GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Machine Design I, PG_00055447		
Field of study	Mechatronics		
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
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. Artur Olszewski	
	Teachers		

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	8.0	37.0	75

Subject objectives

A student achieves basis of machine design, construction and maintenance.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U06] is able to identify and formulate specification of simple, practical engineering tasks, distinctive for mechatronics	.	[SU1] Assessment of task fulfilment
[K6_W04] has organized and theoretically supported, advanced knowledge in the field of general mechanics, strength of materials, theory of mechanisms and machine dynamics, fluid dynamics, hydraulics and pneumatics, machine construction and engineering graphics	.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U05] is able to use properly chosen tools to compare design solutions of elements and mechatronics systems according to given application and economic criteria (e.g. power demand, speed, costs)	.	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_U07] is able to design elements of mechatronic systems taking into consideration given application and economic criteria, using appropriate methods, techniques and tools	.	[SU1] Assessment of task fulfilment

Subject contents

Course content – project
LECTURE Mechanical transmission and drive systems. Friction cluches and brakes. Sealings. Data bases. Basis of tribology: friction in machines - advantages and disadvantages. Holistic theory in phenomenas of tribological systems. Fluid lubrication. Sliding bearings. Basis of hydrostatic drive. Machine maintenance and reliability. Safety. Diagnostics. EXCERISES Mechanical transmissions and drive systems. Clutche and brakes. Sliding bearings. Optimalization. DESIGNING Designing of simple drive systems. Engineering calculations. Technical drawings. Optimalization.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Knowledge in field of Engineering drawing Knowledge in field of Mechanics Knowledge in field of Strength of materials Knowledge in field of Metrology</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Practical exercise</td><td>50.0%</td><td>25.0%</td></tr>
<tr><td>Project</td><td>50.0%</td><td>25.0%</td></tr>
<tr><td>Oral exam</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Knowledge in field of Engineering drawing Knowledge in field of Mechanics Knowledge in field of Strength of materials Knowledge in field of Metrology</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">1. Fundamentals of machine design - lectures and problems - series of handbooks, edited by GUT 2. Kochanowski M.: Podstawy konstrukcji maszyn. Wybrane zagadnienia. Gdańsk: P. Gdańska 2002. 3. Pokojski J.: Systemy doradcze w projektowaniu maszyn. Warszawa: Wyd. N-T 2005.</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">.</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="3">Not applicable</td></tr>
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