COURSE GUIDE

Subject name	**Engineering and technical drawing**
Course of study	**Quality and Production Management**
The form of study	**Full-time**
Level of qualification	**First**
Year	**II**
Semester	**III**
The implementing entity	**Department of Production Engineering and Safety**
The person responsible for preparing	**dr inż. Justyna Żywiołek**
Profile	**General academic**
ECTS points	**4**

TYPE OF TEACHING – NUMBER OF HOURS PER SEMESTER

LECTURE	CLASS	LABORATORY	PROJECT	SEMINAR
15		**30**	**-**	**-**

COURSE AIMS

C1. AutoCAd support.
C2. Preparing project documentation for technical markets or engineering graphics.

ENTRY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. The student knows the basics of creating a technical drawing.
2. The student has basic mathematical knowledge supporting the creation of drawings.
3. The student uses computer effectively.

LEARNING OUTCOMES

EU1. student has the ability to prepare technical drawings.
EU2. student has the ability to use AutoCAD.
EU3. student knows the theoretical principles of creating drawings and dimensioning them.
EU4. student has the ability to project and prepare cross-sections.

COURSE CONTENT

Type of teaching – LECTURE	**Number of hours**
W1. Basic Considerations, Overview of Technical Drawings.	1
W2-W3. Types of projection - rectangular and axonometric projections.	2
W4-W5. Views and cross sections of objects in rectangular projections - principles of execution and types of cross sections.	2
W6, W7. Dimensioning of objects in the drawing. Principles and ways of placing dimensions.	2
W8-W9. Tolerances of dimensions, shape and position, fit.	2
W10. Marking of the type of machining and the geometrical structure of the surface.	1
W11. Drawing machine connections (threaded, welded, keyway). Drawing simplifications.	1
W12. Principles for drawing and reading working drawings of parts and assembly parts, machines and devices.	1
W13. The use of computer graphics to create technical documentation.	1
W14. Characteristics of AutoCAD software. Basic functions of the program.	1
W15. Basics of computer-aided CAD design on an example selected 3D CAD programs	1
Type of teaching - LABORATORY	**Number of hours**
L1. Establishing the rules in the studio, basic information about engineering graphics and technical drawing.	2

L2-L3. Orthographic projection - projections of straight lines, planes, polyhedra and solids - freehand drawing exercises.	4
L4-L5. Introduction and basic drawing functions in AutoCAD. Drawing views of items.	4
L6-L7. Creating basic drawing objects and entering text. Drawing cross sections.	4
L8-L9. The use of editing functions and dimensioning of drawings. Object dimensioning.	4
L10-L11. Executive drawings - rules for selecting projections (sections views, drawing details). Drawing shafts.	4
L12-L13. Half-view, half-section. Drawing the bushing.	4
L14. Computer aided execution of technical drawings. Usage of commands: copy with base point, pattern, mirror in AutoCAD	2
L15. Test.	2

TEACHING TOOLS

1. Manuals and scripts.
2. Audiovisual Equipment.
3. Computer with Internet access.
4. Specialized software: AutoCAD.

WAYS OF ASSESSMENT (F – FORMATIVE, P – SUMMATIVE)

F1. Observation of student work.
F2. Passing reports from laboratory classes.
P1. Written test.

STUDENT WORKLOAD

Form of activity		**Average number of hours for realization of the activity**		
		[h]	**ECTS**	**ECTS**
Contact hours with teacher	Lectures	15	0.6	1.12
Preparation for pass		10	0.4	
Exam		3	0.12	
Contact hours with teacher	Laboratory	30	1.2	2.28
Preparation for the laboratory		12	0.48	
Preparation of reports on specific tasks (laboratories)		15	0.6	
Get acquainted with the indicated literature		10	0.4	0.4
Consultation		5	0.2	0.2
TOTAL NUMBER OF HOURS / ECTS POINTS FOR SUBJECT		**100**	**4**	

BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

Basic resources

1. Pratt W.K. Digital Image Processing. John Wiley and Sons, New York, 1991.
2. Seibokiene E. Computer Graphics :A Comprehensive Guide for Students. Vilnius, Technika, 2005.
3. Stevens R.T. Graphics Programming in C. A. Comprehensive Resource for Every C. Reedwood City , M and Publishing, 2000.

Supplementary resources

1. Bafle A. CorelDraw! 4, Oficyna Wydaw. READ ME, Warszawa, 1993.

TEACHERS (NAME, SURNAME, E-MAIL ADDRESS)

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MATRIX OF LEARNING OUTCOMES REALISATION

Learning outcome	Reference of given outcome to outcomes defined for whole program (PRK)	Course aims	Course content	Teaching tools	Ways of assessment
EU1	K_W06, K_W09, K_U03 K_U11	C1	W1-W15, L1-L15	1, 2	F2, P1
EU2	K_W06, K_U02	C2	W13-W15, L4-L15	3,4	F2, P1
EU3	K_W06, K_U07, K_U11	C1, C2	W1-W12, L8-L11	2, 4	F1, F2.
EU4	K_W06, K_U07, K_U11	C1	W2-W5, L2, L3, L6, L7, L12, L13	1,4	F1, F2

FORM OF ASSESSMENT - DETAILS

	grade 2	grade 3	grade 4	grade 5
EU1	Student can not prepare a technical drawing.	Student can simple commands in connection with the preparation of a technical drawing, but he can not prepare it himself.	Student is able to prepare non-complicated drawings, but without dimensioning, does not know the principles of preparing documentation.	Student has the skills of preparing technical drawings as a whole.
EU2	Student does not have the ability to use the AutoCAD program.	Student has basic skills in using the AutoCAD program, knows simple commands, le can not prepare drawings from the whole.	Student has the ability to use the AutoCAD program, commits minor errors in the preparation of drawings.	Student has the skills to use AutoCAD program expertly.
EU3	Student does not know the theoretical principles of creating drawings and dimensioning them.	Student knows selectively theoretical principles of creating drawings and dimensioning them.	Student knows the theoretical principles of creating drawings and dimensioning them, he commits minor mistakes.	Student knows the theoretical principles ofcreating drawings and dimensioning them.
EU4	Student does not have the ability to project and prepare cross-sections.	Student has a partial ability to project and prepare cross-sections.	Student has the ability to project and prepare crosssections of simple drawings.	Student has the ability toproject and prepare cross-sections of all drawings regardless of their complexity.

ADDITIONAL USEFUL INFORMATION ABOUT THE COURSE

1. Information where presentation of classes, instruction, subjects of seminars can be found, etc. - presented to students during first classes, if required by the formula classes are sent electronically to the e-mail addresses of individual dean groups.
2. Information about the place of classes - Information can be found on the website of the Faculty of Management.
3. Information about the timing of classes (day of the week / time) - Information can be found on the website of the Faculty of Management.
4. Information about the consultation (time + place) - Information can be found on the website of the Faculty of Management.