



Subject card

Subject name and code	Machine Design 3, PG_00042104						
Field of study	Power Engineering						
Date of commencement of studies	October 2024		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	3		Language of instruction		Polish English		
Semester of study	5		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jacek Łubiński				
	Teachers		dr hab. inż. Jacek Łubiński				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30		7.0		38.0	75
Subject objectives	Furthering of the development of skills in practical use of the parts of the engineering craft learned beforehand, as in the design of mechanism and machines.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W12] has basic knowledge of the life cycle and repairs of energy equipment in the field of thermal power stations, thermal and energy systems and heating systems, internal combustion engines and compressors as well as rotating machines	Gathering of the understanding of the fundamental physical phenomena present and decisive to the functioning of machines.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
	[K6_U08] can design the basic parameters of the selected technology related to energy conversion and select auxiliary devices and evaluate the project in terms of technical and economic	Capacity to realise simple tasks in machine component's design.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
	[K6_U01] can obtain information from literature and other sources, organize, interpret it and draw and formulate conclusions; has the ability to self-educate, interprets the results of completed engineering tasks, is able to design simple energy systems and their systems	Strengthening of skills in search, selection and practical use of information, processing of input data, as well as analysis and calculations in engineering.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
	[K6_W04] has structured knowledge of mechanics, including the issues of material strength and general principles of shaping structures, necessary to conduct basic strength analyzes and design simple mechanical or construction systems for power industry or environmental engineering; knows the basics of machine construction and the most commonly used construction and operating materials	Integration by practical use and repetitive activities of knowledge in materials' science, technical mechanics and other subjects pertaining to mechanical engineering.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
Subject contents	Course content – project Design tasks required to prepare design documentation for selected simple machine components, involving the following essential stages: establishing the design requirements for the assigned task; defining the basic technical parameters of the project; collecting the catalogue data, standards-based data, handbook information, and other data necessary to complete the task; selecting computational analysis methods and criteria for assessing the correctness of each stage of the design process; performing calculations and evaluating their results; selecting and adjusting design parameters (e.g. material grade, allowable stresses, loading conditions and calculated stresses, and the dimensional compatibility of the individual elements of the designed machine part/component); preparing a clear, legible, comprehensible, and complete report containing information on the methodology and calculation procedure, sources of technical information, results of the technical/design analysis, and an assessment of the correctness of the work performed; and preparing the graphical design documentation (technical, assembly, and manufacturing drawings) of the designed machine element/component.		
Prerequisites and co-requisites	Successful completion of undergraduate-level courses in Engineering Mechanics and Strength of Materials, as well as Engineering Graphics, Machine Design 1, and Machine Design 2 within the Energy Technologies programme. Alternatively, successful completion of equivalent undergraduate-level courses in Engineering Graphics and Fundamentals of Machine Design.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project work	60.0%	100.0%

Recommended reading	Basic literature	Mechanical Engineer's Handbook (European editions recommended) Fundamentals of Machine Design Industrial standards concerning engineering graphics, technical and mechanical engineering drawing, standard machine components (e.g. bolts and screws), and related subjects Currently available manufacturers' catalogues of standard products and ready-made components Textbook of Mechanical Engineering Drawing (European edition recommended)
	Supplementary literature	<i>The Fabric of Reality</i>, David Deutsch <i>A Brief History of Time</i>, Stephen Hawking <i>The Axemaker's Gift</i>, James Burke and Robert Ornstein <i>Catch-22</i>, Joseph Heller <i>The Trial</i>, Franz Kafka <i>Animal Farm</i>, George Orwell
	eResources addresses	
Example issues/ example questions/ tasks being completed	Design work for a machine component containing less than 20 parts, inclusive of welded and bolted connections.	
Practical activities within the subject	Not applicable	

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