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 2023	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	3	Language of instruction	English
Semester of study	5	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Division of Machine Design and Medical Engineering -> Institute of Mechanics and Machine Design -> 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: 1950 Fundamentals of Machine Design III (2025-2026)
https://enauczanie.pg.edu.pl/2025/course/view.php?id=1950

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	The student is able to carry out the process of designing a mechanical object, taking into account all the required steps, i.e. from the initial concept, through design and verification calculations, to the preparation of drawing documentation.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
K6_W08	The student knows the basics of: mechanical engineering, mechanics and strength of materials, design and construction, selection of construction materials and machine technology.	[SW3] Assessment of knowledge contained in written work and projects
K6_U11	The student knows how different types of devices work and can compare them, indicating their advantages and disadvantages according to specific criteria, e.g. utility, safety, environmental and others.	[SU1] Assessment of task fulfilment [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	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	[SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment
K6_W04	The student is able to calculate the basic forces occurring in the structure, such as: reaction forces/ moments, forces/moments in nodes, tie rods (wires, ropes, chains, belts), rods and beams and other critical places of the structure and calculates the stresses in these places based on knowledge derived from the basic areas of mechanics and strength of materials.	[SW3] Assessment of knowledge contained in written work and projects

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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