



## Subject card

Subject name and code	Railway track maintenance, PG_00044346						
Field of study	Civil Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies	Subject group			Optional subject group		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Railway 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	10.0	10.0	0.0	0.0	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	5.0		50.0	75	
Subject objectives	Ability to plan and perform diagnostic tests and evaluation of of railway tracks geometry quality of railway track. The transmission of information in the diagnosis and repair of railways.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_U09] is able to design railway tracks of complex geometry on sections and stations, both newly designed and renovated; can make a plan and perform diagnostic of railway track and to interpret its results, propose conclusions; can evaluate durability and reliability of railroad elements	can plan and perform diagnostic tests of railways, interpret test results and draw conclusions; can assess the durability and reliability of railway pavement elements					
	[K7_W16] knows methods of diagnostics of engineering objects, has knowledge about different kinds of defects in constructions and its reasons; knows means of fixing and reinforcing of constructions.	knows methods of railways diagnostics; has knowledge of the causes of defects and damage to railways; knows the ways to repair railways					
	[K7_U16] is able to estimate the technical condition of engineering object; can interpret the results of constructions and materials examination;	is able to assess the technical condition and interpret the results of rail road tests					
	[K7_W08] has deep knowledge of railway track construction, including high speed railroads; design and renovation of railroads of complex geometry; has detailed knowledge about diagnostics of railroads, knows basics of railway traffic organisation and control	has detailed knowledge in the field of rail road diagnostics and repairs					
Subject contents	The role and tasks of maintenance of railways. Railway track geometry quality. Diagnosis of rails, sleepers and ballast. Durability and reliability of railways. Maintenance of railways. Repair of railways.						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	50.0%	50.0%
	Exercise	50.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Bałuch H.: Trwałość i niezawodność eksploatacyjna nawierzchni kolejowej. WKiŁ, Warszawa 1980.</li> <li>2. Bałuch H.: Diagnostyka nawierzchni kolejowej. WKiŁ, Warszawa 1978.</li> <li>3. Bałuch M., "Interpretacja pomiarów i obserwacji nawierzchni kolejowej", Politechnika Radomska 2005.</li> <li>4. Bałuch H., Bałuch M.: Determinanty prędkości pociągów - układ geometryczny i wady toru. Instytut Kolejnictwa, Warszawa 2010.</li> <li>5. Kędra Z.: Technologia robót torowych. Wydawnictwo PG, Gdańsk 2017.</li> </ol>	
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Id-1 (D-1), "Warunki techniczne utrzymania nawierzchni na liniach kolejowych", Warszawa 2005</li> <li>2. Id-3 (D-4), "Warunki techniczne utrzymania podtorza kolejowego", Warszawa 2009</li> <li>3. Id-4 (D-6), "Instrukcja o oględzinach, badaniach technicznych i utrzymaniu rozjazdów", Warszawa 2005</li> <li>4. Id-7 (D-10), "Instrukcja o dozorowaniu linii kolejowych", Warszawa 2005</li> <li>5. Id-8, "Instrukcja diagnostyki nawierzchni kolejowej", Warszawa 2005</li> <li>6. Id-10 (D-16), "Instrukcja badań defektoskopowych szyn, spoin i zgrzein w torach kolejowych", Warszawa 2005</li> <li>7. Id-14 (D-75), "Instrukcja o dokonywaniu pomiarów, badań i oceny stanu torów", Warszawa 2005</li> <li>8. "Katalog wad w szynach", Warszawa 2005.</li> </ol>	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		