



Subject card

Subject name and code	, PG_00065228						
Field of study	Transport						
Date of commencement of studies	February 2024			Academic year of realisation of subject		2024/2025	
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		2.0	
Learning profile	general academic profile			Assessment form		assessment	
Conducting unit	Department of Transportation Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Zbigniew Kędra				
	Teachers		dr inż. Zbigniew Kędra				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	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	30		0.0		0.0	30
Subject objectives	The aim of the course is to acquaint students with the measurement systems used in rail transport, and teach basic measurements used in the rail road						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W01] identifies in an in-depth way phenomena related to the field of study as well as theories describing them and possible methods of analyzing processes occurring in the life cycle of technical systems	Knows and describes railway diagnostic systems			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_K01] recognizes the importance of knowledge related to the field of study in solving cognitive and practical problems	Knows the importance of knowledge in the field of diagnostic measurements and their evaluation			[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice		
	[K7_U05] cooperates with other people in the implementation of team work, both as a leader and a team member, effectively achieving set goals	Collaborates in a group to carry out tasks and perform diagnostic tests on railway			[SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment		

Subject contents	<p>Lectures: Characteristics, division and systematics of measuring systems in rail transport. Railway track geometry measurements (hand-held devices, measuring vehicles and geodetic systems). Profile and rail rail wear measurements. Measurement of corrugated rail wear. Systems for detecting damage to railway infrastructure elements. Video inspection of railway infrastructure. Acceleration and dynamics measurements of a rail vehicle. Measurements of the traction cable and its interaction with the pantograph. Measuring systems for railway vehicles. Systems and devices built into the railway track.</p> <p>Exercises: Measurements of width and cant in tracks and railway turnouts. Altitude measurements (geometric leveling) in track and railway turnouts. Measurements of arrows in the track and turnouts. Measurements of rail and rail turnout wear. Measurements of corrugated rail wear. Analysis of measurements carried out and preparation of reports.</p>														
Prerequisites and co-requisites															
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="454 656 794 685">Subject passing criteria</th> <th data-bbox="799 656 1139 685">Passing threshold</th> <th data-bbox="1144 656 1482 685">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 692 794 721">Exercise</td> <td data-bbox="799 692 1139 721">50.0%</td> <td data-bbox="1144 692 1482 721">30.0%</td> </tr> <tr> <td data-bbox="454 728 794 757">Lecture</td> <td data-bbox="799 728 1139 757">50.0%</td> <td data-bbox="1144 728 1482 757">40.0%</td> </tr> <tr> <td data-bbox="454 763 794 792">Laboratory</td> <td data-bbox="799 763 1139 792">100.0%</td> <td data-bbox="1144 763 1482 792">30.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Exercise	50.0%	30.0%	Lecture	50.0%	40.0%	Laboratory	100.0%	30.0%
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Recommended reading	Basic literature	<p>Kędra Z. : Materials from the lecture Measuring systems in rail transport</p> <p>Kędra Z. : Materials for the laboratory Measuring systems in rail transport</p>													
	Supplementary literature	<p>Materiały informacyjne firm produkujących systemy pomiarowe Strony internetowe producentów systemów pomiarowych Id-1 (D-1), "Warunki techniczne utrzymania nawierzchni na liniach kolejowych", Warszawa 2005 Id-3 (D-4), "Warunki techniczne utrzymania podtorza kolejowego", Warszawa 2009 Id-4 (D-6), "Instrukcja o oględzinach, badaniach technicznych i utrzymaniu rozjazdów", Warszawa 2005</p>													
	eResources addresses	<p>Adresy na platformie eNauczanie: Systemy pomiarowe w transporcie szynowym - 2024/25 - Moodle ID: 35163 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=35163</p>													
Example issues/ example questions/ tasks being completed															
Work placement	Not applicable														

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