GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Medical Constructions, PG_00064131						
Field of study	Mechanical and Medical Engineering						
Date of commencement of studies	October 2025		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	2		Language of instruction	Polish			
Semester of study	4		ECTS credits	9.0			
Learning profile	general academic profile		Assessment form	exam			
Conducting unit	Division Of Machine Design And Medical Engineering -> Institute Of Mechanics And Machine Design -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Michał Wasilczuk				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	45.0	30.0	15.0	15.0	0.0	105
	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	105		10.0	110.0		225
Subject objectives	Presenting principles of designing and selection of basic elements used in the mechanical systems. Acquainting with their basic computational models.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U04] is able to utilize empirical, analytical, simulation, and computer-based methods to formulate and solve engineering tasks in the field of medical and mechanical engineering	Student identifies phenomena in elements of machines. Student creates computational models used in machine design. Student analyses and selects suitable computational models of separable and inseparable joints. Student identifies loadings and stress states at critical places of analyzed machine elements, and estimates their safety.	[SU1] Assessment of task fulfilment
[K6_U07] is able to assess whether proposed methods and tools can be used in practice to solve simple engineering task related to machine design, manufacturing and utilization	Student identifies phenomena in elements of machines. Student creates computational models used in machine design. Student analyses and selects suitable computational models of separable and inseparable joints. Student identifies loadings and stress states at critical places of analyzed machine elements, and estimates their safety.	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_W03] has knowledge in rigid body mechanics, biomechanics, modelling of mechanical system, vibration and strength analysis of mechanical structures or knowledge in the use of computer programs for analyzing and simulating mechanical systems, and the design process	Student is able to identify phenomena occurring in machine elements, create computational models necessary for machine design and identify load and stress states in dangerous locations of the analyzed machine elements.	[SW1] Assessment of factual knowledge
[K6_U06] can identify and formulate specifications for simple practical engineering tasks, and critically analyze existing technical solutions, evaluating their functionality, particularly in the context of designing mechanical and medical-mechanical devices	Student identifies phenomena in elements of machines. Student creates computational models used in machine design. Student analyses and selects suitable computational models of separable and inseparable joints. Student identifies loadings and stress states at critical places of analyzed machine elements, and estimates their safety.	[SU1] Assessment of task fulfilment

Subject contents

Lecture and tutorials: calculations and recommendations for the design of shafts and axles. Rolling bearings - selection. Fatigue strength. Elements of driving system. Flexible elements.
Design: preliminary design of a simple mechanical device and detailing, basics of creating technical documentation.

Prerequisites and co-requisites

Mathematics, Physics, Engineering graphics, Mechanics, Strength of materials, Materials science, Technology, Metrology, Machine science

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Oral exam	50.0%	25.0%
Written exam	50.0%	75.0%

Recommended reading

Basic literature	1. Kochanowski R.: Wały i osie - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 2. Maciakowski R., Majewski W.: Sprzęgła - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 3. Kochanowski M.: Podstawy konstrukcji maszyn z rysunkiem technicznym. Wyd. Politechniki Gdańskiej, Gdańsk 1998. 4. Druret K., Kochanowski M., Romanowski P.: Łożyska toczne. Wyd. Politechniki Gdańskiej.
Supplementary literature	Not applicable.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

Document generated electronically. Does not require a seal or signature.