

# SYLLABUS

## Course description

Course description				
Course code		Course	Systemy CAM	
ME/O/I/NST/C6			CAM Systems	
Language of instruction		English		
Academic year		2025/2026		
<b>field of study:</b>		Mechanical Engineering		
<b>field of specialisation:</b>		All		
Educational level		first-cycle studies		
Education profile		General academic		
Mode of study		Part-time studies		
Semester(s)		6		
Affiliation with a group of classes		C . Group of courses to choose from		
Course status		Electable		
Types of classes, instruction hours, ECTS credits		Types of classes	Number of instruction hours	Number of ECTS credits
		Lecture	8 [h]	5 ECTS
		Classes	[h]	
		Lab	24 [h]	
Linkage of the course	with the education profile	Related to the conducted scientific activity in the discipline to which the field of study is assigned		ECTS
	with qualifications	It is used to acquire engineering competences by the student		5 ECTS
	with science discipline	Mechanical engineering		5 ECTS
Form of teaching		Traditional – classes organized at the University /classes conducted using distance learning methods and techniques		
Prerequisites		Knowledge and skills in the field of materials science, metrology, technology processes, design record.		
Department		Faculty of Mechanical Engineering		
Coordinator		Dmitrij Morozow PhD .Eng.		
The website of the basic organizational unit		http://wm.uniwersytetradom.pl		
E-mail address, phone number of the coordinator		d.morozow@urad.edu.pl, phone: 48 361 76 21		

## LEARNING OUTCOMES, CURRICULUM CONTENT, TEACHING CLASSES, VERIFICATION OF LEARNING OUTCOMES

Learning Objective:	Ability to use practical CAD/CAM computer-aided manufacturing techniques (basic level) to design technologies for machining machine parts.
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Curriculum Content:	<p>Lecture: Introduction. Historical outline of the development of CAD/CAM systems. Assessment criteria for CAD/CAM systems. CAD elements in CAM software: 2D/3D design (edge, surface, solid models); exchange of drawing data between CAD/CAM systems. Application of professional CAM packages in 2D/3D machining on the example of MasterCAM or EdgeCAM. Batch programs in CAM systems - as elements of advanced technological design (on the example of "C-hook" programs in the MasterCAM package). Computer integrated manufacturing (CIM) systems.</p> <p>Laboratory classes: Construction of a CAD/CAM system, discussion of individual modules and their application. Creation of simple 2D/3D geometry and import of geometry from another CAD system. Preparation of the machined part for work in the lathe/mill machining module, including: defining the blank, base point, drawing layers, etc. Selection of the machine tool and post-processor for the selected CNC control system. Selection of machining strategies, tools and machining parameters. Processing simulation. Creating a control file for a CNC machine.</p>
Didactic (educational) methods:	Informational lecture (regular), practical exercises (laboratory).
Course assessment type, the criteria for assessing the achieved learning outcomes, and the method of calculating the final grade:	The condition for passing the course is to achieve all the required learning outcomes specified for the course. Form of passing the lecture and project classes based on control work.

Learning outcomes for the course in relation to the field of study learning outcomes and the type of classes				Methods of verifying learning outcomes	
Learning outcome number	Description of the learning outcomes for the course (PEU) A student who has passed the course ( <b>W</b> ) knows and understands / ( <b>U</b> ) can / ( <b>K</b> ) is ready to:	Field of study learning outcome (KEU)	Types of classes	Form of verification (credits)	Methods of testing and assessment
W1	Knows and understands the principles of engineering graphics and the tools used in the preparation of technical documentation; Has knowledge of computer-aided design, manufacturing and operation of mechanical.	K_WG04 K_WG11	Lectures	Pass with grade	Control work
U1	Is able to use computer methods in solving engineering tasks in the field of design, manufacturing and operation of machinery and equipment; is able to assess the suitability of routine methods and tools for solving a simple engineering task of a practical nature in the design, manufacture and operation of machinery and equipment, and select and apply the appropriate method and tools;	K_UW05 K_UW09	Laboratories	Pass with grade	Control work
K1	Is ready to complete and critically evaluate specialized knowledge and is able to select sources of knowledge and methods of learning appropriate for himself/herself and others; is willing to comprehensively analyze and effectively carry out assigned tasks, and in the event of difficulties in solving them, use expert opinion;	K-KK01 K-KK02	Laboratories	Verbal form	

Literature and teaching aids
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**Primary literature:**

1. Mastercam Lathe Tutorial. Training materials, 2021
2. Mastercam Basic Tutorial. Training materials, 2022
3. Mastercam Solid Tutorial. Training materials, 2020
4. Mastercam Work Coordinate System. Training materials, 2018
5. Mastercam Dynamic Milling Tutorial. Training materials, 2018
6. EdgeCAM Getting Started Guide. Training materials, 2022

**Additional literature:**

1. Gaurav Verma, Matt Weber: Mastercam 2022 - 2024 Black Book. 3 – 5th ed. Edition. CAD CAM CAE Works, 2022 – 2024
2. Zhuming Bi, Xiaolin Wang: Computer Aided Design and Manufacturing. Wiley-ASME Press Series, 2020

**Study aids:**

Student workload required to achieve the assumed learning outcomes – the balance of ECTS credits		
Attendance, participation	Student workload [h].	
	Student's self-study hours Classes without a teacher (ZBN)	Classes
Participation in lectures/classes/lab	X	8[h] / 24 [h]
Preparation for lectures/classes/lab , Preparation for ... credit / exam	93 [h]	X
Total student workload Preparation for ... credit / exam	93 [h]/ 3.7 ECTS	32 [h]/1.3 ECTS
ECTS points per subject	5 ECTS	

Additional information, comments
<p>In the case of students with special needs, including disabilities, and chronic illnesses, the methods and forms of verification of learning outcomes specified above (in the syllabus) are adapted to the individual needs of these students, as appropriate.</p> <p>Detailed rules and forms of support for students with special needs, including those with disabilities and chronically ill, during classes, credits, and exams are specified in: University Regulations (Regulamin Studiów Uniwersytetu Technologiczno-Humanistycznego w Radomiu), Study Regulations (Zasady Studiowania), and Procedure for Ensuring Accessibility of the Educational Process to Students with Special Needs, Including Those with Disabilities and Chronically ill (Procedura dotycząca zapewnienia dostępności procesu kształcenia studentom ze szczególnymi potrzebami, w tym: z niepełnosprawnością, przewlekle chorych).</p>

