



## Subject card

Subject name and code	Fundamentals of Machine Design I, PG_00061197						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
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 Polish		
Semester of study	4	ECTS credits			9.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Division of Machine Design and Medical Engineering -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Michał Wasilczuk					
	Teachers	mgr inż. Marek Łubniewski mgr inż. Tomasz Źochowski mgr inż. Remigiusz Knitter dr hab. inż. Stefan Dzionk dr Stanislav Semenov prof. dr hab. inż. Michał Wasilczuk					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	60.0	45.0	15.0	0.0	0.0	120
	E-learning hours included: 0.0						
	eNauczanie source address: <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=46125">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=46125</a> Moodle ID: 46125 Podstawy Konstrukcji Maszyn_MWas_2026 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=46125">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=46125</a>						
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	120	9.0	96.0	225		
Subject objectives	The course aims to familiarize students with the basic functions of typical machine components, their application, and calculation/selection methods, as well as to understand the principles of machine operation. Another important goal is to consolidate knowledge of mechanics and strength of materials.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U11] is able to analyse the operation of devices and compare the construction solutions applying usage, safety, environmental, economic and legal criteria	The student is able to analyze the operation of devices and compare design solutions using functional and safety criteria.	[SU1] Assessment of task fulfilment
	[K6_W05] possesses an organized and theoretically grounded knowledge within the range of strength analysis of basic mechanical constructions including stress and relaxation conditions, energetic methods, strength hypotheses	The student has knowledge of the strength analysis of basic mechanical structures, including: stress and strain state,	[SW1] Assessment of factual knowledge
	[K6_U07] is able to design a typical construction of a mechanical device, component or a testing station using appropriate methods and tools, adhering to the set usage criteria	The student is able to design a typical structure, mechanical device, or component.	[SU1] Assessment of task fulfilment
	[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 is able to formulate and prepare documentation for a simple design task.	[SU1] Assessment of task fulfilment
[K6_W08] possesses knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	The student learns the methodology of designing machine parts, mechanical devices, and selecting construction materials	[SW1] Assessment of factual knowledge	
Subject contents	Course content – lecture basic typical machine elements, basic issues of machine operation and tribology, basics of design methodology		
	Course content – exercises calculations of typical machine elements and methods of their selection		
	Course content – laboratory Illustration of selected issues related to the operation of typical machine elements along with measurements of important parameters		
Prerequisites and co-requisites	Engineering graphics, materials science, mechanics and strength of materials		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	56.0%	45.0%
	tutorials	56.0%	45.0%
	lab exercises reports	100.0%	10.0%
Recommended reading	Basic literature	Norton Machine Design	
	Supplementary literature	Tim Brown Change by Design	
	eResources addresses		
Example issues/ example questions/ tasks being completed	are of graphical character and can not be presented in text box		
Practical activities within the subject	Not applicable		

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