



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Transportation engineering

Field of study

Sustainable Building Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Course

Year/Semester

4/7

Profile of study

general academic

Course offered in

english

Requirements

elective

Lecture

30

Laboratory classes

0

Tutorials

0

Projects/seminars

15

Number of hours

Other (e.g. online)

0

Number of credit points

5

Lecturers

Responsible for the course/lecturer:

DSc Eng. Jeremi Rychlewski

email: jeremi.rychlewski@put.poznan.pl

phone. 61-6475816

Faculty of Civil and Transport Engineering

ul. Piotrowo 5, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

KNOWLEDGE: student has knowledge of basics of car road and railroad design;

student has knowledge on basics of sustainable transport;

SKILLS: student has an ability to obtain information from literature and other properly selected information sources;

student has skills allowing calculations using physical formulas;

student can adjust tools for design tasks;

student can read geodesic and topographic maps.



SOCIAL COMPETENCE: student understands ideas of common values, sustainable development and sustainable transport;

student understands can a necessity to improve professional and personal competence, understand the need and opportunities of continuous learning;

student follows in daily academic life rules of culture and respect for others.

Course objective

To present general knowledge on transport infrastructure for different modes of transport. To present basics of transportation node design and traffic engineering.

Course-related learning outcomes

Knowledge

Student acquires basic knowledge on parameters of infrastructure for different modes of land transport: public transport, freight, pedestrian, bicycle.

Student learns how to integrate different modes within limited area.

Student acquires basic knowledge on design of transport nodes: junctions and interchanges, stations, interchange points.

Skills

Student learns to design street transport infrastructure for different modes;

Student learns basics of transport node design;

Student acquires an ability to evaluate quality of a transport node.

Social competences

Student learns to choose criteria and priorities for a certain task, taking into account common values and sustainable development;

Student takes responsibility for the accuracy and reliability of working results and their interpretation, gets an ability to critically evaluate the results of own work.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The acquired knowledge is verified by a written colloquium done on the last lecture. The colloquium will ask 5 general questions. With small number of students it is possible to change the form into an oral colloquium, requiring acceptance from the lecturer and majority of students. To pass the colloquium, students should acquire at least 50% of points. Activity during the lectures may be taken into account during the colloquium's score evaluation.

Skills and competencies will be checked by a merithorical evaluation of the presented project, social competencies presented during project's consulting, systematic work and a possible defence of the presented project.



Programme content

1. Characteristics and parameters of infrastructure for different modes: pedestrian, bicycles, public transport;
2. Characteristics and parameters of public transport modes: busses, trams, metro, metropolitan railway etc.;
3. Junctions, interchanges, traffic lights, ITS, prioritisation of certain traffic streams;
4. Railway stations, public transport terminals, interchange nodes;
5. Infrastructure for intermodal transport - passenger and cargo.
6. Ecology and transport: energy, ecology, economy, electromobility, autonomous vehicles.

Teaching methods

Informative lecture using multimodal presentation, with an occasional use of a blackboard. Short discussions on student observations will also be included.

A preliminary project of a transport knot including pedestrian, bicycle, public transport, public and private car traffic infrastructure.

Bibliography

Basic

1. Ieda H., Okata J.: Sustainable Urban Transport in an Asian Context. Springer 2010.
2. Manual on Uniform Traffic Control Devices, U.S. Dept of Transportation 2010.
3. Rozporządzenie w sprawie warunków technicznych jakim powinny odpowiadać drogi publiczne i ich usytuowanie.
4. Rychlewski J.: Street network design for a sustainable mobility system. Transport Research Procedia 14 / 2016, str. 528-537.
5. Tolley R., Tolley R. S.: Sustainable transport. Cambridge 2003.
6. Victoria Transport Policy Institute - web page: www.vtpi.org
7. Wesołowski J.: Miasto w ruchu: przewodnik po dobrych praktykach w organizowaniu transportu miejskiego. ISO Łódź 2008.1. Kędra Z.: Technologia robót kolejowych. Politechnika Gdańska, Gdańsk 2017.
8. Yi S.: Principles of railway location and design. Elsevier, Amsterdam 2018.



Additional

1. Basiewicz T., Gołaszewski A., Rudziński L.: Infrastruktura transportu. Politechnika Warszawska, Warszawa 2002.
2. Cieślakowski S.: Stacje kolejowe. WKiŁ, Warszawa 1992.
3. Gaca S., Suchorzewski W., Tracz M.: Inżynieria Ruchu. WKiŁ. 2009 i późniejsze.
4. Materiały konferencji naukowych „Problemy komunikacyjne miast w warunkach zatłoczenia motoryzacyjnego”. Podoski J.: Transport w miastach. WKiŁ. 1988.
5. Sysak J. (red.): Podstawy dróg kolejowych. PWN, Warszawa 1982.
6. Szczuraszek T.: Bezpieczeństwo ruchu miejskiego. WKiŁ. 2005.
7. Tracz M., Allsop R. E., Tarko A.: Skrzyżowania z sygnalizacją świetlną. WKiŁ. 1990.

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for test, project preparation) ¹	80	3,0

¹ delete or add other activities as appropriate