Description of course	
Code of course	**1160-TRTSEM-MSA-0207**
Name of course	***Computer-Aided Planning of Transport***
Version of course	2021/22
A. ***Place of the course in system of studies***	
Level of education	*Second-cycle degree*
Form and mode of studies	*Full-time studies*
Field of studies	*Transport*
Profile of studies	*General academic profile*
Specialization	*Transport systems engineering and management*
Place of teaching of course	*Warsaw University of Technology, Faculty of Transport, Division of Traffic Control and Transport Infrastructure*
Place of realization of course	*Not applicable*
Coordinator of course	*Krzysztof Firląg Ph.D., Warsaw University of Technology, Faculty of Transport, Division of Traffic Control and Transport Infrastructure*
B. ***General characteristic of the course***	
Group/*Block of courses*	*Specialization subject*
Level of course	*Basic level*
Type of course	*Compulsory subject*
Language of course	*English*
Location of the course in the study plan – nominal semester	2
Location of the course in the academic year	*Summer semester*
Preliminary requirements - formal	*Knowledge of basic concepts related to traffic engineering, and modeling of transport systems.*
Limit of students	*Lecture: 100; laboratory 10*
C. ***Effects of education and manner of teaching***	
Purpose of course	*To acquire the knowledge and skills needed to use tools for computer aided planning and design of transport systems. Knowing and applying computer-aided tools for modelling road systems, analysis of phenomena occurring at intersections and road networks.*

Effects of education with reference to the learning outcomes for the area and field of study

No. effect	***Description of the effect***	***Reference to the characteristics of learning outcomes***	***Reference to the learning outcomes in the program***
Assumed learning outcomes in terms of knowledge			
W01	*Has basic knowledge about modern computer programs for microscopic and macroscopic traffic simulations and the the basis of traffic flow modelling principles.*	I.P7S_WG.o	Tr2A_W04 Tr2A_W10
Assumed learning outcomes in terms of skills			
U01	*Is able to, using computer software, create simple microscopic traffic simulations, track the effects of introducing road rules, simulate signalized intersection and evaluate its effectiveness.*	I.P7S_UW.o. III.P7S_UW.o	Tr2A_U06 Tr2A_U13 Tr2A_U15
U02	*Able to build and use a simple macroscopic model with acccordance to guidelines.*	I.P7S_UW.o. III.P7S_UW.o	Tr2A_U06 Tr2A_U17
Assumed learning outcomes in the field of social competences			
–	–	–	–

Form of didactic studies and number of hours	*Lecture*	*Exercise*	*Laboratory*	*Project*	*Other*
On a weekly plan	1	0	2	0	0
Throughout the semester	15	0	30	0	0

Contents of education - separately for each form of didactic studies	*Lecture*: *Introduction to traffic modeling using dedicated computer software. Practical information on working with programs such as Vissim, Visum or Synchro.* *Laboratory*: *Study of road network models – modeling and evaluation of traffic quality for a part of a network using a simulation program. Study of unsignalized traffic junction model – application of computer program for modeling and analysis of nonsignalized traffic junction efficiency. Study of a controlled junction model – application of a computer application for modeling and analysis of road traffic performance with traffic lights. Study of road network – application of a computer programm for the analysis of flow rate indicators of vehicles capacity through a coordinated communication line. Study of the public transport network model - use of a computer application for modelling the fillings of public transport means and simulation of pedestrian traffic within public transport stops.*
Teaching methods	*Lecture:* *Lecture activities, discussing more issues, presenting examples, discussion with lecture participants.* *Laboratories:* *Laboratory and research tasks done in pairs in each class*

Methods of verification of effects of education

No. effect	***Methods of verification***
	Assumed learning outcomes in terms of knowledge
W01	*Two questions on this topic for credit in the lecture. A correct answer to at least one question is require.*
	Assumed learning outcomes in terms of skills
U01	*Assessment of the correct implementation of the simulation model and a prepared report, an oral answer during the laboratory.*
U02	*The accuracy of the final design.*
	Assumed learning outcomes in the field of social competences
–	–

Methods of evaluation	*Lecture:* *Oral answer during the exercise.* *Laboratory:* *The correct completion of the tasks performed at each laboratory exercise (50%); In addition, the completion of the final project (50%). The credit for the course requires the completion of all laboratory exercises and the correct execution of the final project.* *Integrated degree:* *Average of the partial grades.*
Exam	*No*
Literature	*Basic literature*: 1) Roess R.P., Prassas E.S., McShane W.R.: Traffic Engineering, Pearson, 2019. 2) PTV Vissim 9 User Manual, PTV Planung Transport Verkehr AG. 3) PTV Visum 17 User Manual, PTV Planung Transport Verkehr AG.
Website of the course	–
D. ***Student's activity***	
Number of ECTS credits	3
Number of hours of student's work to achieve effects of education	*80 hours, including: work at lectures 15 hours, work on exercises 30 hours, literature study 6 hours, consultations 3 hours (Including 2 hours project consultation), preparation for test 10 hours, working on project outside of class hours 15 hours, defense of the project 1 hour.*
Number of ECTS credits on the course with direct participation of academic teacher	*2,0 ECTS (49 hours, including: work at lectures 15 hours, work on exercises 30 hours, consultations 3 hours, defense of the project 1 hour)*
Number of ECTS credits on practical activities on the course	*2,0 ECTS (48 hours, including: work on exercises 30 hours, 2 hours project consultation, working on project outside of class hours 15 hours, defense of the project 1 hour)*
E. ***Additional information***	

Notes	*As long as it does not cause changes in the relationship of a given subject with the directional effects in the content of education, changes may be introduced on an ongoing basis, taking into account the latest scientific achievements.*
Date of last edition	2021-02-22 23:55