

COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Mechanical Engineering									
Field of study	Mechanical Engineering							Degree level and programme type	Master's degree
Specialization/ diploma path								Study profile	
Course name	Computer modeling of machines design							Course code	IS-MER0029S
								Course type	Project
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
				30				No. of ECTS credits	5
Entry requirements	Fundamentals of Mechanical Engineering, Engineering Mechanics, Engineering Graphics								
Course objectives	<p>The students will be introduced to the CATIA V5 or SolidWorks fundamental concepts and interface. Students will learn the concept of sketch-based features, the management of parts through an assembly and how to generate standard views from this assembly. The part creation in this course is mainly focused on the creation of parts based on 2D profiles (sketches), and on the assembly of existing components.</p> <p>By the end of this course, the student will have a fundamental understanding of the methodology behind the SolidWorks or CATIA V5 product. This course will teach the user the 3D methods of creating elements and structures. The student will also learn the techniques to constrain multiple parts into assemblies, creating associative 2D dimensioned drawings of a solid part or assembly.</p>								
Course content	<p>Interface - program interface overview, using model space, customizing system for individual user needs. Methodology of work in CATIA V5 or SolidWorks environment – basic information.</p> <p>Using sketch tools for purpose of defining flat profiles – input data for building advanced geometry: solid and surface models.</p> <p>Building solid geometry, edit operations, Boolean operations, methods of solid transformations, basic parameterization of models. Wireframe and Surface Design. Defining reference elements, edit operations on surfaces. Method of solid transformations and edit operations using surface models.</p> <p>Basics of assembly design operations. Methods of building and managing assemblies, product tree analysis, relations between components – defining bonds. Basic analysis of space relations between components - detecting collisions. Components measurements, building cross sections. Components positioning.</p> <p>Drafting – generating 2D technical documentation. Automated generation of documentation from 3D models. Preparing 2D documentation from scratch. Generating working and assembly drawings, defining views, cross sections, extractions.</p> <p>Methods of dimensioning, adding text notes and annotations.</p> <p>Managing views and drawing sheets.</p>								

Teaching methods	work in groups, discussion, self- study under supervision: tutorial sessions with worked examples, solving problem, homework assignments	
Assessment method	project – project completion, presentation and discussion	
Symbol of learning outcome	Learning outcomes	Reference to the learning outcomes for the field of study
L01	student: lists and classifies the methods of modeling used in the construction of machines	M1_W07
L02	knows how to create simple solid models	M1_W08
L03	create and edit complex 3D models using various modeling techniques	M1_U14, U15
L04	is able to provide visualization of the model	M1_U17
L05	is able to develop a 2D product documentation based on the 3D model	M1_U17
L06	is aware of the need for training	M1_K01
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
L01	evaluating the student's reports and preparation for the classes , defense project	P
L02	evaluating the student's reports and preparation for the classes,defense project	P
L03	evaluating the student's reports, defense project	P
L04	evaluating the student's reports, defense project	P
L05	evaluating the student's reports and performance in classes, defense project	P
L06	discussion of the student's reports, evaluation of the student's performance in the classes	P
Student workload (in hours)		No. of hours
Calculation	preparation for classes, laboratory classes, projects, seminars, etc.	30
	working on projects, reports, etc.	30
	participation in student-teacher sessions related to the classes/seminar/project	45
	implementation of project tasks	75
	preparation for and participation in exams/tests	30
	TOTAL:	210
Quantitative indicators		HOURS
		No. of ECTS credits
Student workload – activities that require direct teacher participation		30
Student workload – practical activities		210
		1
		5

Basic references	1. Simmons C.H., Maguire D.E.: Manual of Engineering Drawing, Elsevier, 2004 2. Shigley, J.E., Mischke C. R., Mechanical Engineering Design, 5th ed., McGraw-Hill, New York, 1989; 3. handbooks of CATIA V5, (www.catia.com);	
Supplementary references	A.Darbyshire, Mechanical Engineering, Elsevier, 2010. www.cad.pl/kursy.html www.catia.com www.catia.com	
Organisational unit conducting the course	Department of Mechanics and Applied Computer Science	Date of issuing the programme
Author of the programme	Jaroslaw Szusta	16.03.2020

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work,

S – seminar