GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00069267		
Field of study	Civil Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Transportation Engineering -> Faculty of Civil and Environmental Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Kamila Szwaczkiewicz	
	Teachers	dr inż. Kamila Szwaczkiewicz mgr inż. Piotr Omieczyński	

Lesson types and methods of instruction	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 addresses: Moodle ID: 989 PROJEKTOWANIE DRÓG SZYNOWYCH 2025/26 https://enauczanie.pg.edu.pl/2025/course/view.php?id=989						

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	3.0	27.0	75

Subject objectives	The aim of subject is obtainment of knowledge and abilities concerning rail surface construction and design of railway's geometric layout, turnout ways and design of small stations geometric layouts.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment	The student has knowledge and demonstrates understanding of the impact of a railway investment on the environment and the interconnections and dependencies between the existing and planned railway track and the natural environment	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.	The student is aware of the key aspects of professional, ethical and social responsibility related to management, business operations, decision-making and opinion-forming in railway design.	[SK1] Assessment of group work skills [SK2] Assessment of progress of work [SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).	The student has the ability to distinguish the characteristics of the basic elements of the track structure. The student is able to interpret the geometric and physical parameters describing the geometric systems. The student knows the principles of simple track layouts designing. The student is able to assess the conditions of the work of classic track as well as of the CWR track.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint	The student is able to prepare design data and design in a sustainable manner, with care for the natural environment and minimal carbon footprint section of a railway line in plan and longitudinal profile, design cross-sections of the surface and subgrade on a straight line and in a curve, design a level crossing and a turnout way.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task
[K6_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies.	The student is able to carry out engineering activities in the field of railways, using and applying practical knowledge and understanding of the specific characteristics of materials, equipment and tools, processes and technologies.	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task

Subject contents

Principles of railroad designing: cross-sections, line profile, line plan. Railway turnouts design and geometry. Track connections. Track connections shaping and sizing. Railway track junctions design. Railway stations classification. Passenger stations. Goods stations. Marshalling yards. Parking stations. Calculation elements of passenger stations, goods stations and marshalling yards.

Prerequisites and co-requisites

Railways I

Railways II

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
laboratory task	60.0%	20.0%
project	100.0%	30.0%
test	60.0%	50.0%

Recommended reading	Basic literature	Grulkowski S., Kędra Z., Koc W., Nowakowski M., Drogi szynowe, Wydawnictwo Politechniki Gdańskiej, Gdańsk, 20132. Massel A..: Projektowanie linii i stacji kolejowych. PKP Polskie Linie Kolejowe, Warszawa 2010. Skibiński K.: Budowa kolei żelaznych : połączenia torów. Cz.1. Obrachowanie połączeń torów. Nakładem komisji wydawniczej biblioteki politechnicznej. Lwów 1897. Chełmecki W.: Stacje kolejowe cz. I. PolitechnikaKrakowska, Kraków 1997. Chełmecki W.: Stacje kolejowe cz. II. PolitechnikaKrakowska, Kraków 2001. Bałuch H.: Układy geometryczne połączeń torów. WKŁ. Warszawa 1989. Bałuch M.: Podstawy dróg kolejowych. Politechnika Radomska 2001. Koc W.: Elementy teorii projektowania układów torowych. Politechnika Gdańska 2004. Sysak J.: Drogi kolejowej. PWN, Warszawa 1986. 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. Id -1 Warunki techniczne utrzymania nawierzchni na liniach kolejowych Warszawa, 2005. Grulkowski S., Kędra Z., Koc W., Nowakowski M.: Drogi szynowe. Wyd. Pol. Gdańskiej, Gdańsk 2013 (skrypt w formacie pdf, link do wersji pełnotekstowej: pbc.gda.pl/dlibra/docmetadata?id=30780) Bałuch H., Bałuch M.: Eksploatacyjne metody zwiększania trwałości rozjazdów kolejowych. Centrum Naukowo Techniczne Kolejnictwa, Warszawa 2009. Bałuch H.: Układy geometryczne połączeń torów. Warszawa: WKiŁ 1989. Kurtz C.M.: Track and turnout engineering. New York: Simmons-Boardmann Publishing Co 1927. Łączyński J.: Rozjazdy kolejowe. Wydawnictwo Komunikacyjne, Warszawa 1958 r. Rozporządzenie Ministra Transportu i Gospodarki Morskiej w sprawie warunków technicznych, jakim powinny odpowiadać budowle kolejowe i ich usytuowanie. Dz.U. 1998, nr 151, poz. 987. Rzepka W.: Rozjazdy łukowe w planie i profilu. Warszawa: WKiŁ 1966. Skibiński K.: Budowa kolei żelaznych. Połączenia torów. Cz. 1. Obrachowanie połączeń torów. Lwów: I Związkowa Drukarnia we Lwowie 1897. Sysak J. i in.: Drogi kolejowe. Warszawa: PWN 1986. Wątorek K.: Budowa kolei żelaznych. Warszawa: Instytut Wydawniczy Biblioteka Polska 1924. Węgierski J.: Układy torowe stacji. Funkcja i teoria. Warszawa: WKiŁ 1974

	Supplementary literature	Ustawa o Transporcie Kolejowym: https://dziennikustaw.gov.pl/D2020000104301.pdf Rozporządzenia: http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU19981510987/O/D19980987.pdf http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20140000867/O/D20140867.pdf http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU20180001175/O/D20181175.pdf Standardy techniczne i Wytyczne Techniczne do Projektowania - PKP PLK: ST TOM I Załącznik ST1-T1-A6 "Układy geometryczne torów": https://www.plk-sa.pl/files/public/user_upload/pdf/Akty_prawne_i_przepisy/Standardy_techniczne/Szczegolowe_warunki_techniczne_dla_modernizacji_lub_budowy_linii_l ST TOM I DROGA SZYNOWA Wersja 1.4: https://www.plk-sa.pl/files/public/user_upload/pdf/Akty_prawne_i_przepisy/Standardy_techniczne/21.04.2021/ST_Tom_I..PDF ST TOM I Załącznik ST-T1-A8 Konstrukcja nawierzchni kolejowej (obowiązuje od 27.04.2021 r.) https://www.plk-sa.pl/files/public/user_upload/pdf/Akty_prawne_i_przepisy/Standardy_techniczne/21.04.2021/ST-T1-A8.pdf ST TOM II - Skrajnia budowlana: https://www.plk-sa.pl/files/public/user_upload/pdf/Akty_prawne_i_przepisy/Standardy_techniczne/Standardy_techniczne_szczegolowe_warunki_techniczne_dla_moderniz Normy PN- EN: PN-EN 13803-1 PN-EN 13803-2
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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