

COURSE GUIDE

<u>Subject name</u>	Fundamentals Of Engineering Design
<u>Course of study</u>	Quality and Production Management
<u>The form of study</u>	Full-time
<u>Level of qualification</u>	First
<u>Year</u>	II
<u>Semester</u>	IV
<u>The implementing entity</u>	Department of Production Engineering and Safety
<u>The person responsible for preparing</u>	Dr inz. Justyna Zywolek
<u>Profile</u>	General academic
<u>Course type</u>	principal
<u>ECTS points</u>	4

TYPE OF TEACHING – NUMBER OF HOURS PER SEMESTER

LECTURE	CLASS	LABORATORY	PROJECT	SEMINAR
15		-	30	-

COURSE AIMS

- C1. Preparation of design documentation
- C2. Methods and techniques of engineering design support
- C3. Preparation of engineering projects

ENTRY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge of technical drawing
2. Basic knowledge of the principles of engineering design

LEARNING OUTCOMES

- EU 1- The student has the ability to prepare design documentation
- EU 2- student has the ability to use AutoCAD, Excel
- EU 3- student is able to prepare the engineering project
- EU 4- student knows the principles of dimensioning, can prepare them for the engineering project

COURSE CONTENT

Type of teaching – Lecture	Number of hours
W 1- Object and process design as a core element of engineering activity.	1
W2- Technical objects in systematic terms. Stages of the existence of a technical product.	2
W 3- Technical design and its structure: formulation and analysis of the problem, search for concepts, requirements and constraints, evaluation criteria, evaluation and choice of solutions.	3
W4 - Task Design and Concurrency.	2
W5- The rules of preparation of design documentation. Holistic approach to design processes.	3
W 6 - Impact of industrial design and ergonomics on design solutions.	3
W7 - Methods and techniques for assisting different phases and stages of design	3
Type of teaching – Project	Number of hours
P 1. Principles of technical drawing.	5
P 2- Principles of dimensioning (calculation) of selected technical objects.	5
P 3 - Principles of technical drawing.	5
P 4 - Principles of technical design drawing.	5
P 5- Modeling and optimization in design.	5
P 6- Evaluating the Reliability of Structures and Objects.	5

TEACHING TOOLS

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

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	1.2
Preparation for pass		15	0,6	
Contact hours with the teacher	Project	30	1.2	2.0
Preparation for the project		20	0.8	
Get acquainted with the indicated literature		12	0.4	0.48
Attendance at consultations		8	0.32	0.32
TOTAL NUMBER OF HOURS / ECTS POINTS FOR SUBJECT		100		4

BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

Basic resources:

1. Henkin H., Drafting Engineering Contracts, Elsevier Applied Science, London, 1988.
2. Wang J., Challenging ICT Applications in Architecture, Engineering, and Industrial Design Education, Business Science Reference, Hershey, 2013.
3. Beam Walter R., Systems Engineering Architecture and Design, McGraw-Hill Book Company, New York, 1990.

Supplementary resources:

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TEACHERS (NAME, SURNAME, E-MAIL ADDRESS)

1. Dr inż. Justyna Żywiołek justyna.zywiołek@wz.pcz.pl
2. Mgr inż. Aleksandra Wrzalik aleksandra.wrzalik@wz.pcz.pl

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
EU 1	K_W09, K_U01, K_U02, K_U03, K_U04, K_U05, K_U11, K_K01	C1, C2	W1- W4, P1- P3	1, 2	F1, P1,
EU 2	K_W06, K_U02, K_U03, K_K01	C1	W5-W6, P3- P5	3, 4	F1, F2,
EU 3	K_W05, K_W09, K_U09, K_K01	C2, C3	W2, W3, P5- P7	2, 4	P1
EU4	K_W07, K_W09, K_U09, K_K01	C1, C3	W3, W5, P4	1,2	P1

FORM OF ASSESSMENT - DETAILS

	grade 2	grade 3	grade 4	grade 5
EU 1	student does not have the skills to prepare project documentation	student has the ability to partially prepare project documentation	student has the skills to prepare project documentation, with minor errors	student has the skills to prepare project documentation
EU 2	student does not have the skills to use AutoCAD, Excel	student has the ability to use AutoCAD, Excel but does it with the help of the teacher	student has the ability to use AutoCAD, Excel with minor errors	student has the skills to use AutoCAD, Excel
EU 3	student can not prepare an engineering project	student is able to prepare an engineering project, he will prepare it with a significant help from the teacher	student can prepare an engineering project, prepare it with a small guide	student is able to prepare an engineering project
EU 4	student does not know the principles of dimensioning, he can prepare them for the engineering project	student knows selected dimensioning principles, he can prepare them for the engineering project	student knows the principles of dimensioning, can prepare them for the engineering project with help of teacher	student knows the principles of dimensioning, can prepare them for the engineering project

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

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Coordinator