

SYLLABUS

Course description

Course code	Course	INŻYNIERIA ODWROTNA		
MB/O/I/ST/C1B.5		REVERSE ENGINEERING		
Language of instruction	Angielski			
Academic year	2023/2024			
field of study:	Mechanical engineering			
field of specialisation:	CAE			
Educational level	first-cycle studies			
Education profile	general academic			
Mode of study	full-time studies			
Semester(s)	6			
Affiliation with a group of classes	Specialization module			
Course status	Eligible			
Types of classes, instruction hours, ECTS credits	Types of classes	Number of instruction hours	Number of ECTS credits	
	Lecture	8 h]	2 ECTS	
	Classes	8 [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 (general academic profile)		1,5 ECTS
	with qualifications	it is used to acquire engineering competences by the student		2 ECTS
	with science discipline	Mechanical engineering		2 ECTS
Form of teaching	Traditional – classes organized at the University /classes conducted using online learning methods and techniques			
Prerequisites				
Department	Department of Computer Machine Design			
Coordinator	dr inż. Jarosław Kotliński			
The website of the basic organizational unit	http://uniwersytetradom.pl/			
E-mail address, phone number of the coordinator	jaroslaw.kotlinski@uthrad.pl , 48-3617620			

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

Learning Objective:	Obtaining knowledge and skills in the field of digitization by students.
Curriculum Content:	Lecture: Purpose and methods of digitization. Construction of scanners. Scanning techniques. Laboratory exercises: Discussion of the software and techniques for recreating a CAD model from a scanned object. Overview of the construction of 3D scanners. Preparation of 3D scanners for work. Presentation and measurement using a scanner. Preparation of the CAD model from the scan result. Discussion of the cases.
Didactic (educational) methods:	Lecture: Conventional lecture with the use of audiovisual means, verbal problem method. Laboratory exercises: Individual work of students. Individual examples, tasks.
Course assessment type, the criteria for assessing the achieved learning outcomes, and the method of calculating the final grade:	Laboratory exercises - a pass with a grade, the average of grades from reports

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 designing machine parts, mechanical structures and power equipment;	K_WG09	Lecture	pass	Test
W	has knowledge in the field of computer-aided design, manufacturing and operation of mechanical, mechatronic or energy machinery and equipment;	K_WG11	Lecture	pass	Test
U1	is able to use computer methods in solving engineering tasks in the field of design, manufacture and operation of machines and devices;	K_UW05	Lab	pass	Reporte
U...	can, in accordance with the given specification, design and implement a simple device, object, system or process, typical for the process of designing, manufacturing and operating machines and devices, using appropriate methods, techniques and tools;	K_UW10	Lab	pass	Reporte
K1	is ready to show entrepreneurship and ingenuity in activities related to the implementation of professional tasks	K_KO05	Lecture Lab	-	Verbal assessment

Literature and teaching aids

1. Chlebus E.: Innowacyjne technologie Rapid Prototyping – Rapid Tooling w rozwoju produktu. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2003.
2. Chua C. K., Leong K. F., Lim C. S.: Rapid Prototyping Principles and Applications. Jon Wiley and Sons, Inc., New York 2003.
3. Miecielica M.: Analiza wybranych metod szybkiego prototypowania. PW IPIB, Warszawa 2007.
4. Miecielica M.: Rapid prototyping – metody i możliwości zastosowania w inżynierii biomedycznej. AGH, Krakow 2009.
5. Gebhardt A.: Rapid prototyping. Carl Hanser Verlag, Munich 2003.
6. Wohlers Report 2017.
7. Jezierski J.: Analiza tolerancji i niedokładności pomiarów w budowie maszyn. WNT. Warszawa 2003 (Wydanie III zmienione)
8. Jakubiec W., Malinowski J.: Metrologia wielkości geometrycznych. WNT. Warszawa 1993.
9. Meller E. i A.: Laboratorium metrologii warsztatowej. PWN Warszawa 1996.
10. Praca zbiorowa pod redakcją B. Nowickiego i J. Zawory: Metrologia wielkości geometrycznych. WPW Warszawa 2001

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 classes/laboratory classes	X	X	15 [h]
Meeting with teachers during their duty hours	5 [h]	X	X
Preparation for lectures/classes/.... , Preparation for ... credit / exam	X	5[h]/5[h] 5 [h]	X
Total student workload	5 [h]/ 0.2 ECTS	15	30 [h]/ 1.2 ECTS
ECTS credits for the course	2 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).

