

SYLLABUS

Course description

Course code	Course	PROJEKTOWANIE PROCESÓW TECHNOLOGICZNYCH CZĘŚCI MASZYN		
MB/O/I/ST/C2A.15		DESIGN OF TECHNOLOGICAL PROCESSES OF MACHINE PARTS		
Language of instruction	English			
Academic year	2023/2024			
field of study:	Mechanical engineering			
field of specialisation:	Designing and manufacturing of machines			
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	Obligatory			
Types of classes, instruction hours, ECTS credits	Types of classes	Number of instruction hours	Number of ECTS credits	
	Lecture	15 [h]	3 ECTS	
	Classes	0 [h]		
	Project	30 [h]		
Linkage of the course	with the education profile	Associated with the conducted scientific activity in the discipline to which the field of study is assigned		3 ECTS
	with qualifications	It serves the student's acquisition of engineering competencies		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				
Department	Faculty of Mechanical Engineering			
Coordinator	dr inż. Wojciech Kucharczyk			
The website of the basic organizational unit	http://www.wm.uniwersytetradom.pl/			
E-mail address, phone number of the coordinator	wojciech.kucharczyk@uthrad.pl, tel. 48 361 7680			

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

Learning Objective:	The aim of the course is to acquire the ability to design technological processes of machine parts together with the development of a project of a technological process of a selected structural element.
Curriculum Content:	The content of the classes is related to the conducted scientific research. Lecture. Production and technological processes and their division. Input data for the design of the technological process. Technological construction. Standardization and unification of parts and assemblies. Types of semi-finished products, their selection, preparation for processing. Factors affecting the choice of blank. Rational selection of materials. Technological documentation. Machining accuracy, product quality. Typization of technological processes. Designing the technological process of class parts: shaft, sleeve and disc, lever, body, flat parts, gear wheel. Framework product assembly process. Project (NB). The topics of the exercises include the development of the technological process of the indicated precision element with the use of selected technologies, taking into account: dimensions of the starting material; machining allowances; calculations of dimensions and technological parameters in machining processes; calculations related to the selection of machines, devices, fixtures and tools for a specific technological process; heat and surface treatment as well as quality control and technical acceptance.
Didactic (educational) methods:	Lecture - giving method (informative lecture). Project - practical method (project method).
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 outcomes specified for the subject. 1. Lecture. Written exam - average grade from partial questions. 2. Project. Completion of an individually made technological process design for the indicated part of the machines in the field of: removal, heat and surface treatment as well as quality control. The final grade for the project is the sum of the grades: 60% project, 30% presentation, 10% activity in class.

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	It defines the basic concepts used in the design of technological processes (volume of production, producibility of construction, allowances, technological parameters, machining accuracy, product quality, working time standardization, normalization and unification, main and auxiliary technological operation, treatment, etc.).	K_WG09	Lecture	Written exam	Arithmetic mean of sub-question scores
W2	He knows, based on what criteria, to select semi-finished products, machine tools, devices, holders, tools, how to calculate the required machining parameters and dimensions for the development of a technological process.	K_WG 01 K_WG 16	Lecture	Written exam	Arithmetic mean of sub-question scores
W3	Distinguishes between types of technological documentation and knows what are the rules for its development.	K_WG 04 K_WG 11	Lecture	Written exam	Arithmetic mean of sub-question scores
W4	He knows the principles of designing technological processes of typical machine parts as part of process typification.	K_WG 16	Lecture	Written exam	Arithmetic mean of sub-question scores

U1	Is able to select a semi-finished product due to the type of material, its shape and size of the product, production volume, machine park, set technical conditions.	K_UW11	Project	Passing individually made project	Evaluation of the degree and quality of project execution
U2	He can calculate and select technological parameters, select machining allowances, tools, instruments, machine tools, standardize machining times.	K_UW09	Project	Passing individually made project	Evaluation of the degree and quality of project execution
U3	Plans the correct sequence of main and auxiliary operations and quality control in the developed technological documentation.	K_UW12 K_UW14	Project	Passing individually made project	Evaluation of the degree and quality of project execution
U4	Designs a substantively correct technological process of a given precise detail.	K_UW14 K_UK15	Project	Passing individually made project	Evaluation of the degree and quality of project execution
K1	He is able to analyze project tasks assigned to implementation, in terms of defining priorities, serving the maximum efficiency of task execution.	K_KO04 K_KK02	Lecture	Written exam	Arithmetic mean of sub-question scores
K2	He is able to show entrepreneurship and ingenuity in activities related to the implementation of project tasks.	K_KO05	Project	Passing individually made project	Evaluation of the degree and quality of project execution

Literature and teaching aids

- [1] Feld M.: Podstawy projektowania procesów technologicznych typowych części maszyn. WNT. Warszawa. 2003.
 [2] Mazurkiewicz A.: Konstruowanie powierzchni i addytywne kształtowanie wyrobów obróbką laserową. Wyd. UTH Radom, Radom 2018.
 [3] Mazurkiewicz A.: Technologie specjalne kształtowania materiałów. Wyd. II. Wyd. Polit. Rad. Radom 2009.
 [4] Winkler T.: Wspomaganie komputerowe CAD/CAM - Komputerowy zapis konstrukcji. WNT. Warszawa. 1997.

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 project	X	X	30 [h]
Meeting with teachers during their duty hours	2 [h]	X	X
Preparation for lectures / project Preparation for exam	X	8 [h] / 10 [h] 10 [h]	X
Total student workload	2 [h] / 0,1 ECTS	28 [h] / 1,1 ECTS	45 [h] / 1,8 ECTS
ECTS credits for the course	75 [h] / 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).