GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of Machines Design 1, PG_00041779		
Field of study	Ocean Engineering, Ocean 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 polish
Semester of study	4	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Wojciech Litwin	
	Teachers	dr inż. Magdalena Kunicka dr hab. inż. Wojciech Litwin	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	15.0	0.0	0.0	0.0	45

E-learning hours included: 0.0

Adresy na platformie eNauczanie:

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	45	10.0	45.0	100

Subject objectives	Student should have principles knowledge in Machine Elements Design

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W03] has a basic knowledge on hydromechanics, thermodynamics, machine construction, ecology, materials science and electronics necessary to understand the construction and operation principles of ocean technology objects and equipment	The student explains the phases and the course of the design and construction process. The student describes the basic types of machining and plastic working used in the construction of machines. Describes the construction and explains the principle of operation of detachable and non-detachable connections. The student calculates the basic types of detachable and non-detachable connections. Describes the design and calculates the shaft-hub connections. The student recognizes and calculates rolling bearings. The student recognizes and lists the types of plain bearings. The student distinguishes between hydrostatic and hydrodynamic bearings. The student recognizes the types of mechanical transmissions. Describes the construction and explains the principle of operation of the discussed types of transmissions. The student describes and explains the construction of chain and belt transmissions.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems	The student explains the phases and the course of the design and construction process. The student describes the basic types of machining and plastic working used in the construction of machines. Describes the construction and explains the principle of operation of detachable and non-detachable connections. The student calculates the basic types of detachable and non-detachable connections. Describes the design and calculates the shaft-hub connections. The student recognizes and calculates rolling bearings. The student recognizes and lists the types of plain bearings. The student distinguishes between hydrostatic and hydrodynamic bearings. The student recognizes the types of mechanical transmissions. Describes the construction and explains the principle of operation of the discussed types of transmissions. The student describes and explains the construction of chain and belt transmissions	[SU1] Assessment of task fulfilment

Subject contents

1. Design, types and calculations of permanent fastening machine elements. 2. Design, types and calculations of screw joints. 3. Design, types and calculations of hub and shaft fastening. 4. Design of shafts and axles. 5. Springs. 6. Design, types and calculations of ball and roller bearings. 7. Sliding bearings. 8. Gears. 9. Angular, planetary and worm gears. 10. Chain gears. 11. Belt gears.

Prerequisites and co-requisites

Principles knowledge of technical drawing and mechanics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
merytoryczna zawartość	50.0%	100.0%

Recommended reading

Basic literature	1. Dietrich M.: Podstawy Konstrukcji Maszyn, tomy 1,2 i 3 2. Kochanowski M.: Wybrane zagadnienia z Podstaw Konstrukcji Maszyn, skrypt PG 2002r. 3. Dobrzański J.: Rysunek Techniczny Maszynowy 4. Spotts M. F., Design of Machine Elements, Prentice Hall
Supplementary literature	brak
eResources addresses	

Example issues/ example questions/ tasks being completed	1. Ball and roller bearings, drawing, types, calculations method. 2. Sliding bearings, drawing, types, explain P, V, PV, calculations procedure, PV diagram. 3. Gears types. 4. Planetary gears, description and drawing. 5. Worm gear, properties, description, schematic.
Work placement	Not applicable