



Subject card

Subject name and code	, PG_00069214						
Field of study	Civil Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Transportation Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Wojciech Kustra				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	30.0	0.0	0.0	0.0	45
	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	45		10.0		70.0	125
Subject objectives	The aim of the course is to develop road design skills, taking into account the principles of sustainable transport development. The course teaches a comprehensive, holistic approach to planning, analysing, designing and evaluating road solutions, taking into account environmental, social, economic and road safety requirements. The curriculum covers the assessment of road investments throughout their entire life cycle, taking into account their environmental, social, functional, technical and economic impact.						
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 plan, analyse and design road infrastructure solutions in accordance with the principles of sustainable development, and clearly, effectively and unambiguously present their assumptions, procedures and results of life-cycle assessments. The student can communicate these outcomes to both engineering professionals and non-specialist audiences using appropriate communication methods and tools.		[SK1] Assessment of group work skills [SK2] Assessment of progress of work		
	[K6_K04] Engages in independent lifelong learning and individually follows the development of science and technology in the field of civil engineering.		The student is prepared for independent and continuous lifelong learning in the field of sustainable road design, including monitoring emerging technologies, materials and life-cycle assessment methods, and is able to consciously integrate this knowledge into further education and engineering practice.		[SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	Course content – lecture Fundamentals of Sustainable Road Design Theoretical foundations of sustainable road design Life cycle of a structure. Social aspects in the life cycle. Environmental aspects in the life cycle. Economic aspects in the life cycle. Contemporary changes in the approach to road design. Expectations related to new challenges in road design. Planning sustainable road design. Society - Classification and characteristics of transport users.		
	Course content – exercises Selection of criteria for evaluating investment options a case study. Selection of evaluation criteria weights and selection of the optimal option. Transformation of a road in my neighbourhood using a sustainable road design approach. Society - Classification and characteristics of transport users Methodology for assessing the accessibility of transport hubs Transport hub audit		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical	50.0%	80.0%
	Lecture	50.0%	20.0%
Recommended reading	Basic literature		
	1. D. Tollazzi, Sustainable Road Design. Springer. 2. R. P. Roque et al., Sustainable Road Infrastructure. CRC Press. 3. AASHTO Green Book (A Policy on Geometric Design of Highways and Streets).PIARC (World Road Association). 4. Sustainable Road Construction and Maintenance Guidelines. 5. Global Road Safety Facility, World Bank Safe System Approach: Guidelines. 6. GDDKiA Handbook of good environmental practices in road construction. 7. Motor Transport Institute Sustainable transport development 8. Ministry of Infrastructure WRD		

	Supplementary literature	1. European Commission EU Green Infrastructure Strategy. 2. European Environment Agency (EEA) Transport & Environment Reports. 3. CROW Design Manual for Bicycle Traffic. 4. UNECE Environmental Impact Assessment Guidelines. 5. ISO 14040/44 Life Cycle Assessment Standards.
	eResources addresses	Basic https://www.gov.pl/web/infrastruktura/wr-d - WR-D
Example issues/ example questions/ tasks being completed	Selection of criteria for evaluating investment options a case study. Selection of evaluation criteria weights and selection of the optimal option. Transformation of a road in my neighbourhood using a sustainable road design approach. Transport hub audit.	
Practical activities within the subject	Not applicable	

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