SYLLABUS

Course description

Course code	Course	SYSTEMY AKWIZYCJI DANYCH		
ME/O/I/ST/C3		DATA ACQUISITION 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)		5		
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	- [h]	3 ECTS
		Classes	- [h]	
		Lab	45 [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 distance learning methods and techniques		
Prerequisites		knowledge of mathematics, programming and numerical methods, electrical engineering and electronics		
Department		Faculty of Mechanical Engineering		
Coordinator		Ph.D. K. Olejarczyk		
The website of the basic organizational unit		http://wm.uniwersytetradom.pl		
E-mail address, phone number of the coordinator		k.olejarczyk@uthrad.pl (48) 361-71-16		

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

Learning Objective:	C1 – Getting to know the methods of computer registration of measurements from various sensors C2 – Mastering the ability to build simple systems of acquisition and signal generation
Curriculum Content:	The content of classes is related to the conducted scientific research. Analog signal vs digital signal, parameters of the DAQ system and characteristics, main components of measuring equipment, lab #1 measuring rotational speed with a tachometer lab #2 signal analysis with accelerometer lab #3 degradation analysis of an example object using the time synchronous average method (tsa) in the run to failure test (rft) lab #4 modal analysis
Didactic (educational) methods:	feeding methods (informative lecture combined with a power-point presentation); programmed methods (using a graphical programming environment such as MatLab), practical methods (construction of measurement stations using: measurement cards, sensors)
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 to achieve all the required learning out comes specified for the course.

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 of the task and methods of condition diagnosis	K_WG010	Laboratory exercises	Raport	Test
W2	knows and understands the methods of measurement, knows the calculation methods and computer tools necessary for the analysis of experimental results	K_WG012	Laboratory exercises	Raport	Test
U1	is able to use computer methods in solving engineering tasks in the field of DAQ systems	K_UW05	Laboratory exercises	Raport	Test
U2	Is able to use measurement apparatus and methods of estimating measurement errors	K_UW06	Laboratory exercises	Raport	Test
K1	is ready to complete and critically evaluate specialized knowledge and is willing to comprehensively analyze and effectively carry out assigned tasks	K_KO01, K_KO02	Laboratory exercises	Raport	Test

Literature and teaching aids
1. Richard G. Lyons: Wprowadzenie *do cyfrowego przetwarzania sygnałów*, WKiŁ, 2003 2. Prezentacja z wykładów 3. Materiały informacyjne firmy National Instruments ze strony https://www.ni.com/pl-pl.html

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 lab	30 [h]	X
Total student workload	30[h]/ 1.2 ECTS	45 [h]/ 1.8 ECTS
ECTS points per subject	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).