GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Machines Design 1, PG_00042045		
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
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	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Machine Design and Vehicles -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Michał Wodtke	
	Teachers	dr inż. Sebastian Grelik-Urbanowski dr hab. inż. Waldemar Karaszewski dr hab. inż. Michał Wodtke	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Adresy na platformie eNauczanie:
Podstawy Konstrukcji Maszyn I, W/C, E, sem. 04, letni 21/22 (PG_00042045) - Moodle ID: 21944
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21944

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	3.0	17.0	50

Subject objectives

Presenting principles of designing basic elements used in the mechanical systems. Acquainting with computational models of typical joints utilised in the machine designing. Gaining theoretical knowledge about the basic varieties of machine joints.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U01	Student identifies phenomena in elements of machines.	[SU3] Assessment of ability to use knowledge gained from the subject
K6_W04	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.	[SW1] Assessment of factual knowledge

Subject contents

Lecture and tutorials: elements of machine science and the theory of the design. Shaping machine elements using strength criteria engineering methods. Fatigue strength. Safety coefficient and evaluation of permissible stress. Joints (welded, bolted) and hub-shaft assembly.

Prerequisites and co-requisites

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

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test of the qualifying lecture	50.0%	25.0%
Test of the qualifying classes	50.0%	75.0%

Recommended reading	Basic literature	1. Siwek B.: Połączenia spawane, zgrzewane, lutowane i klejone - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 2. Maciakowski R.: Połączenia śrubowe - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 3. Maciakowski R., Majewski W.: Połączenia wału z piastą - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd.Politechniki Gdańskiej. 4. Kochanowski R.: Wały i osie - Wykład z Podstaw Konstrukcji Maszyn z ćwiczeniami rachunkowymi. Wyd. Politechniki Gdańskiej. 5. Kochanowski M.: Podstawy konstrukcji maszyn z rysunkiem technicznym. Wyd. Politechniki Gdańskiej, Gdańsk 1998.
	Supplementary literature	1. Podstawy Konstrukcji Maszyn. Cykl monografii wydawanych przez PWN.
	eResources addresses	Podstawy Konstrukcji Maszyn I, W/C, E, sem. 04, letni 21/22 (PG_00042045) - Moodle ID: 21944 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=21944
Example issues/ example questions/ tasks being completed	To check/assess the safety of the element/set of elements or/and connections used in it/them... To determine/estimate dimensions or max loading of the element/set of elements, or used joint/-s in it/them... Welded joints - to describe computational models for butt and fillet weld indicating differences between them. Motionless bolted joints - to describe computational models with indicating differences between them. Hub-journal couplings- to discuss characteristic features and the range of their applications. To describe computational models for three chosen couplings indicating differences between them.	
Work placement	Not applicable	