COURSE DESCRIPTION CARD - SYLLABUS

Course name
Transportation engineering [S1BZ1E>BK]

Course

Field of study
Sustainable Building Engineering

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
English

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
30

Number of credit points

6,00

Coordinators

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Lecturers

Prerequisites

KNOWLEDGE: Student beginning this course should have: - basic knowledge of car road and railroad design; - knowledge on basics of sustainable transport. SKILLS: Student should be able to: - obtain information from literature and other properly selected information sources; - calculate using physical formulas; - adjust tools for design tasks; - read geodesic and topographic maps. SOCIAL COMPETENCIES: Student should: - understand ideas of common values, sustainable development and sustainable transport; - understand a necessity to improve professional and personal competence, - understand the need and opportunities of continuous learning; - follow 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 knot 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 knowlegde on design of transport nodes: junctions and interchanges, stations, interchange points.

Skills:
Student learns to desing street transport infrastructure for different modes;
Student learns basics of transport node design;
Student aquires 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 developement;
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:

LECTURE: 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.
PROJECT: Skills and competencies will be checked by an evaluation of the presented project, social competencies presented during project"s consulting, systematic work and a possible defence of the presented project.
Grade scale: 50-60% 3,0; 60-70% 3,5; 70-80% 4,0; 80-90% 4,5; 90-100% 5,0.

Programme content

The module's programme covers:
- description and explanation of parameters of transport infrastructure depending on its function;
- description how to design crossings of different roads - including junctions, railroad stations, interchange nodes, intermodal terminals;
- designing elements of a preliminary project of an interchange node integrating different transport modes.

Course topics

LECTURES:
1. Characteristics and parameters of infrastructure for different modes: pedestrian, bicycles, public transport, trucks;
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.
PROJECT: Preliminary project of a transport node including infrastructure for pedestrians, cyclists, public transport and cars.

Teaching methods

Informative lecture using multimodal presentation, wih an occasional use of a blackboard. Short discussions on student observations will also be included.
Project – design method.

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. Rozporządenie 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 robór 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 świeltną. WKiŁ. 1990.

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	80	3,00