



Subject card

Subject name and code	, PG_00064564						
Field of study	Civil Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
Education level	first-cycle studies	Subject group					
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			3.0		
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. Sławomir Grulkowski				
	Teachers		dr inż. Sławomir Grulkowski dr inż. Michał Urbaniak				
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		0.0		0.0	20
Subject objectives	The student learns basic information about railways. Learns about the elements of railway infrastructure. The student calculates the basic elements of railway line geometry						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W03] Demonstrate knowledge and understanding of the processes, established standards and design methods in the civil engineering subject area and of their limitations.	The student is able to rationally determine the areas of rail transport operation and initially determine the course of a rail route.			[SW1] Assessment of factual knowledge		
	[K6_U03] Design engineering objects and details, processes and engineering systems by applying appropriate standards and methods of design.	The student is able to determine and calculate the appropriate parameters of the railway line geometry at the appropriate speed			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_U02] Analyse & solve engineering issues & problems in the field of civil engineering by applying appropriate and relevant established analytical, numerical and experimental methods.	The student is able to use appropriate elements of the railway track construction.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
Subject contents	Features and scope of the railway system in Poland and worldwide Railway track construction elements Geometric conditions for designing railway lines						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria	Passing threshold			Percentage of the final grade		
	Final test	55.0%			50.0%		
	Projects and exercises	55.0%			50.0%		

Recommended reading	Basic literature	<p>1. <i>Szczegółowe warunki techniczne dla modernizacji lub budowy linii kolejowych do prędkości Vmax 250 km/h TOM I Droga Szynowa</i> (Załącznik nr 3 do uchwały Nr 251/2021, Zarząd PKP Polskie Linie Kolejowe S.A. z dnia 20 kwietnia 2021 r.), PKP PLK, Warszawa, 2021.</p> <p>2. <i>Standardy Techniczne - szczegółowe warunki techniczne dla modernizacji lub budowy linii kolejowych do prędkości Vmax 200 km/h (dla taboru konwencjonalnego) / 250 km/h (dla taboru z wychylnym pudłem) Tom I Załącznik ST T1 A8 Konstrukcja Nawierzchni Kolejowej</i> (Załącznik do uchwały Nr 178/2023 Zarządu PKP Polskie Linie Kolejowe S.A. z dnia 7 marca 2023 r.), PKP PLK, Warszawa, 2023.</p> <p>3. <i>Warunki techniczne, jakim powinny odpowiadać budowle kolejowe i ich usytuowanie</i> (Dz.U.1998.151.987).</p> <p>4. Grulkowski S., Koc W., Kędra Z., Nowakowski M., <i>Drogi Szynowe</i>, WPG, 2013</p>
	Supplementary literature	<p>Rozporządzenie Ministra Transportu i Gospodarki Morskiej w sprawie warunków technicznych, jakim powinny odpowiadać budowle kolejowe i ich usytuowanie. Dziennik Ustaw 1998 nr 151 poz. 987.</p> <p>Warunki techniczne utrzymania nawierzchni na liniach kolejowych Id-1 (D-1). PKP PLK S.A., Warszawa 2005 r.</p>
	eResources addresses	<p>Adresy na platformie eNauczanie: Drogi szynowe I - Moodle ID: 42215 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=42215</p>
Example issues/ example questions/ tasks being completed	<p>Types of railway rails</p> <p>Characteristic features of railway turnouts</p> <p>Drawing of a cross-section of a railway track</p> <p>Calculation and selection of track cant</p>	
Work placement	Not applicable	

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