GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Designing of the technological processes CAM, PG_00040073		
Field of study	Mechanical Engineering, Mechanical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Bogdan Ścibiorski	
	Teachers	dr inż. Bogdan Ścibiorski	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	22.0	0.0	15.0	0.0	0.0	37
	E-learning hours included: 0.0						

Learning activity and number of study hours					
	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	37	10.0	78.0	125

Subject objectives	The aim of the course is to obtain basic knowledge and skills in the field of designing technological processes with the use of computer-aided manufacturing systems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools	The student designs processes technological for typical machine parts in conditions automated production with the use of systems computer assist manufacturing. Develops machine tool control programs CNC for machining of turned parts and milled. The student can troubleshoot the scope cooperation between systems CAD and CAM. The student has knowledge on the selection of CNC systems i machining parameters for selected machine parts.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	The student identifies techniques used in design and process automation technological. Selects appropriate structures manufacturing of machine parts in automated production	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

Subject contents	Lecture: Current problems of automation and design of technological processes. Learning the principles of designing and automating technological processes of machine parts in CAX systems on the example of typical machine parts. Development of the technological process structure for typical machine parts in computer-aided manufacturing. Programmed workshop of CNC machine tools. Analysis of the selection of a semi-finished product. Modeling in the CAD system of parts, blank and fixtures. Assigning technological features to geometric features. Designing operations and machining cycles. Generating machining programs. Machining simulation and visualization. CAX systems integration. CIM production concept. Product model data exchange in computer manufacturing systems. Laboratory: CAD modeling of parts, blank and fixtures. Development of the indicated operations for a CNC machine tool using the CAM system, including: selection of a machine tool, declaration of a blank and machining holders, selection of tools and machining parameters for individual treatments, generation of tool paths, machining simulation, generating a machining program.
Prerequisites and co-requisites	Machine technology,

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	56.0%	60.0%
Laboratory	90.0%	40.0%

Recommended reading	Basic literature	1. Kochan P.: Edgecam. Wieloosiowe toczenie CNC. Helion 2017, 2. Kochan P.: Edgecam. Wieloosiowe frezowanie CNC. Helion 2014, 3. Jarosław Panasiuk, Wojciech Kaczmarek: Robotyzacja procesów produkcyjnych, Warszawa, WNT, 2017, 4. Przybylski W., Deja M.: Komputerowo wspomagane wytwarzanie maszyn. WNT, Warszawa 2007.
	Supplementary literature	1. Chlebus E.: Techniki komputerowe CAx w inżynierii produkcji. WNT, Warszawa 2000 2. Elastyczna automatyzacja wytwarzania. Obrabiarki i systemy obróbkowe. WNT, Warszawa 2000. 3. Feld M.: Projektowanie i automatyzacja procesów technologicznych. PWN, Warszawa 2005. 4. Grzesik W., Niesłony P., Bartoszuk M.: Programowanie obrabiarek NC/CNC. WNT, Warszawa 2006.
	eResources addresses	Adresy na platformie eNauczanie: Projektowanie procesów technologicznych CAM (M:31927W0) Specjalność: TMiMK, sem.05 niest. zimowy (WIMiO)22/23 - Moodle ID: 26775 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26775
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	