



## Subject card

Subject name and code	, PG_00062957						
Field of study	Civil Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	4	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. Marcin Budzyński					
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	0.0	30
	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	30	0.0		0.0		30
Subject objectives	The aim of the course is to provide students with knowledge of the basic principles of planning elements of rail, road and air transport.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_K03] Can effectively, clearly and unambiguously convey information, describe activities and communicate their results/ outcomes to engineers or a wider audience using appropriate communication methods and tools.	The student is able to provide information regarding planning of road and rail transport infrastructure, is able to describe activities in this area and communicate their results to others.			[SK2] Assessment of progress of work [SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice		
	[K6_K02] Can work effectively in a group, as well as function in teams, which may consist of representatives of various branches and levels.	The student is able to work in teams involved in planning selected elements of transport infrastructure.			[SK1] Assessment of group work skills [SK2] Assessment of progress of work [SK5] Assessment of ability to solve problems that arise in practice		
	[K6_U05] Conducts research (obtaining information, simulations, experimental methods) in the field of construction in order to solve specific tasks and report research results.	The student conducts research in the field of transport infrastructure planning in order to solve specific tasks and report research results.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
[K6_W05] Demonstrate knowledge and understanding of research methods (obtaining information, simulations, experimental methods) in the field of civil engineering.	The student demonstrates knowledge and understanding of research methods in the field of planning elements of transport infrastructure.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects			

Subject contents	<ol style="list-style-type: none"> <li>1. Basics of transport systems (Spatial development, distribution of functions, demand in transport, travel and transport, factors influencing the development of transport, transport systems, elements of transport systems, examples of transport systems in the world, in Europe and in Poland)</li> <li>2. Transport infrastructure and its elements (Types of infrastructure, transport infrastructure, road transport infrastructure, air transport infrastructure)</li> <li>3. Transport infrastructure planning process (Theoretical foundations: sustainable development, saturated economic development, life cycle of transport facilities, social justice, etc.; phases of the planning process: preliminary studies, feasibility studies, detailed planning; traffic and transport modeling (Gravity method), network planning transport)</li> <li>4. Planning of road and air transport infrastructure (Collection of necessary data, including analysis of higher-level plans), preliminary concept of the road network, traffic structure, detailed concept of the road network, traffic distribution on the network, selection of road network elements: cross-section, nodes, intersections, infrastructure for pedestrians, bicycles, public transport, ITS elements. Airport location, selection of runways and runways)</li> <li>5. Features of rail transport. Basics of railway traffic. Movement resistance. Security. Energy consumption. The place of railways on the transport services market</li> <li>6. Physical basis of railway transport</li> <li>7. Railway road network. Railway lines. Stations and junctions.</li> <li>8. Basics of rail transport infrastructure. Structures and buildings. Camp</li> <li>9. Organization of railway traffic and timetables.</li> <li>10. High-speed railways.</li> <li>11. Trams and rail transport infrastructure in cities</li> </ol>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	passing the project	60.0%	100.0%
Recommended reading	Basic literature	<p>K. Wojewódzka-Król, R. Rolbiecki: Transport infrastructure, PWN Scientific Publishing House, 2018</p> <p>WR-D-11-1 Guidelines for shaping the road network. Part 1: Basic Requirements, 2022</p> <p>P. Nita: Design of airports, Publishing House of Communications and Communications WKŁ</p>	
	Supplementary literature	<p>Infrastructure Planning Guide and Toolkit, Canada. 2018</p> <p>European Commission: Best Practice Guide for Railway Network Statements. Final Report, 2010</p>	
	eResources addresses	Adresy na platformie eNauczenie:	
Example issues/ example questions/ tasks being completed	<p>Designing transport networks at the planning stage</p> <p>Variant planning of transport infrastructure elements.</p> <p>Planning of road infrastructure elements based on field research.</p>		
Work placement	Not applicable		

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