



Subject card

Subject name and code	, PG_00062957						
Field of study	Civil Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group		Optional 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		dr inż. Marcin Budzyński dr inż. Łukasz Jeliński dr inż. Kamila Szwaczekiewicz dr hab. inż. Kazimierz Jamroz dr inż. Sławomir Grulkowski				
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_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.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
	[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.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
	[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.	[SK5] Assessment of ability to solve problems that arise in practice [SK2] Assessment of progress of work [SK1] Assessment of group work skills
	[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.	[SK5] Assessment of ability to solve problems that arise in practice [SK4] Assessment of communication skills, including language correctness [SK3] Assessment of ability to organize work [SK2] Assessment of progress of work
Subject contents	<ol style="list-style-type: none"> 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) 2. Transport infrastructure and its elements (Types of infrastructure, transport infrastructure, road transport infrastructure, air transport infrastructure) 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) 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) 5. Features of rail transport. Basics of railway traffic. Movement resistance. Security. Energy consumption. The place of railways on the transport services market 6. Physical basis of railway transport 7. Railway road network. Railway lines. Stations and junctions. 8. Basics of rail transport infrastructure. Structures and buildings. Camp 9. Organization of railway traffic and timetables. 10. High-speed railways. 11. Trams and rail transport infrastructure in cities 		
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	Infrastructure Planning Guide and Toolkit, Canada. 2018 European Commission: Best Practice Guide for Railway Network Statements. Final Report, 2010
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Designing transport networks at the planning stage Variant planning of transport infrastructure elements. Planning of road infrastructure elements based on field research.	
Work placement	Not applicable	

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