



Subject card

Subject name and code	Road and Railway Engineering, PG_00044860						
Field of study	Geodesy and Cartography						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2025/2026		
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			6.0		
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. Jacek Szmagliński					
	Teachers	dr inż. Łukasz Mejzun					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	45.0	30.0	0.0	0.0	0.0	75
	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	75	9.0		66.0		150
Subject objectives	Presentation of engineering solutions used in railway and road construction. Controlling railway traffic, making an inventory of rail routes, developing the results of track geometry measurements. Calculation of railway station track systems.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W10] has elementary knowledge and understands the concepts of architecture and urban planning, construction, environmental engineering and transport necessary to carry out studies related to planning and investment service	The student has knowledge of creating and interpreting drawings. The student has knowledge of planning and designing the basic elements of railroads and roads.			[SW1] Assessment of factual knowledge		
	[K6_U02] can make basic geodetic drawings and read an architectural technical drawing	Can analyze issues related to road geometry and visibility parameters. Can make simple road measurements and interpret the results.			[SU1] Assessment of task fulfilment		
Subject contents	Course content – lecture Railway part: 1. Stations and tracks; Turnouts, 2. Track lengths; platforms, 3. Rail-road crossings; gauge, 4. Intermodal transport, traction network, 5. Railway signaling, 6. Machines and works performed on tracks, 7. Measurements in the field Road part: 1. Pavement structures - types, division, layers, functions. 2. Earthworks - execution, rules, equipment. 3. Subsoil of the pavement. 4. Bound mixtures and soil stabilized with binders in road construction. 5. Aggregates in road construction. 6. Bituminous mixtures in road construction. Course content – exercises Railway part: 1-2. introduction to the analysis of data from the track gauge, 3-4. data analysis, 5. introduction adjustment of track axis on a straight line, 6. data analysis, 7. Field measurements. Road part: 1. Marking the road using the marking step method. 2. Design of the horizontal geometry of a circular road. 3. Design of the vertical geometry of a circular road. 4. Normal sections of a circular road.						

Prerequisites and co-requisites	Rail transport infrastructure		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	60.0%	60.0%
	Exercises	100.0%	40.0%
Recommended reading	Basic literature	<p>Grulkowski S., Kędra Z., Koc W., Nowakowski M.J.: Drogi szynowe. WPG, Gdańsk 2013.</p> <p>Massel A.: Projektowanie linii i stacji kolejowych. PKP Polskie Linie Kolejowe, Warszawa 2010.</p> <p>Gocał J.: Geodezja inżyniersko-przemysłowa. AGH, Uczelniane Wydawnictwo Naukowo-Dydaktyczne, Kraków 2007.</p> <p>Instrukcja o organizacji i wykonywaniu pomiarów w geodezji kolejowej. D-19, 2000.</p> <p>Rodzaje i obieg dokumentacji geodezyjno-kartograficznej wykonywanej na poszczególnych etapach modernizacji linii kolejowych Ig-1. PKP PLK. Warszawa, 2010.</p> <p>Wytyczne dla osadzania znaków regulacji osi toru na konstrukcjach wsporczych (stupach) sieci trakcyjnej Ig-6. PKP PLK, Warszawa, 2011.</p> <p>Standard techniczny określający zasady i dokładności pomiarów geodezyjnych dla zakładania wielofunkcyjnych znaków regulacji osi toru Ig-7. PKP PLK, Warszawa, 2012.</p>	
	Supplementary literature	<p>Instrukcja o oględzinach, badaniach technicznych i utrzymaniu rozjazdów Id-4. PKP Polskie Linie Kolejowe S.A. Warszawa 2005 r.</p> <p>Warunki techniczne utrzymania nawierzchni na liniach kolejowych. Id1 2005</p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<p>The test includes the lecture part of the subject. list the types of railway stations, describe track lengths and their calculation, describe the dimensions of the platforms, describe the travel requirements visibility calculations, gauge description, describe the assumptions of intermodal transport, describe the most important elements of the overhead contact line, describe the principle of operation of railway signaling, describe the machines used in track work, ability to use a track gauge in track tests, list and describe the layers of the pavement structure (layout, materials, pavement functions), list the types of road surfaces, give the rules for shaping the geometry of the horizontal road, give the rules for shaping the vertical geometry of the road.</p>		
Practical activities within the subject	Not applicable		

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