GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Computer Aided Manufacturing, PG_00039961
Field of study	Management and Production Engineering, Management and Production Engineering

Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
			Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Department of Manufacturing and Production Engineering -> Faculty of Mechanical Engineering and Ship Technology

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Mariusz Deja
	Teachers	dr inż. Dawid Zieliński
		dr inż. Piotr Sender
		dr hab. inż. Mariusz Deja

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	15.0	0.0	75
	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	75	7.0	18.0	100

Subject objectives	Learning the basic techniques of computer-aided manufacturing, especially programming CNC machines with the use of CAM software

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U09	The student applies the practical use of CAM and CAD systems.	[SU1] Assessment of task fulfilment
	K6_K02	Group design of the technological process with the use of a computer system	[SK3] Assessment of ability to organize work
	K6_W03	The student can design technological processes of typical machine parts for the available means of production.	[SW3] Assessment of knowledge contained in written work and projects
	K6_W05	Modelling and simulation of manufacturing processes.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	Systems for computer-aided manufacturing. Preparation of 3-D models of prismatic objects for milling based on the manufacturing drawing. Integration of CAD and CAM systems. Data exchange between systems. Cooperation with CAD programs. Definition of the blank, selection of the holder and milling tools, processing parameters. Roughing, profile and hole machining cycles. Free surface machining cycles. Modification of machining cycles - compacting tool paths, changing the machining direction, copying operations. Preparation of 3-D models of axially-symmetrical components for turning on the basis of an executive drawing. Definition of a blank, selection of a chuck and turning tools, machining parameters. Turning cycles: roughing, shaping and finishing, machining of grooves, holes, threading (4). Collision analysis. Postprocessor selection and NC code generation, code editor. Editing operation parameters. Machining time analysis. Trends in the development of computer aided manufacturing.
Prerequisites and co-requisites	Machine technology, the basics of material removal processes, computer-aided design CAD

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	60.0%	30.0%
	Laboratory exercises	60.0%	35.0%
	Project	60.0%	35.0%

Recommended reading	Basic literature	1. Kochan K.: Edgecam Wieloosiowe Frezowanie CNC. Helion, 2014. 2. Przybylski W., Deja M.: Komputerowo wspomagane wytwarzanie maszyn. Podstawy i zastosowanie. WNT, Warszawa 2007.
	Supplementary literature	Selected articles from on-line journals: 1. Computer-Aided Design 2. Computers in Industry 3. Journal of Manufacturing Systems
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. The range of applications of CAD / CAM manufacturing support systems. 2. Generating an NC program using the CAD / CAM system. 3. Diagram of operation when designing turning technology using the CAD / CAM system. 4. Diagram of operation when designing milling technology using the CAD / CAM system. 5. Present the essential differences between the solid model and the surface model. 6. Characteristics of parametric CAD design. 7. Ways of determining the center of the coordinate system on the workpiece. 8. Ways of determining the blank in CAM systems.
Work placement	Not applicable