GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	URBAN RAIL TRANSIT SYSTEMS, PG_00044673		
Field of study	Transport		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2026/2027
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	4	Language of instruction	Polish
Semester of study	7	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Transportation Engineering -> 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		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	15.0	0.0	45

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	45	10.0	45.0	100

Subject objectives

The aim of the course is to prepare the student to planning and designing urban rail transport routes. The means of urban rail transport that will be discussed on the subject are tram, high-speed city rail, metro and other means of transport combining the features of the above. Technical requirements for pavement design and track geometry in Poland and around the world will be presented. Information on the location and design of tram stops, stations and integration nodes will be provided.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W18] has proficiency in transport infrastructure as appropriate for their specialty	Is able to develop rules for the integration of various transport modes. Understands the need for planning transport systems and can indicate the effects of planning decisions. Knowledge of basic forms of urban rail transport.	[SW1] Assessment of factual knowledge
[K6_U12] able to select tools and methods, carry out assessments and simple tests of transport systems to an extent required of the specialty / learning profile	Is able to design a cross section of track surface and stops. Knows the rules of tram traffic control and other means of urban rail transport. Is able to design a fragment of a double-track tram road, a junction and a terminal. Can assess the condition of the track and the condition of its components.	[SU1] Assessment of task fulfilment

Subject contents

Course content – lecture

1. Rail City Transport - admission to lectures,
2. Description of vehicles and tram routes and high-speed city rail,
3. Description of vehicles and metro routes, two-system tram, pre-metro and fast tram,
4. Integration nodes - description of solutions and functional requirements,
5. Integration nodes - detailed technical solutions,
6. Designing of tram routes - horizontal geometry,
7. Tramway design - vertical and cross-sectional geometry,
8. Designing tram stops,
9. Construction of rail surfaces - ballast,
10. Construction of rail surfaces - ballastless,
11. Outdoor activities on the tracks,
12. Outdoor activities on the tram depot,
13. Tram switches - geometry,
14. Tram switches - controls,
15. Repetition of material.

Course content – project

Computer-aided designing

Prerequisites and co-requisites

Railroads

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Technical desing	100.0%	45.0%
Test	60.0%	55.0%

Recommended reading

Basic literature

WR-D-43-3

Kubalski J.: Komunikacja miejska. Tory tramwajowe. WkiŁ, Warszawa 1978.
Wesołowski J.: Miasto w ruchu. Instytut spraw Obywatelskich (internet), 2008
Warunki techniczne jakim powinny odpowiadać linie metra i ich usytuowanie, Warszawa, 2007
Podoski J.: Transport w miastach. WKiŁ,Warszawa, 1985
Rozporządzenie Ministra Transportu i Gospodarki Morskiej z dnia 2 marca 1999 r. w sprawie warunków technicznych, jakim powinny odpowiadać drogi publiczne i ich usytuowanie.
Rozporządzenie Ministra Transportu i Gospodarki Morskiej z dnia 10 września 1998 r. w sprawie warunków technicznych, jakim powinny odpowiadać budowle kolejowe i ich usytuowanie.
Wytyczne techniczne projektowania budowy i utrzymania torów tramwajowych, MAGTiOŚ, Warszawa 1983.
Tymczasowe wytyczne do projektowania szybkiej komunikacji tramwajowej, MAGTiOŚ, Warszawa 1981

Supplementary literature

Wesołowski J.: Transport miejski. Instytut Spraw Obywatelskich (internet).
AUSFÜHRUNGSBESTIMMUNGEN ZUR EISENBAHNVERORDNUNG (A B - E B V)
Track Design Handbook for Light Rail Transit Second Edition TCRP REPORT 155
Verordnung über den Bau und Betrieb der Straßenbahnen

eResources addresses

Example issues/ example questions/ tasks being completed	Test: describe the means of urban rail transport, describe the basic parameters of integration nodes and integration methods, describe the methods of tram street geometry design, describe and draw typical cross-sections of track surface, describe turnout control methods, draw basic turnout structures. Design: Create a concept of a two-track tram road with a branch and a limit switch, perform calculations regarding geometry, make technical drawings, situational plan, profile, construction cross-sections, system specification track, stakeout plan. make a technical description.
Practical activites within the subject	Not applicable

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