# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Control and Management in Transportation [S2Trans1>SiZwST]

## Course

Field of study
Transport

Year/Semester
1/1

Area of study (specialization)
Road Transport

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

## Number of hours

| Lecture | Laboratory classes | Other |
|---|---|---|
| 15 | 0 | 0 |

| Tutorials | Projects/seminars | |
|---|---|---|
| 15 | 0 | |

## Number of credit points

2,00

## Coordinators

dr hab. inż. Michał Libera
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## Lecturers

## Prerequisites

Basic knowledge of higher mathematics and general systems theory. The specificity and characteristics of transport systems: goals and forms of their implementation, means of transport, infrastructure, organization. Mathematical modeling methods, their algorithmization and numerical simulation. Practical basics of programming. Cooperation and group work. Defining priorities and hierarchy of tasks in the group"s goals. Correct identification of problems and approach to solving dilemmas. Responsibility.

## Course objective

The variety and specificity of transport systems. Principles of law. Technical equipment, mathematical methods and software supporting the management of transport systems. Similarities and differences in the management of different transport systems. Practical aspects of traffic control and supervision in transport systems. Development prospects and limitations.

## Course-related learning outcomes

Knowledge:
Student has advanced detailed knowledge of selected issues in the field of transport engineering
Student has knowledge of development trends and the most important new achievements of means of

transport and other selected related scientific disciplines

Skills:
Student is able to use information and communication techniques used in the implementation of projects in the field of transport
Student is able to assess the usefulness and the possibility of using new achievements (methods and tools) and new products of transport technology

Social competences:
Student understands that knowledge and skills become obsolete very quickly in the field of transport engineering
Student understands the importance of using the latest knowledge in the field of transport engineering in solving research and practical problems

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Lectures: written exam on the lecture material. Classes: individual reports on the performed measurements and simulations.

## Programme content

Definitions of traffic control and management. Purpose, scope and methods of traffic control. Modeling and simulation of road traffic. The influence of motion control on its course in macroscopic and microscopic terms. Influence of various factors. Hybrid simulation, control and supervision systems in urban and highway traffic. Traffic light coordination. Basic legal regulations in the field of road traffic. Civil and state aviation. Classifications: airports, air carriers and airspace. ICAO. IATA. Aviation law. Air traffic management: goals and functions. Air traffic flow management. Airspace management. Air traffic services. Model classification and air traffic simulations.
Features of rail transport. Railway network and its classification. Traffic safety. Regulations. Railway traffic control system. Traffic control devices. Transport rules and traffic organization. Timetables. Ship register. Ship classification. Irregular and linear shipping. Passenger and ferry shipping. Charter. Contracts. Bill of Lading. Models describing sea traffic. Features of inland transport. Classifications of waterways and ports. Ship characteristics. Modeling of inland traffic.

## Course topics

## Teaching methods

1. Lecture: multimedia presentation. 2. Exercises: carrying out various tasks in the field of traffic control and management and processing the results.

## Bibliography

Basic
1. Guca S., Suchorzewski W., Tracz M., Inżynieria ruchu drogowego, teoria i praktyka, Warszawa, WKiŁ 2008 / 2014
2. Szczuraszek T. (ed.), Bezpieczeństwo ruchu miejskiego, Warszawa, WKiŁ 2008
3. Basiewicz T., Gołaszewski A., Rudziński L., Infrastruktura transportu, Warszawa, OWPW 2007
Additional
1. Malarski M., Inżynieria ruchu lotniczego, Warszawa, OWPW 2006
2. Bogdaniuk B., Massel A., Podstawy transportu kolejowego, Gdańsk, WPG 1999
3. Kujawa J. (red.), Organizacja i technika transportu morskiego, Gdańsk, WUG 2001
4. Wojewódzka-Król K., Rolbiecki R., Rydzkowski W., Transport wodny śródlądowy, Gdańsk, WUG 2007

## Breakdown of average student's workload

|  | Hours | ECTS |
|---|---|---|
| Total workload | 50 | 2,00 |
| Classes requiring direct contact with the teacher | 30 | 1,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 20 | 1,00 |