GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Manufacturing Technology, PG_00055382		
Field of study	Mechanical Engineering		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Institute Of Manufacturing And Materials Technology -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Daniel Chuchała	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	30.0	0.0	0.0	60

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	60	4.0	36.0	100

Subject objectives

Preparation for recognizing the processes of manufacturing mechanical elements

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W11] possesses knowledge on design, technology and manufacturing of machine parts, metrology, and quality control; knows and understands methods of measuring and calculating values describing the operation of mechanical systems, knows calculating methods applied to analyse the results of experiments	The student is able to choose the correct production process, technological machine and the type of tools for the implementation of the production process of a given element.	[SW1] Assessment of factual knowledge
[K6_U08] is able to design a technological manufacturing process for typical elements of machines or devices, using analytical and numerical calculating tools	The student is able to use on-line tools to select machining parameters, as well as to calculate the shortening of sheets during the bending process on press brakes.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_U04] is able to perform a critical analysis of the existing technical solutions, present the specification of the technology of manufacturing basic construction elements of machines and engineering assemblies	The student is able to determine the necessary manufacturing processes to produce a given mechanical element	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
[K6_U09] is able to plan the manufacturing, assembly and quality control processes of typical constructions and mechanical devices, estimating their costs	The student is able to select the correct parameters of the cutting process with the use of tool catalogs, also in on-line versions, for a given set of workpiece material and cutting edge material	[SU4] Assessment of ability to use methods and tools

Subject contents	LECTURE Geometric and kinematic parameters of cutting. Tool and workpiece movements. The geometryofthe blades in the tool and working system, the geometry of the cut layer. The phenomenon of formationchipsand types of chips. Heat and temperature in the cutting zone. Cooling and lubricating agents. Wearcuttingtools. Cutting force and power. Tool materials and rules for their selection. Basic methods of machining:turning, milling, drilling, countersinking, reaming. Molding - Metallurgy metals and their alloys. Casting manufacturing methods. Special methods of making molds and cores. Special casting methods. Plastic Working - Basics of plastic working. Plastic deformation of metals. The influence of plastic deformation on the properties of metals. Classification of plastic working processes. Metal rolling. Forging and pressing. Pulling and extrusion. Technology for pulling bars, wires and pipes. Technology of extrusion processes. Punching of non-unfolding coatings. Metal cutting. Metal bending. Multiple and simultaneous pressing. LABORATORY Cutting materials and cutting-off machines. Machining on lathes. Machining on drills.Machining on milling machines. Machining of gears. Machining on grinders. Machining on planers and slotters. Preparation of the production of castings. Making forms using the split and non-split model. Plastic working machines. Influence of crushing on the mechanical properties of metals. Rolling. Plastic bending of profiles and pipes. Punching of non-unfolding coatings.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Lecture	56.0%	70.0%
Laboratory	100.0%	30.0%

Recommended reading

Basic literature	1. Olszak W. Obróbka skrawaniem. WNT Warszawa 2008. 2. Podręcznik szkoleniowy. Obróbka metali skrawaniem . Sandvik Coromant 2017. 3. Storch B.: Podstawy obróbki skrawaniem. Wyd. Politechniki Koszalińskiej, Koszalin 2001. 4. Cichosz P.: Narzędzia skrawające. WNT, Warszawa 2006. 5. Bartosiewicz J.: Obróbka skrawaniem i elementy obrabiarek. Wyd. Poilt. Gda. Gdańsk 1997 6. Szweycer M., Nadolska D.: Metalurgia i odlewnictwo. Poznań: Wyd. Politechniki Poznańskiej 7. Kosowski A.: Zarys odlewnictwa. Wyd. AGH Kraków 8. Skoblik R., Wilczewski L.: Technologia Metali. Laboratorium.
Supplementary literature	1. Jemielniak K.: Obróbka skrawaniem. Ofic. Wyd. Polit. Warsz. Warszawa1998.2. Grzesik W.: Podstawy skrawania materiałów metalowych. WNT warszawa 1998.3. Materiały pomocnicze dostępne na stronach producentów narzędzi np. Seco Tools i in4. Murza-Mucha K.: Techniki wytwarzania. Odlewnictwo. PWN Warszawa5. Dobrucki W.: Zarys obróbki plastycznej metali. Śląsk
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	The final test contains many questions relating to the topics throughout the subject.
Work placement	Not applicable