GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Pavement theory and road materials, PG_00060016						
Field of study	Civil Engineering						
Date of commencement of studies	February 2025		Academic year of realisation of subject	2025/2026			
Education level	second-cycle studies		Subject group	Optional subject group Subject group related to scientific research in the field of study			
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	4.0			
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. Mariusz Jaczewski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60		5.0		35.0	100
Subject objectives	Student knows and uses principles of pavement desing using mechanical-empirical methods and knows methods of testing of road pavement materials						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W07] has expanded knowledge of theory of road and airport pavements, pavement maintenence, advanced methods of material testing and contruction technologies	The student has extended knowledge of the theory of road, highway and airport pavement construction, as well as advanced material research and special technologies of works.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
[K7_K01] is aware of necessity of professional competences improvement; obeys the professional ethics code	The student is aware of the need to improve professional and personal competences; independently complements and expands knowledge in the field of modern road surfaces and their research, and observes the principles of professional ethics	[SK2] Assessment of progress of work
[K7_U08] Is able to evaluate technical conditio of a road, to design its pavement and choose proper construction technology using mechanistic methods and material investigations	The student is able to assess the technical condition of roads, design the pavement structure and select appropriate construction technologies, taking into account mechanistic methods and material testing	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task
[K7_W15] has deep and adequate knowlege of civil engineering, within offered specialization and profile	The student has a structured and in-depth knowledge of the field of civil engineering, within the offered specializations and diploma profiles in the field of pavement construction theory.	[SW1] Assessment of factual knowledge
[K7_U11] is able to plan and execute laboratory experiments to evaluate quality of construction materials and to determine strength of construction elements	The student is able to plan and conduct laboratory experiments leading to the assessment of the quality of the materials used and the assessment of the strength of building structure elements	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

Subject contents

Basic principles of mechanistic-empirical methods of pavement structure design. Elastic and viscoelastic properties of road materials. Pavement Structure Modeling. Analysis of stresses, deformations and displacements in the pavement structure. Fatigue life and fatigue laws of road materials. durability of asphalt pavements. Practical mechanistic and empirical methods of designing flexible surfaces. Design of flexible and semi-rigid surfaces. Design of pavement reinforcements. Advanced testing of road materials.

Prerequisites and co-requisites

Knowledge of the content of the subjects from semester 7 of engineering studies is required: Pavement Design and Road Materials Engineering.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory report	60.0%	20.0%
Project	60.0%	20.0%
Exam	60.0%	60.0%

Recommended reading

Basic literature	Yoder E.J., Witczak M.W, Principles of pavement designHuang Y.H, Pavement analysis and design
Supplementary literature	no requirements
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

1. Pavement Design Methods2. Describe the laboratory tests3. Evaluation of material parameters for design

Work placement

Not applicable

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