

# SYLLABUS

## Course description

Course code	Course	<b>PROJEKTOWANIE ZESPOŁÓW NAPEĐOWYCH</b>		
MB/O/I/ST/B1.14		<b>TRANSMISSION SYSTEM DESIGN</b>		
Language of instruction	English			
Academic year	2023/2024			
<b>field of study:</b>	Mechanics and machine construction			
<b>field of specialisation:</b>	All			
Educational level	first-cycle studies			
Education profile	General academic			
Mode of study	Full-time studies			
Semester(s)	4			
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	15 [h]	3 ECTS	
	Design classes	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		3 ECTS
	with qualifications	It is used to acquire engineering competences by the student		3 ECTS
	with science discipline	Mechanical engineering		3 ECTS
Form of teaching	Traditional – classes organized at the University /classes conducted using online learning methods and techniques			
Prerequisites	technical mechanics, strength of materials, construction and operation of machines			
Department	Faculty of Mechanical Engineering			
Coordinator	PhD Karol Osowski			
The website of the basic organizational unit	<a href="http://www.wm.uniwersytetradom.pl/">http://www.wm.uniwersytetradom.pl/</a>			
E-mail address, phone number of the coordinator	k.osowski@uthrad.pl, phone 48 361 71 17			

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

Learning Objective:	Acquisition of the ability to classify mechanical gears and perform preliminary design calculations of mechanical gears with the use of computer-aided design of machines.
Curriculum Content:	<p>The content of the classes is related to the conducted scientific research.</p> <p>Lecture: Selection of mechanical gears. Mechanical transmissions systems. Basics of hydrostatic drive. Problems of designing assemblies of mechanical transmissions: toothed with wheels with internal and external meshing, belt, friction, rope, helical. Fixed and variable gears. Design algorithms. Optimization of mechanical transmissions. Engineering databases systems in design. Computer aided design of hydraulic and mechanical transmissions.</p> <p>Project: Calculations of geometry and structural calculations of gears with a V-belt. Technical drawings (assembly and execution) of a belt transmission with a V-belt. The use of computer-aided design (CAD) methods to design a belt transmission with V-belt.</p>
Didactic (educational) methods:	<ul style="list-style-type: none"> <li>- feeding methods (informative lecture, reading);</li> <li>- problem methods (problem lecture, conversational lecture);</li> <li>- activating methods (case method, situational method, didactic discussion);</li> <li>- programmed methods (using a computer);</li> <li>- practical methods (demonstration, calculation exercises, project method);</li> </ul>
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 a given course. Obtaining positive grades in all forms of classes included in a given course is tantamount to passing it and obtaining by the student the number of ECTS points assigned to this course.</p> <p>Lecture: the arithmetic mean of the grades obtained by the student for tests.</p> <p>Design classes: final evaluation of the completed project.</p> <p>Additional elements: active participation in classes, independent work.</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 ( <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	The student knows how to prepare technical documentation for a mechanical transmission project.	K_WG04, K_WG11	lecture	graded credit	test
W2	The student knows how to calculate the elements of the drive system and on this basis select mechanical gears and drive motors.	K_WG06, K_WG10	lecture	graded credit	test
W3	The student uses computer-aided methods in the design of mechanical transmissions.	K_WG17	lecture	graded credit	test
U1	The student is able to select a drive system	K_UW02,	design classes	graded	project

	with a three-phase electric motor for the working system of a technological machine.	K_UW05, K_UW05		credit	
U2	The student is able to design a belt transmission with a V-belt.	K_UW05, K_UW09, K_UW11	design classes	graded credit	project
K1	The student is able to work in a group.	K_KK01, K_KK02, K_KK03	design classes	participation in classes	verbal assessment

#### Literature and teaching aids

1. Dietrich M.: Podstawy konstrukcji maszyn. PWN Warszawa, 1989.
2. Madej J.: Projektowanie mechanizmów napędowych pojazdów szynowych. WKŁ Warszawa, 1988.
3. Praca zbiorowa: Poradnik mechanika. WNT Warszawa, 1985.
4. Piątkiewicz A., Sobolski, R.: Dźwignice. WNT Warszawa, 1977.
5. Osiński Z. i inni: Podstawy konstrukcji maszyn. PWN Warszawa, 1988.
6. Loska A. i inni: Podstawy konstrukcji maszyn. Skrypt PW Warszawa, 1980.
7. Kurmaz L.: Projektowanie węzłów i części maszyn. Wydawnictwo Politechniki Świętokrzyskiej, Kielce 2004.
8. Osowski K.: Materiały do zajęć z przedmiotu Projektowanie zespołów napędowych.

#### 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	15 [h]
Participation in design classes	X	X	30 [h]
Meeting with teachers during their duty hours	5 [h]	X	X
Preparation for lectures/design classes Preparation for credit	X	20 [h] 5 [h]	X
Total student workload	5 [h]/ 0,2 ECTS	25 [h]/1 ECTS	45 [h]/ 1,8 ECTS
ECTS credits for the course	3 ECTS		

#### Additional information, comments

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.

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).

