Skills:
Creates detailed and assembly drawings using engineering graphics software, adhering to technical standards [DSB1_U08].
Models and edits objects in a 3D space, preparing technical documentation in accordance with engineering requirements [DSB1_U03].
Analyzes and interprets technical drawings across various industries, including mechanical, hydraulic, pneumatic, and architectural fields [DSB1_U07].
Applies tools for dimensioning, tolerancing, and marking elements on technical drawings in compliance with applicable standards [DSB1_U05].
Utilizes CAD software to create diagrams, nomograms, and technical schematics for various industrial sectors [DSB1_U09].

Social competences:
Collaborates in project teams, using tools for creating and editing technical documentation [DSB1_K02].
Adheres to technical standards and norms in the process of designing and documenting engineering objects [DSB1_K05].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture:
Formative assessment: Based on responses to questions regarding material covered in previous lectures.
Summative assessment: Completion based on a multiple-choice test.
Laboratory:
Formative assessment: Based on the ongoing evaluation of progress in completing technical drawing tasks.
Summative assessment: Completion based on the execution of technical drawings related to the course content.
Passing threshold: 50% of total points.
Grading scale:
0 - 49: Fail
50 - 59: Satisfactory
60 - 69: Satisfactory plus
70 - 79: Good
80 - 89: Good plus
90 - 100: Very good

Programme content

Lecture:
Types of technical drawings, sheet formats, standardized drawing elements, types and arrangement of projections, views and sections, dimensioning, tolerance of dimensions, shape, and position, surface roughness and waviness notation, machine part connections, axes, shafts, bearings, couplings, and brakes. Drawing and interpreting schematics: mechanical, hydraulic, pneumatic, thermal power engineering, and vacuum technology, as well as elements of electrical, chemical, and architectural drawings.
Laboratory:
Execution of detailed and assembly drawings, including 3D models, as well as diagrams and nomograms.

Course topics

Lecture:
Types of technical drawings, sheet formats, standardized drawing elements, types and arrangement of projections, views and sections, dimensioning, tolerance of dimensions, shape, and position, surface roughness and waviness notation, machine part connections, axes, shafts, bearings, couplings, and brakes. Drawing and interpreting schematics: mechanical, hydraulic, pneumatic, thermal power

engineering, and vacuum technology, as well as elements of electrical, chemical, and architectural drawings.
Laboratory:
Execution of detailed and assembly drawings, including 3D models, as well as diagrams and nomograms.

Teaching methods

Lecture:
Monographic lecture using a computer, with program content divided into distinct thematic areas, aligned with the scope of practical exercises.
Laboratory:
Exercise-based method (explanations and clarifications) incorporating elements of the demonstrative method and discussion, following the course content.

Bibliography

Basic:
1. Agaciński P., Grafika inżynierska, Wydawnictwo Politechniki Poznańskiej, Poznań, 2014.
2. Dobrzański T., Rysunek techniczny maszynowy, Wydawnictwo Naukowe PWN, Warszawa, 2019.
3. Zakres aktualnych aktów normatywnych z zakresu rysunku technicznego.

Additional:
1. Molasy R., Rysunek techniczny: chropowatość i falistość powierzchni, tolerancje geometryczne i tolerowanie wymiarów, Wydawnictwo Politechniki Świętokrzyskiej, Kielce, 2016.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00