



Subject card

Subject name and code	Railways I, PG_00044193						
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	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			2.0		
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	prof. dr hab. inż. Eligiusz Mieloszyk					
	Teachers	dr inż. Michał Urbaniak mgr inż. Piotr Omieczynski dr inż. Kamila Szwackiewicz mgr inż. Natalia Karkosińska-Brzozowska					
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		5.0		15.0	50
Subject objectives	The aim of the course is to present the structure of railways, the characteristics of the rail surface elements (rails, sleepers and ballast) and the basic rules of railway track designing.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
Subject contents	<p>Types of transport and place of railway transport;Contact of various types of transport with railway transport;Engineering structures on a railway (bridges, viaducts, tunnels, culverts);Connections of the issues of railway engineering with the following areas of knowledge: geotechnics, structural mechanics, geodesy, materials engineering, environmental engineering, mechanical engineering (vehicle mechanics and rolling stock), aerodynamics (rolling stock), electrical engineering and electronics (traction, rail traffic control);Basic concepts related to railway infrastructure;Classification of railway lines;Railway track surface elements;Railway line as a spatial curve;Principles of shaping the track geometry;Transition curves, including clothoid and its properties;Geometric layout of the track in the horizontal and vertical planes;Vehicle in a circular curve and transition curve;A rail on an elastic foundation loaded with concentrated force, used to measure the stiffness of a railway superstructure.</p>						
Prerequisites and co-requisites	Not required						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Passing the exercises		60.0%		60.0%		
	Passing the lecture (test)		60.0%		40.0%		

Recommended reading	Basic literature	<p>1. Bałuch H.: Układy geometryczne połączeń torów. WKŁ. Warszawa 1989.</p> <p>2. Bałuch M.: Podstawy dróg kolejowych. Politechnika Radomska 2001.</p> <p>3. Koc W.: Elementy teorii projektowania układów torowych. Politechnika Gdańska 2004.</p> <p>4. Sysak J.: Drogi kolejowej. PWN, Warszawa 1986. 5. Rozporządzenie ministra transportu i gospodarki morskiej z dnia 10 września 1998 r. w sprawie warunków technicznych, jakim powinny odpowiadać budowle kolejowe i ich usytuowanie. Dz. U. z dnia 15 grudnia 1998. z późniejszymi zmianami</p> <p>6. Id -1 Warunki techniczne utrzymania nawierzchni na liniach kolejowych Warszawa, 2005.</p> <p>7. Grulkowski S., Kędra Z., Koc W., Nowakowski M.: Drogi szynowe. Wyd. Pol. Gdańskiej, Gdańsk 2013</p>
	Supplementary literature	1. Annex No. 1 to Resolution No. 1086/2017 of the Management Board of PKP Polskie Linie Kolejowe S.A. of November 13, 2017, Technical standards, Attachment ST1-T1-A6
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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