GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Machines Design 2, PG_00049769		
Field of study	Power Engineering, Power Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
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	English
Semester of study	4	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Machine Design and Vehicles -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jacek Łubiński	
	Teachers	dr hab. inż. Jacek Łubiński	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	0.0	15.0	0.0	45

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	45	9.0	21.0	75

Subject objectives

Improvement and development of skills in machine design. Introduction to complex design problems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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	Well developed associations of knowledge and skills of various areas of the technical knowledge.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[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	Capacity to create detailed models of problems in technology, gather data and prepare input data sets, as required for the problem's solution. Selection and use of adequate calculation procedures as required for shaping and verifying the performance of machine elements.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools

Subject contents

Bearings (rolling and sliding), advanced calculations in bolted connection design, shaft design, notch influence in fatigue stress, Hub shaft connections, couplings and brakes

Prerequisites and co-requisites

Completed courses in:
Machine Design 1, Geometry and Technical Drawing, Engineering Mechanics, Materials Technology

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
tests	60.0%	100.0%

Recommended reading	Basic literature	Mechanical Engineering Handbook (European edition) Fundamentals of Machine Design Industry standards on engineering graphics, technical drawing (machine), standard machine components (e.g. bolts, bearings, prismatic keys) Manufacturers' catalogues of ready - made machine components available on commercial basis Technical Drawing handbook
	Supplementary literature	The Fabric of Reality, David Deutsch A Brief History of Time, Stephen Hawking The Axemaker's Gift, James Burke, Robert Ornstein Catch 22, Joseph Heller The Trial, Franz Kafka Animal Farm, George Orwell
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Bearings (rolling and sliding) - selection and life assessment of roller element bearings, advanced calculations in bolted connection design - axial, fatigue loading of bolts shaft design - shaping of shaft on the basis of fatigue stress evaluation, notch influence in fatigue stress - stress cumulation evaluation hub shaft connections - shaping and calculation check of connections couplings and brakes	
Work placement	Not applicable	