

**COURSE SPECIFICATION**

Course code	full-time programme:	<b>M#2-S1-ME-KWW-510</b>
	part-time programme:	
Course title in Polish	<b>Komputerowe modelowanie części maszyn I</b>	
Course title in English	<b>Computer-Aided Design of Machine Part I</b>	
Valid from (academic year)	<b>2024/2025</b>	

**GENERAL INFORMATION**

Programme of study	<b>MECHANICAL ENGINEERING</b>
Level of qualification	<b>first-cycle</b>
Type of education	<b>academic</b>
Mode of study	<b>full-time programme</b>
Specialism	<b>Computer-Aided Manufacturing</b>
Department responsible	<b>Department of Machine Design and Machining</b>
Course leader	<b>dr inż. Michał Skrzyniarz</b>
Approved by	<b>dr hab. Jakub Takosoglu, prof. PŚk, Dean of the Faculty of Mechatronics and Mechanical Engineering</b>

**COURSE OVERVIEW**

Course type		<b>specialism-related</b>
Course status		<b>compulsory</b>
Language of instruction		<b>English</b>
Semester of delivery	full-time programme	<b>Semester V</b>
	part-time programme	
Pre-requisites		
Examination required (YES/NO)		<b>NO</b>
ECTS value		<b>2</b>

Mode of instruction		lecture	class	laboratory	project	seminar
No. of hours per semester	full-time programme	<b>15</b>		<b>15</b>		
	part-time programme					

**LEARNING OUTCOMES**



Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	The student will have advanced knowledge of structural modelling using modern design software to support the work of a designer.	MiBM1_W03 MiBM1_W09 MiBM1_W11
	W02	The student has organised knowledge to support the solution of various engineering problems related to construction.	MiBM1_W03 MiBM1_W09 MiBM1_W11
Skills	U01	The student will be able to apply basic science knowledge to solve problems in the design phase of machine components..	MiBM1_U01 MiBM1_U02 MiBM1_U19
	U02	The student will be able to complete a project using advanced design tools, including the ability to design machine components.	MiBM1_U01 MiBM1_U02 MiBM1_U19
	U03	The student will be proficient in the use of computer software in the field of mechanics and mechanical design for the purpose of designing and constructing machine components.	MiBM1_U01 MiBM1_U02 MiBM1_U19
Competence	K01	The student is able to comprehensively analyse and efficiently carry out assigned tasks.	MiBM1_K06
	K02	The student is aware of the need for continuous learning, including familiarisation with new modelling applications and techniques.	MiBM1_K02

## COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	Introduction to part modelling in CAD software for machine components. Working with layers. Editing object representations. Creating sketches. Applying relations and sketch parameterisation. Dynamic sketch editing. Creating solid features. Boolean operations. 3D model modifications using synchronous modelling. Hole wizard. Working with assemblies. Creating assemblies. Adding and moving components. Applying constraints within assemblies. Create new components within assemblies. Creating dependencies between components. 2D and assembly drawings.
laboratory	Create solid features for model machine components: sketching, working with relationships, parameterisation and dynamic editing. Use of sketch libraries. 3D modelling operations. Editing selected machine component elements using synchronous modelling. Work with the Hole Wizard. Preparing solid parts for assembly. Assemble components. Create an assembly of elements. Create a technical drawing for the selected machine component.

## ASSESSMENT METHODS

Outcome code	Methods of assessment (Mark with an X where applicable)					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			
W02			X			
U01			X			
U02			X			





U03			X			
K01			X			
K02			X			

**ASSESSMENT TYPE AND CRITERIA**

Mode of instruction	Assessment type	Assessment criteria
lecture	non-examination assessment	The pass mark is a minimum of 50% for the final in-class test.
laboratory	non-examination assessment	The pass mark is a minimum of 50% for the final in-class test.

**OVERALL STUDENT WORKLOAD**

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
1.	Scheduled contact hours	L	C	Lb	P	S	L	C	Lb	P	S	h
		15		15								
2.	Other contact hours (office hours, examination)	2		2								h
3.	Total number of contact hours	34										h
4.	Number of ECTS credits for contact hours	1,4										ECTS
5.	Number of independent study hours	16										h
6.	Number of ECTS credits for independent study hours	0,6										ECTS
7.	Number of practical hours	25										h
8.	Number of ECTS credits for practical hours	1,0										ECTS
9.	Total study time	50										h
10.	ECTS credits for the course <i>1 ECTS credit = 25-30 hours of study time</i>	2										ECTS

**READING LIST**

1. Mazur D., Rudy M.: Modelowanie w systemie NX CAD. Oficyna Wydawnicza Politechniki Rzeszowskiej Rzeszów 2016
2. Menchen P., Budzyński A.: NX 8.5 Ćwiczenia. GMSYSTEM Wrocław 2012
3. Menchen P.: NX 9.0. Ćwiczenia „Od koncepcji do wytwarzania – krok po kroku”. GM System Wrocław 2013.
4. Przybylski W., Deja M.: Komputerowo wspomagane wytwarzanie maszyn. Podstawy i zastosowanie. WNT Warszawa 2007.
5. Antosiewicz M.: Modelowanie powierzchniowe, Tom I. Wydawnictwo CAMdivision, Rzeszów 2022.





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6. Antosiewicz M.: Modelowanie powierzchniowe, Tom II. Wydawnictwo CAMdivision, Rzeszów 2022.
7. Józwiak D., Antosiewicz M.: Podstawy modelowania Synchronous & Realize Shape, Wydawnictwo CAMdivision, Miękinia 2015.



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i Budowy Maszyn