GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Machine Design III, PG_00040190		
Field of study	Mechanical 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	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 inż. Grzegorz Rotta	
	Teachers	dr inż. Grzegorz Rotta	

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

eNauczanie source addresses:

Moodle ID: 8133 Fundamentals of Machine Design III
https://enauczanie.pg.edu.pl/2025/course/view.php?id=8133

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	6.0	39.0	75

Subject objectives

Learning the methodology of designing simple mechanical devices

Extending the knowledge and skills to use basic calculation methods for typical machine elements and the methods of selecting catalog parts for the designed technical device

Learning how to effectively create technical documentation using theoretical knowledge and CAD software

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U07	Based on input data and specified functional criteria, it is capable of presenting several different general concepts for the entire device, as well as generating design variants for subassemblies, their connections, and kinematic joints.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject
K6_W04	Possesses fundamental knowledge of mechanics and the strength of materials regarding calculations for cantilever and simply supported beams, as well as simple plate and frame structures. Understands which structural parameters are critical for the strength, stiffness, and vibration characteristics of a component.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
K6_W08	They are familiar with methods for designing technical devices. They know how to select materials based on the device's function and importance. They are knowledgeable about various manufacturing technologies, enabling them to design the device in an optimal and cost-effective manner.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation
K6_U11	Based on a description, drawing, or photograph, they are able to identify a technical device, explain how it works, and specify the functions of its components.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
[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	They are capable of producing technical documentation—particularly drawings (assembly, manufacturing, schematic, and proposal drawings)—and preparing the calculations, tables, and charts necessary for the design and description of the device, using appropriate software.	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools

Subject contents

Course content – project

Mai aim is to design a simple machine that performs one simple operation. The designed machine may include such elements as: screw connections, welded connections, shafts and axles, couplings, gears, brakes, bearings, flexible elements.

The project will require basic engineering calculations for typical machine elements

As part of the project, it will also be necessary to prepare drawing documentation, i.e. assembly drawing and 3-5 working drawings

Everything is to be documented in a single report

Prerequisites and co-requisites

The content of lectures, computational and computer exercises as well as a structural design in Fundamentals of Machine Design I and Fundamentals of Machine Design II subjects

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final report submitted	50.0%	40.0%
Weekly assessment of current work progress	50.0%	60.0%

Recommended reading

Basic literature	A set of scripts from the Fundamentals of Machine Design published by the Gdańsk University of Technology The content of lectures, computational and computer exercises as well as a structural design in Fundamentals of Machine Design I and Fundamentals of Machine Design II subjects

	Supplementary literature	- A set of books "Fundamentals of Machine Design" published by PWN, Warsaw-PKM, edited by M. Dietrich, PWN, Warsaw - Any works on Fundamentals of Machine Design in Polish and in English
	eResources addresses	
Example issues/ example questions/ tasks being completed	- Development of various device concepts - Choosing the best concept - Design and verification calculations - Preparation of drawing documentation - assembly drawing and executive drawings	
Practical activites within the subject	Not applicable	

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