



Subject card

Subject name and code	Transportation engineering, PG_00045986						
Field of study	Civil Engineering						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		Subject group		Optional subject group 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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Transportation Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Michał Urbaniak				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	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		5.0		10.0	75
Subject objectives	The subject is aimed on basic information regarding design and construction of roads and railway lines and road and railway traffic.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U08] Is able to evaluate technical conditio of a road, to design its pavement and choose proper construction technology using mechanistic methods and material investigations	Gets ability of pavement design and choice of construction technology.	[SU1] Assessment of task fulfilment
	[K7_U07] is able to design elements of road network, to apply the rules of traffic organisation and control, taking into account economy, safety and environmental factors,	Gets ability of road design and traffic management.	[SU1] Assessment of task fulfilment
	[K7_W06] has expanded knowledge about traffic theory, planing of road networks and junctions design, regarding economy, safety and environmental aspects	Gets basic knowledge of road planning and design and traffic management.	[SW1] Assessment of factual knowledge
	[K7_W08] has deep knowledge of railway track construction, including high speed railroads; design and renovation of railroads of complex geometry; has detailed knowledge about diagnostics of railroads, knows basics of railway traffic organisation and control	Gets basic knowledge in railway engineering	[SW1] Assessment of factual knowledge
	[K7_W07] has expanded knowledge of theory of road and airport pavements, pavement maintenance, advanced methods of material testing and conctruction technologies	Gets basic knowledge of road construction and maintenance.	[SW1] Assessment of factual knowledge
	[K7_U09] is able to design railway tracks of complex geometry on sections and stations, both newly designed and renovated; can make a plan and perform diagnostic of railway track and to interpret its results, propose conclusions; can evaluate durability and reliability of railroad elements	Gets ability of geometry design of a railway and its construction.	[SU1] Assessment of task fulfilment
Subject contents	Geometric design of road. Intersections and interchanges. Earthworks. Soil stabilization. Road bases and subbases. Bituminous materials and mixes. Pavement design. Overview of land transportation systems. Railway system and its elements. Essential elements of rail structure. Principles of track geometry (horizontal curves, transitions, super elevation, vertical geometry). Turnouts. Various types of posts. Railway stations and their classification. Overview of control command systems. Principles of organization of rail passenger transport. Principles of organization of rail freight transport. Rules of railway traffic. Timetabling. Graphic timetables.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory	80.0%	20.0%
	Lectures Test	60.0%	80.0%
Recommended reading	Basic literature	1. Profilidis V.A.: Railway engineering. Ashgate Publishing 2000. 2. Pachl J.: Railway timetable and traffic. Eurailpress 2008. 3. Brockenbrough R.L., Boedecker K.J.: Highway Engineering Handbook, McGraw-Hill 2003 4. Cedergren H.R.: Drainage of Highway and Airfield Pavements. John Wiley & Sons, 1974	
	Supplementary literature	1. Bogdaniuk B., Massel A.: Podstawy transportu kolejowego. Wyd. Politechniki Gdańskiej 1999. 2. Błażejowski K., Styk S.: Technologia warstw asfaltowych. WKiŁ 2004. 3. Szydło A.: Nawierzchnie drogowe z betonu cementowego. 2004. 4. Edel R.: Odwodnienie dróg. WKiŁ 2006.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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