GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Machines Design 2, PG_00049769		
Field of study	Power 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
Semester of study	4	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	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

Development and integration of skills in machine design. Execcising on engineering problems the improvement of shape of machine components, selection of ready made components and verification of the design by calculation. Development of independent gathering of information necessary to solve the engineering problem. Improvement of thinking patterns in sequential solution of sub - tasks in machine design.

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	The student will acquire structured knowledge in the field of mechanics, including the issues of strength of materials and general principles of shaping structures, necessary to conduct basic strength analyses and design simple mechanical or building systems for power engineering or environmental engineering; knows the basics of machine construction and the most commonly used construction and consumables	[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	As a result of completing the course, the student will acquire the ability to obtain information from literature and other sources, to organise, interpret it, as well as to draw and formulate conclusions; has the ability to self-educate, interprets the results of completed engineering tasks, is able to design simple power systems and their systems	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Design procedure and engineering calculations for a shaft.

Design procedure and engineering calculations for a rolling bearing system.

Design procedure and engineering calculations for a shaft - hub union.

Design procedure and engineering calculations for a simple friction brake.

Design procedure and engineering calculations for a simple friction coupling.

Design procedure and engineering calculations for a bolted connection.

Design procedure and engineering calculations for a welded and bonded connection.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Completed couses in: technical mechanics, strength of materials, metallurgy (basics), welding technology (basics), metal cutting technology (basics), advanced mathematics (trygonometry, planimetry, stereometry, vector manipulation), engineering graphics (basics).

Keen interest in technology.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>tests</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>design project</td><td>50.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>Strength of materials for mechanical engineers (any edition after 1990)

Metallurgy and/or material science for mechanical engineers (any edition after 1990)

Machine design, A. Norton (any edition after 1990)

Mechanical engineer handbook (any edition after 1990)</td></tr>
<tr><td>Supplementary literature</td><td>Fabric of Reality, David Deutsch, 2010</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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