STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Basics of Traffic Engineering	**1010611361010612396**

Field of study	Profile of study (general academic, practical)	Year /Semester
Transport	**general academic**	**3 / 6**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Road Transport	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**full-time**

No. of hours	No. of credits
Lecture: **1** Classes: **1** Laboratory: **-** Project/seminars: **-**	**2**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
other	**university-wide**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**2 100%**
Technical sciences	**2 100%**

Responsible for subject / lecturer:

Marek Maciejewski
email: marek.maciejewski@put.poznan.pl
tel. 616652226
Faculty of Transport Engineering
ul. Piotrowo 3, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge about the construction of the means of transport (road and rail vehicles, aeroplanes and ships), the typical infrastructure and traffic regulations. Basics of the probability theory and statistics.
2	**Skills**	Methods of measuring the physical characteristics. General rules for modelling the time dependent processes. The spreadsheet skills.
3	**Social competencies**	Cooperation and work in a team. Defining the priorities and task hierarchy in achieving the group objectives. The correct identification of problems and the approach to the trying to decide dilemmas. Responsibility.

Assumptions and objectives of the course:

Basic concepts of traffic engineering. Drivers, vehicles and road infrastructure. Measurements, tests and analyzes of road traffic. Basics of traffic modeling and simulation. Road capacity. Transport policy. Traffic control. Priorities in transport. Parking. Traffic safety and environmental protection.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Knows the aims and research approaches to traffic engineering - [K1A_W21]
2. Knows terms from the scope of traffic engineering for the various means of transport - [K1A_W05]
3. Knows and properly interprets the fundamental parameters of the traffic and road - [K1A_W05]
4. Knows methods of the measurements, researches and analyses - [K1A_W06]
5. Knows the principles of traffic flow and its regulating - [K1A_W21]
6. Knows ways to care for the traffic safety and natural environment - [K1A_W24]

Skills:

1. Is able systemically to consider the system: human - vehicle - road and its surroundings - [K1A_U18]
2. Is able to measure, research and analyse the basic traffic parameters - [K1A_U01]
3. Is able to specify the road and traffic conditions, and to determine the basic road parameters - [K1A_U01]
4. Is able to define the need and scope of modelling, simulation and traffic control - [K1A_U18]
5. Is able to formulate the traffic priorities taking the safety and environment into consideration - [K1A_U16]

Social competencies:

1. Is able to work in a team in carrying out measurements and studying their results - [K1A_K04]
2. Is able to define priorities for the traffic system designing - [K1A_K05]
3. Understands the need for systemically work on the traffic projects - [K1A_K01]
4. Understands the purpose of applying the careful resolutions owing to the safety and environment - [K1A_K02]

Assessment methods of study outcomes

Lectures: credit on the grounds of written tests

Exercises: individual reports from the performed measurements and researches of road traffic

Course description

Aim, scope and methods of traffic engineering. Basic traffic parameters: flow rate, density and speed. Road and traffic conditions and the road capacity. The driver-vehicle-road system. Features of drivers and factors influencing driver behavior. Vehicle characteristics. Road infrastructure.

Goals of road traffic research. Types of measurements and tests. Measurement methods and their registration. Treatment of measurement results, their analysis and visualization. Traffic modeling and simulation. Overall model classification. Characteristics of basic models. Introduction to numerical simulations.

Capacity of roads. Levels of service for road traffic. Determining capacities for roads. Roadway intersection?s capacity for intersections with priority, for roundabouts, and for signalized intersections.

Strategies for transport and traffic development. Instruments of transport policy implementation. Traffic management (goals, means and methods). Traffic control. Traffic lights: purpose of use and justifications for the installation. Advantages and disadvantages.

Collective transport: privileges, priorities and their effects (economic, social and environmental). Methods and means of preference. Parking (types, organization and control). Traffic safety status: accident and registration statistics, factors, analysis and evaluation. Transport ecology.

Basic bibliography:

1. Guca S., Suchorzewski W., Tracz M., Inżynieria ruchu drogowego, teoria i praktyka, Warszawa, WKiŁ 2008 / 2014

2. Gajda J, Sroka R., Stencel M., Żegleń T., Burnos P., Piwowar P., Pomiary parametrów ruchu drogowego, Kraków, Wydawnictwa AGH 2012

Additional bibliography:

1. Komar Z., Wolek C., Inżynieria ruchu drogowego - wybrane zagadnienia, Wrocław, WPW 1994

2. Szczuraszek T. (ed.), Bezpieczeństwo ruchu miejskiego, Warszawa, WKiŁ 2008

Result of average student's workload

Activity	Time (working hours)
1. Preparation for classes	5
2. Participation in classes (according to plan)	30
3. Consolidation of the content of classes / report	5
4. Consultations	2
5. Preparation for the exam / pass	10
6. Participation in the exam / pass	1

Student's workload

Source of workload	hours	ECTS
Total workload	53	2
Contact hours	33	1
Practical activities	20	1