GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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| Subject name and code | , PG_00072750 | | |
| Field of study | Civil Engineering | | |
| 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 |
| 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 | 5.0 |
| 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 | 15.0 | 30.0 | 0.0 | 0.0 | 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 | 0.0 | 0.0 | 45 |

**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_K04] Engages in independent lifelong learning and individually follows the development of science and technology in the field of civil engineering. | Is able to develop rules for the integration of various transport modes.<br>Understands the need for planning transport systems and can indicate the effects of planning decisions.<br>Knowledge of basic forms of urban rail transport. | [SK1] Assessment of group work skills |
| [K6_K03] Can effectively, clearly and unambiguously convey information, describe activities and communicate their results/ outcomes to engineers or a wider audience using appropriate communication methods and tools. | 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. | [SK1] Assessment of group work skills |

<table>
<tr><td>Subject contents</td><td>Course content – lecture<br><br>1. Rail City Transport - admission to lectures,<br>2. Description of vehicles and tram routes and high-speed city rail,<br>3. Description of vehicles and metro routes, two-system tram, pre-metro and fast tram,<br>4. Integration nodes - description of solutions and functional requirements,<br>5. Integration nodes - detailed technical solutions,<br>6. Designing of tram routes - horizontal geometry,<br>7. Tramway design - vertical and cross-sectional geometry,<br>8. Designing tram stops,<br>9. Construction of rail surfaces - ballast,<br>10. Construction of rail surfaces - ballastless,<br>11. Outdoor activities on the tracks,<br>12. Outdoor activities on the tram depot,<br>13. Tram switches - geometry,<br>14. Tram switches - controls,<br>15. Repetition of material.<br><br>Course content – exercises<br><br>Computer-aided designing</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Railroads</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Technical desing</td><td>100.0%</td><td>45.0%</td></tr>
<tr><td>Test</td><td>60.0%</td><td>55.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>WR-D-43-3<br><br>Kubalski J.: Komunikacja miejska. Tory tramwajowe. WkiŁ, Warszawa<br><br>1978.<br>Wesołowski J.: Miasto w ruchu. Instytut spraw Obywatelskich (internet), 2008<br>Warunki techniczne jakim powinny odpowiadać linie metra i ich usytuowanie, Warszawa, 2007<br>Podoski J.: Transport w miastach. WKiŁ,Warszawa, 1985<br>Rozporządzenie Ministra Transportu i Gospodarki Morskiej z dnia 2 marca 1999 r. w sprawie warunków technicznych, jakim powinny odpowiadać drogi publiczne i ich usytuowanie.<br>Rozporządzenie Ministra Transportu i Gospodarki Morskiej z dnia 10 września 1998 r. w sprawie warunków technicznych, jakim powinny odpowiadać budowle kolejowe i ich usytuowanie.<br>Wytyczne techniczne projektowania budowy i utrzymania torów tramwajowych, MAGTiOŚ, Warszawa 1983.<br>Tymczasowe wytyczne do projektowania szybkiej komunikacji tramwajowej, MAGTiOŚ, Warszawa 1981</td></tr>
<tr><td>Supplementary literature</td><td>Wesołowski J.: Transport miejski. Instytut Spraw Obywatelskich (internet).<br>AUSFÜHRUNGSBESTIMMUNGEN ZUR EISENBAHNVERORDNUNG ( A B - E B V )<br>Track Design Handbook for Light Rail Transit Second Edition TCRP REPORT 155<br>Verordnung über den Bau und Betrieb der Straßenbahnen</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Test:<br>describe the means of urban rail transport,<br>describe the basic parameters of integration nodes and integration methods,<br>describe the methods of tram street geometry design,<br>describe and draw typical cross-sections of track surface,<br>describe turnout control methods,<br>draw basic turnout structures.<br>Design:<br>Create a concept of a two-track tram road with a branch and a limit switch,<br>perform calculations regarding geometry,<br>make technical drawings, situational plan, profile, construction cross-sections, system specification track, stakeout plan.<br>make a technical description.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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