COURSE GUIDE

Subject name	**Fundamentals of engineering design**
Course of study	**Quality and Production Management**
The form of study	**Full-time**
Level of qualification	**First**
Year	**II**
Semester	**IV**
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. 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

EU1. The student has the ability to prepare design documentation.
EU2. student has the ability to use AutoCAD, Excel.
EU3. student is able to prepare the engineering project.
EU4. student knows the principles of dimensioning, can prepare them for the engineering projec.t

COURSE CONTENT

Type of teaching – LECTURE	**Number of hours**
W1. 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
W3. 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
W6. 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**
P1. Principles of technical drawing.	5
P2. Principles of dimensioning (calculation) of selected technical objects.	5
P3. Principles of technical drawing.	5
P4. Principles of technical design drawing.	5
P5. Modeling and optimization in design.	5
P6. 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	048
Consultation		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 W,R. Systems Engineering Architecture and Design. McGraw-Hill Book Company , New York, 1990.

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_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,
EU2	K_W06, K_U02, K_U03, K_K01	C1	W5-W6, P3-P5	3, 4	F1, F2,
EU3	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
EU1	Student does not have	Student has the ability to	Student has the skills	Student has the skills

	the skills to prepare project documentation.	partially prepare project documentation.	to prepare project documentation, with minor error.	to prepare project documentation.
EU2	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.
EU3	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.
EU4	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.