



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Vehicles and systems of urban rail transport

### Course

Field of study

Construction and Exploitation of Means of Transport

Area of study (specialization)

Railway Vehicles

Level of study

Second-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

polish/english

Requirements

compulsory

### Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

dr hab. inż. Bartosz Firlik

bartosz.firlik@put.poznan.pl

tel. (61) 665 2012

Faculty of Civil and Transport Engineering

ul. Piotrowo 3, pok. 722, 60-965 Poznań

Responsible for the course/lecturer:

### Prerequisites

Knowledge: The student has basic knowledge of the construction of rail vehicles and the organization of transport

Skills: The student is able to solve specific problems appearing in technical systems

Social competences: in technical systems: The student is able to cooperate in a group, assuming various roles in it. The student is able to determine the priorities important in solving the tasks set before him.

### Course objective

Acquainting with the existing in Poland and in the world systems of public transport, as well as the structure (construction) and operation of public transport vehicles (trams, underground and buses).



### Course-related learning outcomes

#### Knowledge

1. Has knowledge of development trends and the most important achievements in the field of urban transport. He can list and classify public transport vehicles.
2. Knows the most important models of urban transport systems, as well as their advantages and disadvantages. He knows and understands the European Union's policy towards urban transport.
3. Can list the causes of congestion. He knows the concept of supply and demand in public transport.

#### Skills

1. Can assess the possibility of using new solutions in urban transport. He can make a critical analysis of existing solutions in terms of trends in the field of sustainable transport.

#### Social competences

1. Notices problems of transport in cities and is able to take appropriate steps to solve them.
2. Can properly define priorities for the implementation of a task set by himself or others. Can think and act in a creative and entrepreneurial manner.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The final grade takes into account both the grade from the written exam as well as the student's activity during the classes and preparation for them.

### Programme content

Development of urban transport in the world and in Poland. Transport tasks and needs of urban transport. Producers, research centers and characteristic structures of Polish and foreign rail and road rolling stock. Classification of rail and road vehicles. Principles of operation and general information on the construction of traction vehicles and other vehicles. Construction requirements? consumables for vehicles. Advantages and disadvantages of individual urban transport systems. Presentation of loads acting on the vehicle and its components. Presentation of the basics of design and operation of modern rail and road vehicles. Presentation of urban transport systems developed in Poland and in the world. Introducing the policy of the European Union and local governments towards urban transport. Highlighting the main problems of urban transport in European cities.

### Teaching methods

Lecture with multimedia presentation

### Bibliography

#### Basic

1. Wesołowski J.: Miasto w ruchu. Dobre praktyki w organizowaniu transportu miejskiego, Instytut Spraw Obywatelskich, Łódź 2008.



2. Wesołowski J.: Transport miejski. Instytut Spraw Obywatelskich, Łódź 2008.
3. Swolkień O.: Polityka transportowa. Instytut Spraw Obywatelskich, Łódź 2008.

Additional

1. Zielona Księga - W kierunku nowej kultury mobilności w mieście (Bruksela, wrzesień 2007 r., COM (2007) 551
2. Zaborowski Ł.: Tramwaj dla polskich miast. Instytut Sobieskiego 2018

**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