

## GDAŃSK UNIVERSITY

## Subject card

Subject name and code	BASICS OF RAILWAY DESIGN, PG_00044203								
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			Optional subject group 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	6		ECTS credits			2.0			
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. Kamila Szwaczkiewicz							
	Teachers		dr inż. Kamila Szwaczkiewicz						
			dr inż. Jacek Szmagliński						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	:t	Seminar	SUM	
	Number of study hours	0.0	15.0 0.0 15.0			0.0	30		
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	arning activity Participation ir classes includ plan		I didactic Participation in   ed in study consultation hours		Self-study		SUM	
	Number of study hours	30		5.0		15.0		50	
Subject objectives	Getting students familiar with methods for designing basic railway geometries in layout and in cross section								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_W10] Has basic knowledge on design, construction and maintenence of roads and railroads		Student has basic knowledge of designing typical rail track geometrical layouts.			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects			
	[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		Student is able to design railway track construction and basic track layouts.			[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	- normal and characteristic cross-se	- normal and characteristic cross-section of a railway line;						
	- marking step - simplified profile of the railway line;							
	- calculation of complex geometric l	- calculation of complex geometric layout in the plan:						
	"							
	- railway passenger stops designing	- railway passenger stops designing;						
	- design of the widening of the space	- design of the widening of the spacing between track centers;						
	ign, track surface.							
Prerequisites and co-requisites	Railaways I	Railaways I						
Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade					
and criteria	Exercises - execution of assigned tasks	60.0%	40.0%					
	Double track railway with a passenger stop project	60.0%	60.0%					
Recommended reading	Basic literature	Regulation of the Minister of Transport and Maritime Economy of September 10, 1998 on technical conditions to be met by railway structures and their location. with later changes; Detailed technical conditions for the modernization or construction of railway lines to a 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 layout tracks "(valid from 01/01/2018); 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 II - RAILWAY LINE CONSTRUCTION GAUGE; Detailed technical conditions for the modernization or construction of railway lines to a speed of Vmax 200 km / h (for conventional rolling stock) / 250 km / h (for rolling stock with tilting body) - VOLUME I - RAILWAY LINE CONSTRUCTION GAUGE; Detailed technical conditions for the modernization or construction of railway lines to a speed of Vmax 200 km / h (for conventional rolling stock) / 250 km / h (for rolling stock with tilting body) - VOLUME I - RUNWAY (valid from 18/07/2019); Detailed technical conditions for the modernization or construction of railway lines to a speed of Vmax 200 km / h (for conventional rolling stock) / 250 km / h (for rolling stock with a tilting body) - VOLUME XI - CONSTRUCTION (effective from 01.01.2018); Architectural guidelines for the lpi-1 passenger infrastructure - effective from August 11, 2020; Technical conditions for the construction and acceptance of passenger platforms, aspects: platform access edges, surfaces and body of platform Id-22; Grulkowski S., Kędra Z., Koc W., Nowakowski M.J.: Railroads. Publishing House of the Gdańsk University of Technology, Gdańsk 2013. Bałuch H .: Optimization of track geometric systems. WKŁ, Warsaw 1983. STANDARDY TECHNICZNE szczegółowe warunki techniczne dla modernizacji lub budowy linii kolejowych do prędkości Vmax 250 km/h TOM I ZAŁAC						
	Supplementary literature	Instructions on preparing and updating schematic plans of Ig-10 [D-27] - version adapted to the rules of WCAG						
	eResources addresses	Adresy na platformie eNauczanie:						
		35266 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=35266						
Example issues/ example questions/ tasks being completed	1. Calculate the maximum velocity (parameters P0, P1, P2) in complex geometric layouts:- Two arcs without transition curves directed in the same direction separated by an inset: inset Lop = 200m, Circular arc R1 = 1200m, length LI = 183.003m, inset Lop = 48m, Circular arch R2 = 2000m, length LI = 213.2m, inset Lop = 80m- Compound curve without transition curves:insert Lop = 200m, circular arch R1 = 600m, length LI = 183.003m, circular arch R2 = 1200m, length LI = 1300m, circular arch R1 = 600m, length LI = 1300m, northogonal curve without transition curves:insert Lop = 200m, circular arch R1 = 600m, length LI = 183.003m, circular arch R2 = 1200m, length LI = 130m, insert Lop = 200m2. Design the route of the railway line in the plan, having the following data: line type, map background, start and end directions							
Work placement	Not applicable							