



Subject card

Subject name and code	Management and maintenance of road and airport infrastructure, PG_00069774						
Field of study	Transport						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
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. Łukasz Mejłun				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	15.0	0.0	45
	E-learning hours included: 0.0						
	eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2438						
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		0.0		0.0	45
Subject objectives	The aim of the course is to familiarise students with the basics of managing and maintaining road and airport infrastructure, both as a whole and in its individual elements.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W03] demonstrates in-depth preparation in the application of analytical methods and techniques for formulating and solving problems		The student is able to apply various tools and methods to solve practical issues and tasks related to the management and maintenance of road and airport infrastructure, both as a whole and in the context of individual elements of this infrastructure.		[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge		
	[K7_K01] recognizes the importance of knowledge related to the field of study in solving cognitive and practical problems		The student has basic knowledge of issues related to the management and maintenance of road and airport infrastructure, treated both as a whole and in the context of individual elements of this infrastructure.		[SK5] Assessment of ability to solve problems that arise in practice [SK1] Assessment of group work skills		
	[K7_U04] prepares and presents convincing, professional presentations of analysis results with their in-depth interpretation		The student is able to practically apply knowledge of issues related to the management and maintenance of road and airport infrastructure, treated both as a whole and in the context of individual elements of this infrastructure; and present the obtained results and outcomes.		[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		

Subject contents	Course content – lecture		
	Definition and types of resources and assets. Objectives of resource management and maintenance. Areas of organizational activity within the implementation of management and maintenance. Principles of good management and maintenance. The cycle of activities in resource management and maintenance. Levels of decision-making in resource management and maintenance. Resource management and maintenance strategies. Levels of approach in resource management and maintenance. Resource implementation and management plans. Resource registration and inventory. Resource assessment. Risk management. Identification, analysis, assessment, and treatment of risks in resource management and maintenance. IT-analytical tools for resource management and maintenance. Challenges, obstacles, and difficulties in resource management and maintenance. Resource lifecycle. Variants of resource management and maintenance. Opportunities, methods, and effects of response in resource management and maintenance. Diagnostic systems for infrastructure elements. Methods and tools for infrastructure diagnostics. Methods for maintaining the infrastructure as a whole and its individual components. Resource maintenance planning. Implementation of resource maintenance.		
	Course content – exercises		
Prerequisites and co-requisites	Short practical exercises (tasks) carried out individually/in groups in the following areas: resource identification, resource registration, resource assessment, strategy definition, creation of short-term and long-term plans, risk identification, risk assessment, risk treatment, response planning, maintenance work planning, development of maintenance work implementation schedules.		
	Course content – project		
	Short project tasks carried out individually/in groups in the scope of: design of a method for identifying resources and registering resources, design of a method for assessing resources, design of maintenance works, design of schedules for the implementation of maintenance works.		
Prerequisites and co-requisites	The student should have knowledge of the elements, construction, design, implementation and maintenance of road and airport infrastructure.		
Assessment methods and criteria			
	Subject passing criteria	Passing threshold	Percentage of the final grade
	Grade for the final test (lecture content)	50.0%	60.0%
Recommended reading	Grade for completed exercise and project tasks		
	50.0%		
	40.0%		
Recommended reading	Basic literature		
	1. Horonjeff, R., McKelvey, F. X., Sproule, W. J., Young, S. B., Airport Systems: Planning, Design, and Management, 3rd ed., McGraw-Hill Education, New York, 2010. 2. Fu, L., Sustainable Winter Road Operations, Wiley, Chichester, 2019. 3. Moglia, M., Sharma, A., Maheepala, S. (red.), Sustainable Infrastructure: Principles into Practice, CRC Press, Boca Raton, 2018. 4. Dedykowane normy PN-EN 5. Prezentacje wykładowe		
	Supplementary literature		
Example issues/ example questions/ tasks being completed	6. Hudson, W. R., Haas, R., Uddin, W., Pavement Management for Airports, Roads, and Parking Lots, 2nd ed., Springer, New York, 2014. 7. Kerali, H. R. (ed.), Road Maintenance Management: Concepts and Systems, Macmillan Press, London, 2000. 8. Guidebook for Advanced Computerized Maintenance Management System Integration at Airports, Airport Cooperative Research Program (ACRP), Report No. 175, Transportation Research Board, Washington D.C., 2017. 9. Wu, J., Cao, W., Gao, Y. (eds.), Road and Airfield Pavement Technology: Proceedings of the 12th International Conference on Road and Airfield Pavement Technology, Springer, Singapore, 2021. 10. Link, H., Stuhldreher, A. M., The Costs of Road Infrastructure and Congestion in Europe, Springer, BerlinHeidelberg, 2016. 11. Piłat, J., Radziszewski, P., Nawierzchnie asfaltowe: projektowanie i budowa, Wydawnictwo Komunikacji i Łączności, Warszawa, 2010. 12. Gardziejczyk, W., Utrzymanie dróg: technologie, organizacja i bezpieczeństwo ruchu, Wydawnictwo Politechniki Białostockiej, Białystok, 2018. 13. Chien, S., Ding, Y., Wei, C., Optimal Maintenance Strategies for Roadway Pavements, Journal of Infrastructure Systems, vol. 8, no. 1, 2002, s. 1120. 14. Life Cycle Cost Analysis as a Tool for Road Infrastructure Management, Roads and Bridges Drogi i Mosty, vol. 22, nr 4, 2023, s. 347360. 15. Radziszewski, P., Sarnowski, M., Nowoczesne technologie utrzymania nawierzchni drogowych, Wydawnictwo Politechniki Warszawskiej, Warszawa, 2019.		
	eResources addresses		
	Example issues/ example questions/ tasks being completed	1. Separately identify infrastructure elements that are tangible and intangible assets. 2. Identify the risks associated with managing the given infrastructure elements. Assess these risks and provide possible responses and treatment options. 3. Rank the parameters for assessing the condition of infrastructure elements in a hierarchical order (from most important to least important). For each group of characteristics, provide the dominant parameters.	

Practical activities within the subject	Not applicable
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