

# SYLLABUS

## Course description

Course description				
Course code		Course	PODSTAWY KONSTRUKCJI MASZYN	
ME/O/I/ST/B11			BASIC OF MACHINE DESIGN	
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		Full-time studies		
Semester(s)		3/4		
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	30 [h]	11 ECTS
		Classes	30 h]	
		Project	60 [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		11 ECTS
	with qualifications	It is used to acquire engineering competences by the student		11 ECTS
	with science discipline	Mechanical engineering		11 ECTS
Form of teaching		Lecture: lecture with elements of multimedia presentations Project: design - individual performance Classes: engineering calculus exercises		
Prerequisites		Knowledge of technical drawing and basic material strength		
Department		Faculty of Mechanical Engineering		
Coordinator		PhD Paweł Maciąg		
The website of the basic organizational unit		http://wm.uniwersytetradom.pl		
E-mail address, phone number of the coordinator		p.maciag@uthrad.pl,		

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

Learning Objective:	<p>C1 -learn about the construction and purpose of basic machine elements</p> <p>C2 -learn the principles of calculating and designing machine assemblies</p> <p>C3 -learn the ability to read and prepare design documentation design documentation</p>
Curriculum Content:	<p>Lecture:</p> <p>Fundamentals of structural theory. Design algorithms. Databases. Fundamentals of optimisation. Computer programmes supporting Design Structural calculations. Types of loading. Criteria strength calculations for machine elements. Stiffness, stability and durability of structures. Fatigue strength and fatigue calculations. Elements of tribology. Connections: press-fit, bolted, shaped, welded, welded, soldered, glued, riveted, tubular and valves. Susceptible components. Methods of analysing kinematic systems. Fundamentals of hydrostatic drive. Design algorithms. Sliding and rolling bearings. Couplings. Engineering databases in mechanical engineering. Mechanical transmissions - types and characteristics. Project: individual project from the topic: Screw mechanism, linkages, gears.</p> <p>Classes: Solving selected problems of calculating components of of machinery not covered in the project.</p>
Didactic (educational) methods:	
Course assessment type, the criteria for assessing the achieved learning outcomes, and the method of calculating the final grade:	<p>Passing of the provided projects.</p> <p>Passing of classes</p> <p>Passing the examination (comprehensive response to at least three questions out of five).</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	knows and understands the principles of design of machine parts, mechanical structures	K_WG09	L, P, C	Credit for classes Passing the project Passing the Examination	Tests, Credit Project Examination
W2	knows and understands the basic methods, techniques and tools required for solving simple engineering tasks in the area of construction, manufacturing technology and operation of machinery	K_WG16	L, P, C	Credit for classes Passing the project Passing the Examination	Tests, Credit Project Examination
U1	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_UW09	L, P, C	Credit for classes Passing the project Passing the Examination	Tests, Credit Project Examination
U2	is able to, according to the given specification, design and implement a simple device, object, system or process, typical of the process of designing, manufacturing and operating machinery and equipment, using appropriate methods, techniques and tools	K_UW10	P, C	Credit for classes Passing the project Passing the Examination	Tests, Credit Project
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	L, P, C	Credit for classes Passing the project Passing the Examination	Tests, Credit Project Examination
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	L, P, C	Credit for classes Passing the project	Tests, Credit Project Examination

Literature and teaching aids
<p>Primary literature:</p> <ol style="list-style-type: none"> <li>1. Wydawnictwa seryjne podstawy konstrukcji maszyn PWN.</li> <li>2. Dietrich M. (red): Podstawy konstrukcji maszyn. Warszawa PWN i WNT.</li> <li>3. Dietrich J.: System i konstrukcja. Warszawa, WNT 1978.</li> <li>4. Ochęduszek K.: Koła zębate. Warszawa, WNT 1985.</li> <li>5. Mazanek E. (red): Podstawy konstrukcji maszyn. Częstochowa. Wyd. Politechniki Częstochowskiej 1997.</li> <li>6. Praca zbiorowa pod red. E. Mazanek : Przykłady obliczeń z podstaw konstrukcji maszyn, cz. 1,2, wyd. WNT 2005.</li> <li>7. Mazanek E., Kasprzycki A., Kania L.: Ćwiczenia laboratoryjne z podstaw konstrukcji maszyn i komputerowego wspomaganie projektowania. Częstochowa. Wyd. Politechniki Częstochowskiej 2003.</li> <li>8. Kurmaz L.: Podstawy konstrukcji maszyn. Kielce. Wyd. Politechniki Świętokrzyskiej 2002.</li> <li>9. Kurmaz L., Kurmaz O.: Projektowanie węzłów i części maszyn. wyd. Politechniki Świętokrzyskiej, 2004.</li> </ol> <p>Additional literature:</p> <p>Study aids:</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	120 [h]
Preparation for lectures/classes/lab , Preparation for ... credit / exam	155 [h]	X
Total student workloadPreparation for ... credit / exam	155 [h]/ 6,2 ECTS	120 [h]/ 4,8 ECTS
ECTS points per subject	11 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>

