



Subject card

Subject name and code	Technical Mechanics, PG_00051276						
Field of study	Transport and Logistics, Transport and Logistics						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2020/2021		
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 no remarks		
Semester of study	2		ECTS credits		5.0		
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. Tomasz Mikulski				
	Teachers		dr hab. inż. Tomasz Mikulski dr inż. Kazimierz Trębacki				
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						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=11452 Adresy na platformie eNauczanie: MECHANIKA TECHNICZNA - sem. II inż. Transport - Moodle ID: 12552 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12552						
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		10.0		55.0	125
Subject objectives	The preliminaries in statics, kinematics and dynamics of structural systems						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W02] has a basic knowledge in physics, including technical mechanics, fluid mechanics, solid-state physics, optics and acoustics necessary to understand basic physical phenomena occurring in transport		Defining concepts and physical quantities (with the use of mathematical apparatus) related to statics, material point kinematics, system of material points and a rigid body; determining and solving of equation of structure balance; describing of basic explanation of physical phenomena in the field of classical mechanics with using learned laws and rules.		[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	[K6_U02] can work individually and in a team, communicate through various techniques in professional environment and also record, analyse, and present the results of work, can estimate the time needed to complete a given task		The student identifies, classifies and defines computational tasks illustrating the lecture material in the field of statics and kinematics material points and non-deformable bodies .		[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		
Subject contents	STATICS. Vectors in 2D and 3D, moment of a force about a point and an axis. Reduction of force systems. Gravity centres. Support (constraint) reactions in bar systems and 2D systems. Cross-sectional forces in beams and trusses. Friction - sliding friction, belt friction. KINEMATICS. Planar motion of a particle, circular and elliptical motion, particle motion in Cartesian and natural coordinates., path determination based on initial conditions. Rotations, centre of rotation. Rotation of a solid vs linear motion of its point, compound motion, rolling resistance. DYNAMICS. Work and energy, conservation laws, momentum , force impulse, time-variant dynamic problems. Solid dynamics, mass moments of inertia						

Prerequisites and co-requisites	mathematics, physics (mechanics)		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test - statics	50.0%	60.0%
	test - kinematics and dynamics	50.0%	40.0%
Recommended reading	Basic literature	E. Wittbrodt, S. Sawiak Theoretical mechanics - theory and examples (in Polish) GUT publishing house 2017	
	Supplementary literature	does not concern	
	eResources addresses	MECHANIKA TECHNICZNA - sem. II inż. Transport - Moodle ID: 12552 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=12552	
Example issues/ example questions/ tasks being completed	Determine cross-sectional forces in a loaded beam Determine axial forces in a loaded truss Classify dynamic problems in engineering		
Work placement	Not applicable		