COURSE SPECIFICATION

Course code	full-time programme:	**M#2-S1-ME-506**
	part-time programme:	
Course title in Polish	**Technologia budowy maszyn**	
Course title in English	**Manufacturing Engineering**	
Valid from (academic year)	**2024/2025**	

GENERAL INFORMATION

Programme of study	**MECHANICAL ENGINEERING**
Level of qualification	**first-cycle**
Type of education	**academic**
Mode of study	**full-time programme**
Specialism	**all**
Department responsible	**Department of Machine Design and Machining**
Course leader	**dr hab. inż. Sławomir Błasiak, prof. PŚk,**
Approved by	**dr hab. Jakub Takosoglu, prof. PŚk, Dean of the Faculty of Mechatronics and Mechanical Engineering**

COURSE OVERVIEW

Course type		**programme-specific**
Course status		**compulsory**
Language of instruction		**English**
Semester of delivery	full-time programme	**Semester V**
	part-time programme	
Pre-requisites		
Examination required (YES/NO)		**NO**
ECTS value		**2**

Mode of instruction		**lecture**	**class**	**laboratory**	**project**	**seminar**
No. of hours per semester	full-time programme	**15**			**15**	
	part-time programme					

LEARNING OUTCOMES

Category of outcome	**Outcome code**	**Course learning outcomes**	**Corresponding programme outcome code**
Knowledge	W01	The student has advanced knowledge in the field of manufacturing techniques for machine parts (turning, milling, drilling, grinding, etc.) using conventional machine tools.	MiBM1_W07

	W02	Has a structured advanced knowledge of the principles and methods of developing technological designs of typical machine parts and technological documentation using CAD programmes.	MiBM1_W09
Skills	U01	Be able to design a simple technological process in the area of mechanical and mechanical engineering and select appropriate machinery and equipment for this purpose.	MiBM1_U08
	U02	The student is able to select materials and tools as well as machine tools when developing a technological process.	MiBM1_U14
Competence	K01	He is ready to critically assess the impact of a technological process in the field of mechanical engineering and engineering on the safety of people and the environment.	MiBM1_K02
	K02	The student is prepared to adhere to ethical principles in the field of mechanical engineering technology related to the course of study Mechanical Engineering and Mechanical Engineering.	MiBM1_K06

COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	The following content will be imparted as part of the lecture classes conducted, covering: Classification of machine parts. Production and technological process. Structure and documentation of the technological process. Example of documentation. Types of semi-finished products and their selection. Preparation of semi-finished products for machining. Types of allowances and factors affecting their size. Normative allowances for machining. Determination and clamping of PO. Machining bases, principles of selection. Errors in determining PO. Selection of process machines. Methodology of tool selection and machining parameters. Standard of working time. General principles of technological process design. Technological processes of axisymmetric parts of the shaft, sleeve, disc class. Technological process of flat parts.
project	The scope of the design class will include: Discussion and issue of individual process design data for a shaft or bushing type part. Discussion of the purpose and scope of the project and principles of passing. Analysis of structural and technological data. Selection of machining methods. Selection of machining allowances. Selection of semi-finished product. Selection of technological machines, cutting tools. Forming technological process structure, Selection of machining parameters and calculation of working time norm for cutting and roughing operations. Selection of machining parameters and calculation of working time norm for shaping turning, milling and grinding operations. Final development of process documentation.

ASSESSMENT METHODS

Outcome code	Methods of assessment *(Mark with an X where applicable)*					
	Oral examination	Written examination	Test	Project	Report	Other
W01			X			
W02			X			

U01				X		
U02				X		
K01				X		
K02				X		

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	non-examination assessment	Successful completion of the final assessment. Achieving at least 50 % of the credits.
project	non-examination assessment	Final assessment based on the developed project. Achievement of at least 50 % of the points.

OVERALL STUDENT WORKLOAD

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
1.	Scheduled contact hours	L	C	Lb	P	S	L	C	Lb	P	S	h
		15			15							
2.	Other contact hours (office hours, examination)	2			2							h
3.	**Total number of contact hours**	**34**										h
4.	**Number of ECTS credits for contact hours**	**1,4**										ECTS
5.	**Number of independent study hours**	**16**										h
6.	**Number of ECTS credits for independent study hours**	**0,6**										ECTS
7.	**Number of practical hours**	**25**										h
8.	**Number of ECTS credits for practical hours**	**1,0**										ECTS
9.	**Total study time**	**50**										h
10.	**ECTS credits for the course** *1 ECTS credit = 25-30 hours of study time*	**2**										ECTS

READING LIST

1. Feld M.: Podstawy projektowania procesów technologicznych typowych części maszyn. WNT Warszawa 2000.
2. Kapiński S., Skawiński P., Sobieszczański J., Sobolewski J.: Projektowanie technologii maszyn. Wydawnictwo Politechniki Warszawskiej. 2002.
3. Kaczmarek J. Projektowanie z technologii maszyn. Wydawnictwo Politechnik Łódzkiej. 2001.
4. Choroszy B.: Technologia maszyn. Wrocław, Oficyna Wydaw. PWr. 2000.

5. Przybylski L.: Strategia doboru warunków obróbki współczesnymi narzędziami. Toczenie – wiercenie – frezowanie. Politechnika Krakowska, Kraków, 2000.
6. Zych A.: Projektowanie procesów technologicznych, Instytut Technologii Eksploatacji - Państwowy Instytut Badawczy, Radom 2005.
7. Łabędź J.: Projektowanie procesów technologicznych obróbki. Wyd. AGH, Kraków, 1996.
8. Małecki i inni: Projektowanie procesów technologicznych. Skrypt PŚk, Kielce.
9. Wołk R. Normowanie czasu pracy na obrabiarkach do obróbki skrawaniem. WNT. Wa-wa, 1997.
10. Katalogi firm produkujących narzędzia: Walter GPS, Sandvik, Pafana, Seco Tools, Mitsubishi Carbide.

Czasopisma

1. Mechanik