



Subject card

Subject name and code	Fundamentals of Machine Design I, PG_00061197						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2024/2025		
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	4	ECTS credits			9.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Zakład Konstrukcji Maszyn i Inżynierii Medycznej -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Michał Wasilczuk					
	Teachers	prof. dr hab. inż. Michał Wasilczuk mgr inż. Marek Łubniewski mgr inż. Remigiusz Knitter					
Lesson types and methods of instruction	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						
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	forcing students to think (in general and as engineers). consolidation of earlier knowledge (graphics, mechanics, strength of materials)						

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	Student is able to design a simple mechanical device	[SU1] Assessment of task fulfilment
	[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	Student is able to design a simple mechanical device	[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 is acquainted with the methods used in mechanics, strength of materials etc	[SW1] Assessment of factual knowledge
	[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 and describe action of a simple mechanism/device	[SU2] Assessment of ability to analyse information
[K6_W08] possesses knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	Student knows the rules of designing mechanical devices	[SW1] Assessment of factual knowledge	
Subject contents	Machine elements, fundamentals of tribology		
Prerequisites and co-requisites	engineering graphics, strength of materials, mechanics, metrology, basic maths		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	60.0%	45.0%
	written test (solving problems)	60.0%	45.0%
	laboratory	100.0%	10.0%
Recommended reading	Basic literature	basic handbooks of machine design (Shigley, etc.)	
	Supplementary literature	Engineering Design - systematic approach, Springer. Pahl, Beitz. Change by design Tim Brown	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Check/assess the safety of the component/assembly and/or the connections used in it. Determine the dimensions or allowable load of the component/assembly or mechanical connection. Welded joints: describe the calculation models for butt and fillet welds indicating the differences between them. Bolted connections: describe the calculation models and indicate of the differences between them depending on the load case. Hub - shaft connections: discuss the characteristic features and typical applications. Describe the calculation models for three selected hub-shaft connections, with an indication of the differences between them.		
Work placement	Not applicable		

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