GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Technical Mechanics 1, PG_00056412		
Field of study	Design and Construction of Yachts		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	practical profile	Assessment form	exam
Conducting unit	Faculty of Ocean Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Tomasz Mikulski	
	Teachers	mgr inż. Paweł Bielski dr hab. inż. Tomasz Mikulski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	30.0	0.0	0.0	0.0	60

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	60	8.0	57.0	125

Subject objectives

Knowledge and understanding of the problems of statics of rod systems and kinematics of a material point, system of material points and rigid bodies.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U02	The student is able to recognize mechanics technical to evaluate behavior of layouts construction and marine equipment.	[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
K6_W02	The student has acquired skills problem solving technical based on the law mechanics.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge

Subject contents

STATICS: Force projection on to an axis. Moment of a force about a point and an axis. Parallel shifting of a force, reduction of a set of forces. Equilibrium conditions and equations for a plane and space rigid body systems. Reactions in bar structures with static loads. Centers of gravity of solid, flat and linear systems. Determination of internal forces in flat truss and bar systems. Resistance forces: sliding friction and rubbing of the rope with a roller.

KINEMATICS: Kinematics of a material point, track of motion, velocity, acceleration, motion along a straight line, circular track, normal and tangential components of acceleration. Compound motion, absolute and relative motion analyses. Description of the motion of a rigid body. Planar kinetics of a rigid body, temporary center of the rotation, planar mechanisms.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exercise	50.0%	70.0%
lecture	50.0%	30.0%

Recommended reading

Basic literature	Hibbeler R.C.: Engineering Mechanics Statics, Dynamics. Prentice Hall 2010.

	Supplementary literature	Hibbeler R.C.: Statics and mechanics of materials. Prentice Hall 2004.
	eResources addresses	Adresy na platformie eNauczanie: Mechanika techniczna I, WC, PiBJ, sem. 2, letni 2022/23, (PG_00056412) - Moodle ID: 31075 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=31075
Example issues/ example questions/ tasks being completed	1. Reduce the flat system of forces acting on the rectangular shield. 2. Determine reactions in a simply supported beam loaded with generalized forces. 3. Detremine inner forces in flat truss structure or simply beam. 4. Determine the magnitudes of P_{max} and P_{min} for the limit equilibrium state of a block on the sloping row including the combination of cases with the sliding friction. 5. Defined is the equation of movement of a material point. Determine the path, speed and acceleration at a given moment t. 6. The wheel of radius r is moving with a constant velocity of the center. What is the velocity and acceleration of a circumference point. 7. Determine the path equation and the flight range of the fired bullet at a given angle and at a predetermined initial velocity. Ignere the air resistance.	
Work placement	Not applicable	