GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Railways I, PG_00044193		
Field of study	Civil Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study 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	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 Omieczyński mgr inż. Natalia Karkosińska-Brzozowska prof. dr hab. inż. Eligiusz Mieloszyk	

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
[K6_W10] Has basic knowledge on design, construction and maintenence of roads and railroads	The student has the ability to distinguish the basic characteristic elements of railway track. The Student can interpret geometric and physical parameters describing geometric layout. The student can adjust construction of the railway track to a specific track class.	
[K6_U13] knows principles of constrution of roads and railroads; can design a section of a road and railroad; can evaluate the technical condition of a road and railroad infrastructure	The student is able to design a simple geometric layout of a railway track in the plan - a section of a railway line. The student is able to adjust the acceptable parameters to the designed system of a specific category of railway line.	

Subject contents	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.
Prerequisites and co-requisites	Not required

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Passing the lecture (test)	60.0%	40.0%
Passing the exercises	60.0%	60.0%

Recommended reading

Basic literature	1. Bałuch H.: Układy geometryczne połączeń torów. WKŁ. Warszawa1989. 2. Bałuch M.: Podstawy dróg kolejowych. Politechnika Radomska2001. 3. Koc W.: Elementy teorii projektowania układów torowych.Politechnika Gdańska 2004. 4. Sysak J.: Drogi kolejowej. PWN,Warszawa 1986.5. Rozporządzenie ministra transportu i gospodarkimorskiej 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 6. Id -1 Warunki techniczne utrzymanianawierzchni na liniach kolejowych Warszawa, 2005. 7. Grulkowski S., Kędra Z., Koc W., Nowakowski M.: Drogi szynowe. Wyd. Pol.Gdańskiej, Gdańsk 2013
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: Drogi Szynowe - Ćwiczenia 23/24 - Moodle ID: 30580 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30580 Drogi Szynowe - Ćwiczenia 23/24 - Moodle ID: 30580 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=30580

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable