GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00069814		
Field of study	Planowanie i projektowanie infrastruktury transportu szynowego		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2025/2026
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	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Sławomir Grulkowski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	15.0	0.0	45

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=47159

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	45	0.0	0.0	45

Subject objectives

The aim of the course is to familiarize students with the basic criteria for planning and locating rail transport infrastructure. An additional aim is to discuss the basic elements of designing geometric layouts of railway tracks

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U05] cooperates with other people in the implementation of team work, both as a leader and a team member, effectively achieving set goals	The student is able to identify the industries necessary to complete the task. Is able to determine the sequence of tasks when completing the project	[SU5] Ocena umiejętności zaprezentowania wyników realizacji zadania [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[K7_K01] recognizes the importance of knowledge related to the field of study in solving cognitive and practical problems	The student is able to design simple elements of the network and track infrastructure	[SK2] Ocena postępów pracy [SK3] Ocena umiejętności organizacji pracy [SK5] Ocena umiejętności rozwiązywania problemów występujących w praktyce
[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	The student is able to identify problematic elements of the infrastructure. He can find a way to improve the situation	[SW1] Ocena wiedzy faktograficznej

Subject contents

Course content – lecture

Lecture

1. Preparation of investments - studies and design
2. International agreements and regulations
3. Requirements and their classification
4. Railway earthworks
5. The course of the line
6. Shaping geometric systems
7. Railway stations
8. Track connections
9. Functional diagrams
10. Crossroads of railroads with roads
11. Principles of designing devices for passenger transport

Project

1. Design of a fragment of a railway line
2. Project of a railway station
3. Railway crossing project

Course content – laboratory

1. Using computer tools in planning and design

2. Using surveying resources

3. Using artificial intelligence

Course content – project

1. Design of a section of a railway line using modern design techniques

2. Design of a section of a railway station

Prerequisites and co-requisites

Ability to name infrastructure elements

Knowledge of the basic formulas for calculating the geometric parameters of the railway track

Ability to interpret graphs from diagnostic measurements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	100.0%	50.0%
Test from the lecture	55.0%	50.0%

Recommended reading

Basic literature	Massel A., Designing railway lines and stations, PKP Polskie Linie Kolejowe, Warsaw, 2010 Detailed technical conditions for the modernization or construction of railway lines to the speed of Vmax 200 km / h (for conventional rolling stock) / 250 km / h (for rolling stock with tilting body) - VOLUME I - RAILWAY - Annex ST-T1-A6 "Geometric arrangements tracks "(valid from 01/01/2018) Technical conditions for the maintenance of the surface on the railway lines Id-1 (D-1) Bałuch H., Optimization of track geometric systems, Transport and Communications Publishing Hous, 1983
Supplementary literature	Bałuch H. Geometric systems of track connections, Transport and Communications Publishing House, 1983
eResources addresses	

Example issues/ example questions/ tasks being completed	Lecture 1. Which extremes are typically used for intermodal transport. Briefly describe 2. List the individual steps in the design of the railway route 3. Based on the drawing, determine the amount of track shift to the inside of the curve as a result of the elongation KP (drawing in the appendix) 4. What is an equivalent cant and excess cant 5 Explain the concept of useful track length Design 1. rules for calculating the longitudinal gradients of a railway track. 2. Analysis of train traffic resistance 3. Calculation of complex turnout systems. 4. Calculation of the braking mass of the train.
Practical activites within the subject	Not applicable

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