GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Road and Railway Engineering, PG_00044860		
Field of study	Geodesy and Cartography		
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
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		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Jacek Szmagliński	
	Teachers	dr inż. Łukasz Mejłun	

Lesson types and methods of instruction

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_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
[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

Subject contents

Railway part:Lectures: 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.Exercises: 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:Lectures: 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.Exercises: 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

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Excercises</td><td>100.0%</td><td>40.0%</td></tr>
<tr><td>Test</td><td>60.0%</td><td>60.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Grulkowski S., Kędra Z., Koc W., Nowakowski M.J.: Drogi szynowe. WPG, Gdańsk 2013.Massel A..: Projektowanie linii i stacji kolejowych. PKP Polskie Linie Kolejowe, Warszawa 2010.Gocał J.: Geodezja inżynieryjno-przemysłowa. AGH, Uczelniane Wydawnictwo Naukowo-Dydaktyczne, Kraków 2007.Instrukcja o organizacji i wykonywaniu pomiarów w geodezji kolejowej. D-19, 2000.Rodzaje i obieg dokumentacji geodezyjno-kartograficznej wykonywanej na poszczególnych etapach modernizacji linii kolejowych Ig-1. PKP PLK. Warszawa, 2010.Wytyczne dla osadzania znaków regulacji osi toru na konstrukcjach wsporczych (słupach) sieci trakcyjnej Ig-6. PKP PLK, Warszawa, 2011.Standard techniczny określający zasady i dokładności pomiarów geodezyjnych dla zakładania wielofunkcyjnych znaków regulacji osi toru Ig-7. PKP PLK, Warszawa, 2012.Z. Wiłun Zarys geotechniki WKŁR. Edel Odwodnienie dróg WKŁK. Błażejowski, S. Styk Technologia warstw bitumicznych WKŁJ. Piłat, P. Radziszewski Nawierzchnie asfaltowe WKŁA. Szydło Nawierzchnie drogowe z betonu cementowego Polski CementKatalog Typowych Konstrukcji Nawierzchni Podatnych i Półsztywnych. 2014. PG, GDDKiA.Katalog Typowych Konstrukcji Nawierzchni Sztywnych. 2014. PWr, GDDKiA.ROZPORZĄDZENIE MINISTRA TRANSPORTU I GOSPODARKI MORSKIEJ z dnia 2 marca 1999 r. w sprawie warunków technicznych, jakim powinny odpowiadać drogi publiczne i ich usytuowanie</td></tr>
<tr><td>Supplementary literature</td><td>Instrukcja o oględzinach, badaniach technicznych i utrzymaniu rozjazdów Id-4. PKP Polskie Linie Kolejowe S.A. Warszawa 2005 r.

Warunki techniczne utrzymania nawierzchni na liniach kolejowych. Id1 2005</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
Inżynieria Drogowa i Kolejowa 2024 - Moodle ID: 38327
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38327</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">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 requirementsvisibility 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.</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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