

SYLLABUS

Course description

Course code	Course	PODSTAWY KONSTRUKCJI MASZYN		
MB/O/I/ST/B1.17		FUNDAMENTALS OF MACHINE DESIGN		
Language of instruction	English			
Academic year	2023/2024			
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)	4, 5			
Affiliation with a group of classes	Core subjects			
Course status	Obligatory			
Types of classes, instruction hours, ECTS credits	Types of classes	Number of instruction hours	Number of ECTS credits	
	Lecture	IV semester 30 [h] 30 V semester [h] [h]	IV sem.6 ECTS V sem. 6 ECTS	
	Classes	IV semester 15 [h]		
	project	IV semester 30 [h] 30 V semester [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		12 ECTS
	with qualifications	It is used to acquire engineering competences by the student		12 ECTS
	with science discipline	Mechanical engineering		12 ECTS
Form of teaching	Traditional – classes organized at the University /classes conducted using online learning methods and techniques			
Prerequisites	knowledge of record structures and fundamentals of strength of materials			
Department	Faculty of Mechanical Engineering			
Coordinator	Professor Wojciech Żurowski			
The website of the basic organizational unit	www.wm.uniwersytetradom.pl			
E-mail address, phone number of the coordinator	wojciech.zurowski@uthrad.pl, phone: 48 3617615			

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

Learning Objective:	C1-knowledge of the structure and purpose of the main elements of machines C2-mastering the principles of calculation and design of machine units C3-acquisition of reading skills and drawing up design documentation
Curriculum Content:	The content of classes is related to the conducted scientific research. Lecture: Fundamentals of construction theory. Design algorithms. Databases. Basics of optimization. Computer programs that help you design design calculations. Types of loads. Criteria for calculating the strength of machine elements. Rigidity, stability and durability of the structure. Fatigue strength and fatigue calculation. Elements of tribology. Connections: pressure, screw, shaped, welded, welded, soldered, glued, riveted, tubular and valve. Vulnerable elements. Methods for analyzing kinematic systems. Fundamentals of hydrostatic drive. Design algorithms. Plain and rolling bearings. Clutches. Engineering databases in mechanical engineering. Mechanical gearboxes-types and characteristics Design: individual design with the theme: screw mechanism, joints, gears. Exercises: solving selected questions for calculating machine elements that are not included in the project.
Didactic (educational) methods:	q: lecture with elements of multimedia presentations q: solving self-selected construction tasks. Q: Individual project execution.
Course assessment type, the criteria for assessing the achieved learning outcomes, and the method of calculating the final grade:	Completion of the planned projects. Passing the exam (exhaustive answer to at least three out of five questions)

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	has knowledge in understanding and creating design documentation, normalization, strength calculations, and applying up-to-date methods for recording structures. Knows the principles of engineering graphics and the tools used in the preparation of technical	documentation	K_WG14 b, C, P	project credit exam	test, project credit exam
W2	has basic knowledge in the field of design principles of machine parts and mechanical structures	K_WG09 K_WG10	b, C, P	project credit exam.	exam, project credit
U1	can formulate and perform project tasks tasks; choose the best modern solutions, build according to their own ideas	K_uw07 K_UW08	P	project credit exam	test
K1	students can: complete and select information about the design, share knowledge, formulate project tasks, learn independently and work in a team.	K_KR06	P		test

Literature and teaching aids
1. Wydawnictwa seryjne podstawy konstrukcji maszyn PWN. 2. Dietrich M. (red): Podstawy konstrukcji maszyn. Warszawa PWN i WNT. 3. Dietrych J.: System i konstrukcja. Warszawa, WNT 1978. 4. Ochęduszko K.: Koła zębate. Warszawa, WNT 1985. 5. Mazanek E. (red): Podstawy konstrukcji maszyn. Częstochowa. Wyd. Politechniki Częstochowskiej 1997. 6. Praca zbiorowa pod red. E. Mazanek : Przykłady obliczeń z podstaw konstrukcji maszyn, cz.1,2, wyd. WNT 2005. 7. Mazanek E., Kasprzycki A., Kania L.: Ćwiczenia laboratoryjne z podstaw konstrukcji maszyn i komputerowego wspomaganie projektowania. Częstochowa. Wyd. Politechniki Częstochowskiej 2003. 8. Kurmaz L.: Podstawy konstrukcji maszyn. Kielce. Wyd. Politechniki Świętokrzyskiej 2002. 9. Kurmaz L., Kurmaz O.: Projektowanie węzłów i części maszyn. wyd. Politechniki Świętokrzyskiej, 2004.

Student workload required to achieve the assumed learning outcomes –the balance of ECTS credits			
Attendance, participation	Student workload [h].		
	Other contact hours (IGK)	Student's self-study hours Classes without a teacher (ZBN)	Classes
Participation in ... lectures	X	X	60 [h]
Participation in classes/laboratory classes	X	X	60[h] 15[h]
Meeting with teachers during their duty hours	15 [h]	X	X
Preparation for lectures/classes/.... , Preparation for ... credit / exam	X	120 [h] 30 [h]	X
Total student workload	15 [h] / 0,6 ECTS	150 [h]/ 6 ECTS	135[h] / 5,4 ECTS
ECTS credits for the course	300 [h] / 12 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, przewlekłymi chorobami).</p>

