

SYLLABUS

Course description

Course description				
Course code		Course	Podstawy inżynierii	
ME/O/I/ST/B4			Fundamentals of engineering	
Language of instruction		English		
Academic year		2025/2026		
field of study:		Mechanical Engineering		
		All		
field of specialisation:				
Educational level		first-cycle studies		
Education profile		General academic		
Mode of study		Full-time studies		
Semester(s)		1		
Affiliation with a group of classes		B. Group of obligatory course core subject		
Course status		Obligatory		
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		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		Krzysztof Kołodziejczyk		
The website of the basic organizational unit		http://wm.uniwersytetradom.pl		
E-mail address, phone number of the coordinator		k.kolodziejczyk@urad.edu.pl (48) 361-71-16		

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

Learning Objective:	C1 - Acquisition by students of practical skills in conducting simple experiments and using IT techniques and tools in engineering activities.
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	C2 - Acquisition of the ability to independently solve simple computational problems using specialized software. C3 - Development of the ability to report the results of completed work.
Curriculum Content:	<p>Lecture content: Fundamental concepts in the field of knowledge and technology. Engineering competencies. Units of measurement and relationships between them. Standardization and normalization in technology. Software supporting engineering work (with an emphasis on CAD/CAE programs). Research and measurement in technology. Modeling in technology. Modeling and simulation in technology. Mathematical model. Principles of mathematical modeling. Mathematical modeling of physical phenomena in engineering practice. Developing, drawing conclusions, and presenting the results of research and measurements.</p> <p>Laboratory Exercises Content: Computer programs in engineering work - office, mathematical, and graphic software. Using a computer in engineering mathematical calculations and modeling physical phenomena. Teamwork: based on a technical object indicated by the academic teacher (mechanical system, electrical system), students, with the help and under the supervision of the teacher, conduct a simple experiment, go through subsequent stages of modeling (making simplifications, building a mathematical model) and computer simulation of the object, verify the obtained results, and finally prepare a report on the conducted experiments.</p>
Didactic (educational) methods:	Expository methods (information lecture) Programmed methods (using a computer) Practical methods (demonstration, laboratory exercises)
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 the achievement of all the required learning outcomes specified for the course. The method of calculating the final grade for the course is determined by the study regulations.

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	Knows and understands the fundamental methods, techniques, and tools required for solving simple engineering tasks in the field of machine construction, manufacturing technology, and operation.	K_WG16	Lecture	exam	Written exam
U1	Can use analytical, simulation and experimental methods to formulate and solve engineering tasks.	K_UW02	Lab	credit	Reports
U2	Is aware of the need of life-long learning and is able to choose learning methods appropriate for himself/ herself and others.	K_UU21	Lab	Verbal evaluation	Verbal evaluation
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.	K_KK01	Lab	Verbal evaluation	Verbal evaluation
K2	Is willing to comprehensively analyze and effectively carry out assigned tasks, and in the event of difficulties in solving them, use expert opinion.	K_KK02	Lab	Verbal evaluation	Verbal evaluation

Literature and teaching aids
<p>Primary literature:</p> <ol style="list-style-type: none"> 1. Moaveni, Saeed, and Ishan Sharma. <i>Engineering Fundamentals : An Introduction to Engineering</i>. 4th ed., SI, Cengage Learning, 2011. 2. Chapman, Stephen J. <i>MATLAB® Programming for Engineers</i>. 4th ed., Cengage Learning, 2008. <p>Study aids:</p> <p>Educational materials for laboratory sessions and research subjects provided by the teacher</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	40 [h] 15 [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, przewlekłe chorych).</p>

