



Subject card

Subject name and code	, PG_00069429						
Field of study	Zrównoważone projektowanie dróg						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		2.0		
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 Kuśtra				
	Teachers		dr inż. Wojciech Kuśtra dr inż. Marcin Budzyński mgr inż. Anna Gobis				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	0.0	10.0	0.0	20
	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	20		2.0		28.0	50
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_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies.	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	[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
	[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in 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.	[SK3] Ocena umiejętności organizacji pracy
	[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).	Nie dotyczy tego przedmiotu	[SW2] Ocena wiedzy zawartej w prezentacji
	[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint	Nie dotyczy tego przedmiotu	[SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu [SU2] Ocena umiejętności analizy informacji
	[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment	The student understands the environmental impacts of road infrastructure projects and is able to analyse the interrelations and dependencies between the designed road facilities and the natural environment, including the assessment of these impacts over the full life cycle of the investment.	[SW2] Ocena wiedzy zawartej w prezentacji

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 – project Selection of criteria for evaluating investment options a case study. Selection of evaluation criteria weights and selection of the optimal option. 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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