



## Subject card

Subject name and code	Aspects of Safety, Ecology and Economics in Road Engineerin, PG_00044349						
Field of study	Civil Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group		
Mode of study	Part-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			exam		
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 hab. inż. Kazimierz Jamroz dr inż. arch. Romanika Okraszewska dr inż. Wojciech Kustra					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	10.0	0.0	0.0	0.0	25
	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	25	7.0		43.0		75
Subject objectives	The aim of the course is to learn about the methods of optimizing a road investment and to make elements of a feasibility study for such an investment.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W05] has knowledge about business activity specific for construction sector; understands principles of financial economy of companies, knows rules of defining quality management procedures in a construction company; has knowledge about optimisation of building enterprises and existing risk and uncertainty	The student can perform elements of the feasibility study.					
	[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,	The student is able to use tools in the field of assessing the economic efficiency of road investment, road safety level and the impact of road traffic on the environment.					
	[K7_W06] has expanded knowledge about traffic theory, planing of road networks and junctions design, regarding economy, safety and environmental aspects	The student has the ability to assess road investment in terms of impact on safety, the environment and is able to assess the effectiveness of the investment. Is able to use multi-criteria analysis tools to choose the optimal investment option.					
	[K7_W13] has knowledge on state of the art methods on knowledge acquisition, filtration, processing and analysis	The student is able to obtain data for traffic forecasts, has the ability to apply the method of cost-benefit analysis for road investment.					

Subject contents	Economic analysis methods for road investment. Multi-criteria analysis method. Scope and content of the feasibility study. Environmental impact assessment of road investments. Risk in traffic. Identification and risk assessment of road users.		
Prerequisites and co-requisites	Basic knowledge of road engineering obtained in first level of studies.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Workshops	60.0%	50.0%
	Lecture	60.0%	50.0%
Recommended reading	Basic literature	JASPERS. Blue Book of Road Infrastructure, 2015	
	Supplementary literature	Tracz M., Bohatkiewicz J., Radosz S., Stręk J. Road environmental impact assessment. Part I and II - second edition extended and updated. General Directorate of Public Roads. Warsaw, 1999	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Optimization methods for road investments. Rules for assessing investment options. Road traffic forecasts and economics for economic analyzes.		
Work placement	Not applicable		