

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Modelling and simulation of traffic flows		Code 1010614371010605997
Field of study Transport	Profile of study (general academic, practical) general academic	Year /Semester 4 / 7
Elective path/specialty Road Transport	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 9 Classes: - Laboratory: 18 Project/seminars: -		No. of credits 4
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: dr inż. Szymon Fierek email: szymon.fierek@put.poznan.pl tel. 616652716 Faculty of Transport Engineering ul. Piotrowo 3 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Knows the basic issues related to traffic engineering
2	Skills	Is able to analyze data
3	Social competencies	Is able to work in team
Assumptions and objectives of the course: Understanding the principles of traffic simulation modeling Construction the traffic simulation models of selected intersections		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. has extended and in-depth knowledge of physics useful for formulating and solving selected technical tasks, in particular for correct modeling of real problems - [T1A_W02] 2. has a structured, theoretically founded general knowledge in the field of technology, transport systems and various means of transport - [T1A_W03]		
Skills:		
1. is able to obtain information from various sources, including literature and databases, both in Polish and in English, appropriate to integrate them, make their interpretation and critical evaluation, draw conclusions, and fully justify the opinions they formulate - [T1A_U01] 2. is able to properly plan and perform experiments, including measurements and computer simulations, interpret the obtained results, and correctly draw conclusions from them - [T1A_U03] 3. is able to formulating and solving tasks in the field of transport, use appropriately selected methods, including analytical, simulation or experimental methods - [T1A_U04]		
Social competencies:		

1. is aware of the importance of knowledge in solving engineering problems and knows examples and understands the reasons for malfunctioning transport systems that led to serious financial and social losses or to serious health and even life - [T1_K02]
2. is aware of the social role of a technical university graduate, in particular, understands the need to formulate and communicate to the public, in an appropriate form, information and opinions on engineering activities, technical achievements, and the legacy and traditions of the profession of transport engineer - [T1_K04]

Assessment methods of study outcomes		
Final test Individual project		
Course description		
Introduction to traffic simulation modeling, Micro-simulation tools - presentation of the most popular software with a discussion of their functionality; Presentation of the essence of the microsimulation approach and ordering the modeling process. General overview of the process of building a traffic simulation model; List of attributes in the Vissim program and a combination of data for the construction of simulation models; Model of driver behavior; Presentation of sample program applications		
Basic bibliography:		
1. Gaca S., Suchorzewski W., Tracz M.: INŻYNIERIA RUCHU DROGOWEGO TEORIA I PRAKTYKA. Wydawnictwa Komunikacji i Łączności WKŁ 2014		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in lectures	15	
2. Participation in laboratories	15	
3. Literature studies	8	
4. Subject consultations	10	
5. Preparation of input data, analysis of delivered measurement results	10	
6. Preparation of the microsimulation model	20	
7. Preparation of a report, project, presentation	10	
8. Preparing for classes	10	
9. Preparation for the final test	20	
10. Participation in the final test	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	120	4
Contact hours	42	1
Practical activities	45	1