

**COURSE SPECIFICATION**

Course code	full-time programme:	M#2-S1-ME-503
	part-time programme:	
Course title in Polish	Komputerowe wspomaganie procesów technologicznych	
Course title in English	Computer-Aided Manufacturing	
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 inż. Łukasz Nowakowski
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		Technical Drawing, Fundamentals of Machining
Examination required (YES/NO)		NO
ECTS value		3

Mode of instruction		lecture	class	laboratory	project	seminar
No. of hours per semester	full-time programme	15		30		
	part-time programme					

LEARNING OUTCOMES

Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
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Knowledge	W01	The student has a structured knowledge of engineering graphics and modern information technologies to support the design of technological processes.	MiBM1_W03 MiBM1_W06
	W02	The student knows the methods to design the technological process. The student has detailed knowledge related to selected issues in the field of design, manufacturing technology of basic components of machinery and equipment.	MiBM1_W11 MiBM1_W07
Skills	U01	The student is able to consciously use computer software in the field of mechanics and mechanical engineering in the areas of design, construction, manufacturing techniques, presentation of work results.	MiBM1_U02 MiBM1_U04
	U02	The student is able to design a simple technological process in the field of mechanics and mechanical engineering and select appropriate machines and equipment for this purpose	MiBM1_U08 MiBM1_U09
	U03	The student is able to carry out the design and process for machine components using CAD/CAM software, starting with a sketch and ending with a prototype.	MiBM1_U04 MiBM1_U19
Competence	K01	The student is ready to critically evaluate his knowledge and the need to improve his professional qualifications (through second and third degree studies, postgraduate studies, professional courses).	MiBM1_K01 MiBM1_K03

COURSE CONTENT

Type of instruction lecture	Topics covered
lecture	As part of the conducted lecture classes, the following content will be imparted, including: the basics of operating selected computer systems that support the creation of technological processes. Students will be introduced to the operation of selected CAD programs for computer-aided design, CAM programs for computer-aided manufacturing processes, and the capabilities of the control systems of scanned machine tools that support the engineer's work.



laboratory	<p>Laboratory classes will include exercises designed to familiarize students with the construction and technological capabilities of selected computer systems that support the creation of technological processes</p> <p>The scope of the laboratory classes will include:</p> <ul style="list-style-type: none"> • basics of part modeling in CAD programs, • development of two 3D models of parts (for turning and milling machining) in a selected CAD program, • basics of creating technological process in CAM programs - turning module, • development of lathe machining technology in a selected CAM program, • basics of creating technological process in CAM programs - milling module, • development of milling machining technology in a selected CAM program, • basics of creating a technological process on the simulator of the lathe controller, • development of lathe machining technology on the simulator of the lathe controller, • basics of creating a technological process on the simulator of a milling machine controller, • development of lathe machining technology on a milling machine controller simulator,
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ASSESSMENT METHODS

Outcome code	Methods of assessment (<i>Mark with an X where applicable</i>)					
	Oral examination	Written examination	Test	Project	Report	Other
W01			x			
W02			x			
U01					x	
U02					x	
U03					x	
K01					x	

ASSESSMENT TYPE AND CRITERIA

Mode of instruction	Assessment type	Assessment criteria
lecture	non-examination assessment	Successful completion of the final exam. Obtaining at least 50% of the points.
laboratory	non-examination assessment	Positive completion of class reports. The final grade is the arithmetic average.

OVERALL STUDENT WORKLOAD

ECTS weighting												
No.	Activity type	Student workload										Unit
		full-time programme					part-time programme					
		L	C	Lb	P	S	L	C	Lb	P	S	
1.	Scheduled contact hours	15		30								h



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2.	Other contact hours (office hours, examination)	2		2								h
3.	Total number of contact hours	49										h
4.	Number of ECTS credits for contact hours	2,0										ECTS
5.	Number of independent study hours	26										h
6.	Number of ECTS credits for independent study hours	1,0										ECTS
7.	Number of practical hours	50										h
8.	Number of ECTS credits for practical hours	2,0										ECTS
9.	Total study time	75										h
10.	ECTS credits for the course <i>1 ECTS credit = 25-30 hours of study time</i>	3										ECTS

READING LIST

1. Jerzy Honczarenko: Obrabiarki sterowane numerycznie, Wydawnictwo Naukowe PWN 2019
2. Witold Habrat: Obsługa i programowanie obrabiarek CNC Podręcznik operatora, Kabe 2015
3. Wit Grzesik, Piotr Kiszka, Piotr Niesłony: Programowanie obrabiarek CNC, Wydawnictwo Naukowe PWN 2019
4. Cichosz P.: Narzędzia skrawające



Politechnika Świętokrzyska
Kielce University of Technology

Projekt „Dostosowanie kształcenia w Politechnice
Świętokrzyskiej do potrzeb współczesnej gospodarki”
nr FERS.01.05-IP.08-0234/23



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i Budowy Maszyn