

SYLLABUS

Course description

Course code		Course	Zastosowanie systemów CAD/CAE		
ME/O/I/ST/C8b			Application of CAD/CAE systems		
Language of instruction		English			
Academic year		2025/2026			
field of study:		Mechanical Engineering			
field of specialisation:		All			
Educational level		first-cycle studies			
Education profile		General academic			
Mode of study		Full-time studies			
Semester(s)		7			
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	15 [h]	4 ECTS	
		Classes	-- [h]		
		Lab	30 [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		4 ECTS	
	with qualifications	It is used to acquire engineering competences by the student		4 ECTS	
	with science discipline	Mechanical engineering		4 ECTS	
Form of teaching		Traditional – classes organized at the University /classes conducted using distance learning methods and techniques			
Prerequisites		knowledge of mechanics (statics) and mathematics			
Department		Faculty of Mechanical Engineering			
Coordinator		dr inż. Marcin Wikło, prof. URad			
The website of the basic organizational unit		http://wm.uniwersytetradom.pl			
E-mail address, phone number of the coordinator		m.wiklo@urad.edu.pl			

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

Learning Objective:	Expansion of skills related to FEM simulation, Consolidating and deepening knowledge in the field of technical mechanics and strength of materials focused on practical tasks
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Curriculum Content:	<p>The content of the classes is related to the scientific research that has been conducted.</p> <p>Extension of the simulation knowledge connected with the MBD, Dynamics, and Parametrization basics of nonlinearities.</p> <p>Content of the design exercises</p> <p>Initial organizational activities: familiarization with the rules applicable during classes, the applicable form of crediting the subject and a general outline of the material required of students.</p> <p>Summary of the CAD/CAE design approach - CAD software, CAE software, methods of integration.</p> <p>Extension of the approach to design coupled with simulation - advantages, disadvantages, possibilities.</p> <p>Execution of projects, taking into account various scenarios of construction execution and loading</p>
Didactic (educational) methods:	Informative lecture and calculation exercises
Course assessment type, the criteria for assessing the achieved learning outcomes, and the method of calculating the final grade:	<p>The condition for passing the course is to achieve all the required learning outcomes specified for the course.</p> <p>The average obtained by the student's grades from the in class test - lecture and from the projects - exercise</p>

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 (W) knows and understands / (U) can / (K) is ready to:	Field of study learning outcome (KEU)	Types of classes	Form of verification (credits)	Methods of testing and assessment
W1	Uses the steps necessary to build a computational model. Utilizes software to solve problems in mechanics and strength of materials.	K_WG01, K_WG02, K_WG05, K_WG17	Lectures	in class tests	Tests grades
U1	Can perform numerical calculations for various types of mechanics problems, interprets the obtained results. Can select software depending on the complexity of the problem.	K_UW08, K_UW09, K_UK16, K_UO19 K_UU21	Project	Projects	Project grades
K1	Can cooperate and work in a group and understands non-technical aspects of the activity of a mechanical engineer, including the impact on the environment. Shows creativity in the calculation process. Shows responsibility related to the calculations performed and the ethics of presenting results.	K_KK01, K_KK02, K_KO04, K_KR07	Lectures / Project	Verbal evaluation	Verbal evaluation

Literature and teaching aids
<p>Primary literature:</p> <ol style="list-style-type: none"> 1. M. Asghar Bhatti, Fundamental Finite Element Analysis and applications with Mathematica and Matlab computations, Wiley 2005 2. Roman Bąk, Tadeusz Burczyński Wytrzymałość materiałów z elementami ujęcia komputerowego Wydawnictwo Naukowe PWN, 2017 3. Ansys manual, Ansys Innovation Space 4. Fusion manual 5. Matlab manual <p>Additional literature:</p> <ol style="list-style-type: none"> 1. Daniel Inman, Engineering Vibrations, Pearson Education, Inc.; (2008) English 2. Rakowski G., Kacprzyk Z., Metoda elementów skończonych w mechanice konstrukcji, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 1993. <p>Study aids:</p> <p>Materials provided during classes</p>

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	45 [h]
Preparation for lectures/classes/lab , Preparation for ... credit / exam	55 [h]	X
Total student workload Preparation for ... credit / exam	55 [h]/ 2.2 ECTS	45 [h]/ 1.8 ECTS
ECTS points per subject	4 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>