

SYLLABUS OF A MODULE

Polish name of a module	Komputerowe wspomaganie projektowania
English name of a module	CAD
ISCED classification - Code	<i>0715</i>
ISCED classification - Field of study	<i>Mechanics and metal trades</i>
Languages of instruction	<i>English</i>
Level of qualification:	<i>BSc (EQF 6)</i>
Number of ECTS credit points	<i>6</i>
Examination:	<i>A - assignment</i>

Number of hours per semester:

Lecture	Exercises	Laboratory	Seminar	E-learning	Project
15	0	45	0	0	0

MODULE DESCRIPTION

Module objectives

01. Students obtain knowledge of the construction of any machine parts and mechanisms using CAD applications on the example of the SolidWorks program.
02. Acquisition of practical skills by students and preparation for independent geometrical and structural modelling of machine elements and their assemblies in CAD programs on the example of the SolidWorks system.

PRELIMINARY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Basic knowledge of engineering graphics and technical drawing.
2. Ability to use various sources of information.
3. Ability to work independently and in a group.
4. Ability to interpretation and presentation of obtained results.

LEARNING OUTCOMES

- LO 1 – Student identifies the possibilities of modelling elements, machine sets and mechanisms in 3D space in CAD programs on the example of the SolidWorks program.
- LO 2 – Student is able to create geometrical and structural models along with their parameterization in relation to CAD applications on the example of the SolidWorks program.
- LO 3 – Student is able to make a 3D model of a machine element, mechanism and assembly with a complex structure in a CAD program on the example of the SolidWorks system.

MODULE CONTENT

Type of classes – lecture	Number of hours
Lec 1 - Characteristics of basic issues related to geometrical and structural modelling.	1
Lec 2 - Introduction to SolidWorks. Basics of operation and program infrastructure.	1
Lec 3,4 - Creating, editing and operations on 2D profiles.	2
Lec 5 - Defining geometrical and dimensional constraints in sketches.	1
Lec 6-9 - Solid modelling. Tools, methods and functions used to create solid models.	4
Lec 10 - Diagnosis of problems, analysis and repair of parts.	1
Lec 11 - Global variables and equations.	1
Lec 12,13 - 2D design documentation.	2
Lec 14,15 - Modelling and using assemblies.	2
Sum	15
Type of classes– laboratory.	Number of hours
Lab 1 - Getting to know the basic functions of the SolidWorks program, its interface, model history, and navigating the model space.	3
Lab 2 - Creating, editing and operations on 2D profiles.	3
Lab 3 - Completing the task illustrating the creation of profiles using drawing tools and editing tools.	3
Lab 4 - Application of geometric and dimensional constraints and parameterization of profiles.	3
Lab 5 - Completing the task illustrating the creation of parameterized profiles with defined geometric and dimensional constraints.	3
Lab 6 - Connecting profiles with 3D geometry.	3
Lab 7 - The use of reference elements and the use of basic solid modelling commands	3
Lab 8 - Editing, modification and transformation of solids.	3
Lab 9 - Construction of a parameterized solid model.	3
Lab 10,11 - Creating 2D documentation for the solid model.	6
Lab 12-14 - Positioning and transforming components. Creating a set of elements. Assembly analysis.	9
Lab 15 - Diagnosis of problems, analysis and repair of parts and assemblies.	3
Sum	45

TEACHING TOOLS

1. - Power Point presentations, lecture notes, sample problems.
2. - Laboratory tutorials.
3. - Computer workstations equipped with the SolidWorks program - educational license.
4. - Models of machine elements and machine assemblies.

WAYS OF ASSESSMENT (F – FORMATIVE, S – SUMMATIVE

F1. - assessment of preparation for laboratory exercises
F2. - assessment of the ability to apply the acquired knowledge while doing the exercises
F3. - evaluation of reports on the implementation of exercises covered by the curriculum
F4. - assessment of activity during classes
S1. - assessment of the ability to solve the problems posed and the manner of presentation obtained results - pass mark *
S2. - assessment of mastery of the teaching material being the subject of the lecture - exam

*) in order to receive a credit for the module, the student is obliged to attain a passing grade in all laboratory classes as well as in achievement tests.

STUDENT'S WORKLOAD

L.p.	Forms of activity	Average number of hours required for realization of activity
1. Contact hours with teacher		
1.1	Lectures	15
1.2	Tutorials	0
1.3	Laboratory	45
1.4	Seminar	0
1.5	Project	0
1.6	Consulting teacher during their duty hours	5
1.7	Examination	0
Total number of contact hours with teacher:		65
2. Student's individual work		
2.1	Preparation for tutorials and tests	0
2.2	Preparation for laboratory exercises, writing reports on laboratories	50
2.3	Preparation of project	0
2.4	Preparation for final lecture assessment	20
2.5	Preparation for examination	0
2.6	Individual study of literature	15
Total number of hours of student's individual work:		85
Overall student's workload:		150
Overall number of ECTS credits for the module		6 ECTS
Number of ECTS points that student receives in classes requiring teacher's supervision:		2.6 ECTS
Number of ECTS credits acquired during practical classes including laboratory exercises and projects:		3.8 ECTS

BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

1. Domański J.: SolidWorks 2017. Projektowanie maszyn i konstrukcji. Praktyczne przykłady, Helion, 2017.
2. Lombard M.: Solidworks 2011 Parts Bible, John Wiley & Sons, 2011.
3. Lombard M.: Solidworks Assemblies Bible, John Wiley & Sons, 2011.
4. Kęska P.: SOLIDWORKS 2018 Nowości w programie, porady praktyczne oraz ćwiczenia, CADVantage, 2018.
5. Tran P.: Certified SOLIDWORKS Professional Advanced Preparation Material, SDC Publications; 2017.
6. Willis J., Dogra S.: SOLIDWORKS 2019: A Power Guide for Beginners and Intermediate User Paperback, CADArtifex, 2019.
7. Zeid I.: Mastering SolidWorks, Pearson Peachpit, 2014.

MODULE COORDINATOR (NAME, SURNAME, E-MAIL ADDRESS)

Dr hab. inż. Dawid Cekus prof. PCz - cekus@imipkm.pcz.pl
