



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Sustainable transport

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### Course

Field of study

Sustainable Building Engineering

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

english

Requirements

elective

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### Number of

#### hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

#### Number of credit points

1

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### Lecturers

Responsible for the course/lecturer:

DSc Eng. Jeremi Rychlewski

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Faculty of Civil and Transport Engineering

ul. Piotrowo 5, 60-965 Poznań

Responsible for the course/lecturer:

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### Prerequisites

KNOWLEDGE: student has knowledge of basics of mathematics and physics, knows traffic rules;

student has knowledge from course on architectural design.

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 read geodesic maps.



SOCIAL COMPETENCE: student understands ideas of common values;

student understands basic ecological dependencies, presented on previous courses;

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

### Course objective

To present knowledge and way of thinking on chosen aspects of sustainable development of transport network and sustainable transport behaviour.

### Course-related learning outcomes

#### Knowledge

Student acquires knowledge on requirements and methods for developing sustainable transport;

Student learns about a need to hierarchise and classify transport infrastructure;

Student acquires knowledge on designing separated and shared spaces, including need of handicapped people.

#### Skills

Student acquires an ability to hierarchize a transport network, aiming at sustainable transport values;

Student acquires skills to analyse urban and transport needs in accordance with sustainable development rules.

#### Social competences

Student understands the need to proliferate the knowledge about sustainable transport, transfers the knowledge in a clear and easily comprehensible manner;

Student can realise how important is to take care of personal health and physical fitness.

### 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 be in a form of a multiple choice test with penalty for wrong answers, and questions of "list with a short description" type. 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.

### Programme content

1. Idea of sustainable transport, external costs in transport, road hierarchy, road classification;
2. Modal split, transport mode choice decision making, priorities for chosen transport vehicles;
3. Intermodal and piggyback transport, logistical centers;



4. Universal desing, meeting needs of handicapped persons, separated and shares spaces;
5. Desing of sustainable transport corresponding to characteristics of a chosen area.

### Teaching methods

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

### 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. Podoski J.: Transport w miastach. WKiŁ. 1988.
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](http://www.vtpi.org)
7. Wesołowski J.: Miasto w ruchu: przewodnik po dobrych praktykach w organizowaniu transportu miejskiego. ISO Łódź 2008.
8. Yi S.: Principles of railway location and design. Elsevier, Amsterdam 2018.

#### Additional

1. Bul R., Gadziński J., Rychlewski J.: Kierunki i standardy planowania metropolitalnego systemu transport. w: Mikuła Ł.: Integracja planowania przestrzennego w Metropolii Poznań – problemy, metody , osiągnięcia. Bogucki, Poznań 2016, str. 25-44.1.
2. Olszewski P., Suchorzewski W.: Samochód w śródmieściu. WKiŁ. 1983.
3. Dell R. et al.: Towards sustainable road transport. Academic Press.
4. Gaca S., Suchorzewski W., Tracz M.: Inżynieria Ruchu. WKiŁ. 2009 i późniejsze.
5. Materiały konferencji naukowych „Problemy komunikacyjne miast w warunkach zatłoczenia motoryzacyjnego”.
6. Rychlewski J.: Priorytet tramwajowy w Poznaniu. Archiwum Instytutu Inżynierii Lądowej 12/2012, str. 33-60.
7. Rychlewski J.: Street classification problems w: Modelling of change in transportation subsystems pod red. R. Janecki, S. Krawiec, Wyd. Politechniki Śląskiej, Gliwice 2011, str. 245-254.



8. Rychlewski J.: Experience of 17 years of public transport priority in Poznań, Poland. Proceedings of the 16th International IEEE Annual Conference on Intelligent Transportation Systems (ITSC 2013), The Hague, The Netherlands, October 6-9, 2013, str. 1882-1887.

9. Szczuraszek T.: Bezpieczeństwo ruchu miejskiego. WKiŁ. 2005.

10. Tracz M., Allsop R. E., Tarko A.: Skrzyżowania z sygnalizacją świetlną. WKiŁ. 1990.

### Breakdown of average student's workload

|  | Hours | ECTS |
|--|-------|------|
| Total workload   | 30    | 1,0  |
| Classes requiring direct contact with the teacher                          | 15    | 0,5  |
| Student's own work (literature studies, preparation for test) <sup>1</sup> | 15    | 0,5  |

<sup>1</sup> delete or add other activities as appropriate