Polish course name	**PODSTAWY PROJEKTOWANIA CAD**
English course name	**THE BASICS OF CAD DESIGN**
Course code	**WIP-MDL-D1-TBOCD-02**
Field of study	**Materials design and logistics**
Level of qualification	**First degree**
Form of study	**Full-time**
Semester	**2**
Number of ECTS points	**2**
Ways of assessment	**Design work**

Number of hours per semester

Lecture	Seminar	Classes	Laboratory	Project
				30

TEACHERS:

Dr inż. Andrzej Stefanik,

Dr hab. inż. Piotr Szota, prof. PCz.

COURSE OBJECTIVES:

› **C1** Acquainting with the operation of CAD computer programs for drawing complex objects, material selection and basic property analysis based on metal processing processes.

› **C2** Developing the ability to apply techniques and technologies for the visualization of machine parts and their interdependencies in the finished product assembly, as well as designing devices in space.

PRELIMINARY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES:

1. Basic knowledge of mathematics, metrology and computer science.
2. Ability to work independently and in a group.
3. Ability to use various sources of information.

COURSE CONTENT

DESIGN CLASSES

- **P1, P2** Methods of volumetric and surface shaping.
- **P3, P4** Finishing elements, parametric equations - variant designs.
- **P5, P6** Assembly modeling - list of machine parts, types of connections.
- **P7, P8** Drawing multi-element assemblies (assembly drawing) as a project using available database and design tools.
- **P9, P10** Designing sheet metal parts and welded parts.
- **P11, P12** The use of Inventor to design production tools.
- **P13, P14** Load analysis of metal structures depending on the materials used.
- **P15 – P30** Development of a project of a selected complex device, along with the selection of materials for production, strength analysis and technical documentation - hybrid work completed with a presentation of the project.

BASIC REFERENCES

1. Elżbieta Gąsiorek, Podstawy projektowania inżynierskiego, Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu, 2006 r.
2. Fabian Stasiak, Zbiór ćwiczeń. Autodesk Inventor 2018, Kurs podstawowy, Expert Boks, 2018 r.
3. Thom Tremblay, Inventor 2014 and Inventor LT 2014 Essentials: Autodesk Official Press, John Wiley & Sons, 2013 r.

SUPPLEMENTARY REFERENCE MATERIALS

1. Dobrzański Tadeusz, Rysunek techniczny maszynowy, Wydanie 24, WNT Warszawa, 2009 r.
2. Posiadała Bogdan, Rysunek techniczny w AutoCADzie, Wydawnictwo Politechniki Częstochowskiej, Częstochowa 2002 r.
3. Christian Schlieder, Autodesk Inventor 2010, Books on Demand, 2010 r.

LEARNING OUTCOMES

- **EU1** Acquisition of theoretical and practical knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of drawing parts, assemblies and preparing technical documentation.

› **EU2** Ability to formulate specifications of simple engineering tasks and design a simple assembly of parts, object, system in 3D area, using appropriate methods, techniques and tools.

TEACHING TOOLS

› Project - briefing with the use of multimedia devices.
› Laboratory equipment and guides.
› Computer stations with software.

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

› **F1**. Assessment of the implementation of tasks included in the curriculum.
› **P1**. Assessment of the mastery of the teaching material being the subject of project tasks - assessment of project preparation.

STUDENT WORKLOAD

Form of activity	Number of hours	ECTS
Contact hours with the teacher		
Lectures	0	0
Seminar		
Classes		
Laboratory		
Project	30	1,2
Test	2	0,08
Exam		
Total contact hours	32	1,28
Student's own work		
Getting acquainted with the indicated literature		
Preparation for seminar		
Preparation for classes		
Preparation for lab		
Project preparation	14	0,56
Consultation	4	0,16
Preparation for the exam		
Total student’s own work	18	0,72

Total number of hours/ ECTS points for the course	**50**	**2,0**

ADDITIONAL INFORMATION

Timetable of classes	https://wip.pcz.pl/dla-studentow/plan-zajec/studia-stacjonarne
Information about the consultation (time + place)	https://wip.pcz.pl/dla-studentow/konsultacje-dla-studentow

MATRIX OF LEARNING OUTCOMES REALISATION

Learning outcome	**Reference of given outcome to outcomes defined for whole program**	**Course objectives**	**Course content**	**Ways of assessment**
EU 1	K_W03, K_K02, K_U04,	C1	P1 - P14	F1, P1
EU 2	K_W03, K_K02, K_U04,	C2	P15 - P30	F1, P1

FORM OF ASSESSMENT - DETAILS

EU1 Acquisition of theoretical and practical knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of drawing parts, assemblies and preparing technical documentation.

- 2,0 The student has not mastered the knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of making a drawing of a part, a team and preparation of documentation.
- 3,0 The student has mastered the basic knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of drawing a part, assembly and preparation of technical documentation.
- 3,5 The student has partially mastered the knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of making a drawing of a part, assembly and preparation of technical documentation.

- 4,0 The student has a good command of the knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of making a drawing of a part, assembly and preparation of technical documentation.
- 4,5 The student has more than a good command of the knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of making a drawing of a part, assembly and preparation of technical documentation.
- 5,0 The student has a very good command of the knowledge of modelling parts in spatial systems, including the use of IT tools, including basic knowledge of making a drawing of a part, assembly and preparation of technical documentation.

EU2 Ability to formulate specifications of simple engineering tasks and design a simple assembly of parts, object, system in 3D area, using appropriate methods, techniques and tools.

- 2,0 The student does not have the ability to perform the specifications of simple engineering tasks and design simple assemblies of parts, objects, systems in the 3D area, using appropriate methods, techniques and tools.
- 3,0 The student has the basic implementation of the specification of simple engineering tasks and the design of simple assemblies of parts, objects, systems in the 3D area, using the appropriate methods, techniques and tools.
- 3,5 The student has partial skills to perform the specifications of simple engineering tasks and to design simple assemblies of parts, objects, systems in the 3D area, using appropriate methods, techniques and tools.
- 4,0 The student is able to perform the specification of simple engineering tasks well and to design a simple assembly of parts, objects, systems in the 3D area, using appropriate methods, techniques and tools.
- 4,5 The student is more than able to perform the specification of simple engineering tasks and design a simple assembly of parts, objects, systems in the 3D area, using the appropriate methods, techniques and tools.
- 5,0 The student is very good at specifying simple engineering tasks and designing a simple assembly of parts, objects, systems in the 3D area, using appropriate methods, techniques and tools.