



## Subject card

Subject name and code	Technical mechanic [E], PG_00044531						
Field of study	Transport						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study		
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	general academic profile	Assessment form			exam		
Conducting unit	Katedra Wytrzymałości Materiałów -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Agnieszka Sabik					
	Teachers	dr inż. Marek Jasina dr hab. inż. Agnieszka Sabik dr inż. Tomasz Ferenc					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	45.0	0.0	0.0	0.0	75
	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	75		5.0		45.0	125
Subject objectives	Solving technical problems on the basis of mechanical rules. Statical and strength analysis of construction elements.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W02] has basic knowledge of physics which includes technical mechanics, fluid mechanics, solid state physics, optics and acoustics required for understanding basic phenomena of physics which occur in transport	Student is able to calculate the stress distribution in a given crosssection of a structure. Student determines the crosssection or material of frame elements.			[SW1] Assessment of factual knowledge		
	[K6_U10] able to carry out simple engineering tasks related to the construction and operation of a selected element of the transport system, select the right methods and tools, select the right technical parameters for an object to be designed including economic and environmental aspects	Student is able to determine the adequate statical system of a real structure. Student is able to check the load capacity of the structure.			[SU1] Assessment of task fulfilment		
Subject contents	Classical mechanics. Statics of flat frame structures. Reactions and internal forces in beams, frames, trusses. Stress and strain state. Constitutive laws, Hooke's law. Tension/compression, bending, twisting, shear. Bending line of a beam. Stability of columns. Strength criteria.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Exam	60.0%			60.0%		
	Tests	60.0%			40.0%		

Recommended reading	Basic literature	1. Bielewicz E.: Wytrzymałość materiałów. Politechnika Gdańska, Gdańsk 2006. 2. Przewłócki J., Górski J.: Podstawy mechaniki budowli. Arkady Warszawa 2006. 3. Zadania z mechaniki budowli. t.1, skrypt PG pod redakcją Cz. Branickiego. 4. Lubowiecka I., Skowronek M.: Zadania z Mechaniki Budowli. Gdańsk 2000. 5. Lewiński J., Wilczyński A.P., Witemberg-Perzyk D.: Podstawy wytrzymałości materiałów, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2010. 6. Grabowski J., Iwanczewska A.: Zbiór zadań z wytrzymałości materiałów, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2012.
	Supplementary literature	1. Wilde P., Wizmur M.: Mechanika teoretyczna. PWN Warszawa 1984. 2. Chudzikiewicz A.: Statyka budowli. t.1 Układy statycznie wyznaczalne. PWN Warszawa 1976.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<p>Find internal forces in a given statically determined structure.</p> <p>Obtain deflections in beam elements.</p> <p>Obtain the buckling load of a beam.</p> <p>Determine the geometry of the crosssection of a given beam/frame element.</p>	
Work placement	Not applicable	