

<b>Description of course</b>			
Code of course	1160-TR000-MSA-0204		
Name of course	Teleinformatic Systems in Transport		
Version of course	2021/22		
<b>A. Place of the course in system of studies</b>			
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	Main field		
Place of teaching of course	Warsaw University of Technology, Faculty of Transport, Division of Telecommunication		
Place of realization of course	Not applicable		
Coordinator of course	Ph.D. Eng. Marek Stawowy, Division of Telecommunication, Faculty of Transport, Warsaw University of Technology		
<b>B. General characteristic of the course</b>			
Group/Block of courses	Intermediate		
Level of course	Specialization courses		
Type of course	Obligatory		
Language of course	English		
Location of the course in the study plan – nominal semester	Second semester		
Location of the course in the academic year	First year		
Preliminary requirements - formal	Basics of computer science or computer science at the engineering or undergraduate level.		
Limit of students	Lecture: 100 students, lab classes: 10 students.		
<b>C. Effects of education and manner of teaching</b>			
Purpose of course	They understand basic technology and techniques of ICT systems functioning used to support the organization and management in transport and acquire the ability to assess the suitability of the selected ICT technologies applied in transport companies and organizations.		
<b>Effects of education with reference to the learning outcomes for the area and field of study</b>			
No. effect	Description of the effect	Reference to the characteristics of learning outcomes	Reference to the learning outcomes in the program
<b>Assumed learning outcomes in terms of knowledge</b>			
W01	Has an ordered knowledge concerning devices that are part of ICT systems, including wireless networks.	I.P7S_WG.o I.P7S_WK	Tr2A_W06 Tr2A_W11
W02	Knows protocols and network models used in ICT systems.	I.P7S_WG.o I.P7S_WK	Tr2A_W06 Tr2A_W11
W03			
<b>Assumed learning outcomes in terms of skills</b>			
U01	Can acquire information from the literature, databases, and other sources; can integrate obtained information, make their interpretation and critical assessment, and draw conclusions and formulate and fully justify opinions.	I.P7S_UW.o	Tr2A_U01
U02	Can identify, formulate the specification and configure communication devices in local and wide area telecommunication networks.		
U02	Can cooperate with other people during teamwork and take the lead of a team.	I.P7S_UW.o. III.P7S_UW.o	Tr2A_U07 Tr2A_U10
<b>Assumed learning outcomes in the field of social competences</b>			
KS01	–	–	–

<i>Form of didactic studies and number of hours</i>	<i>Lecture</i>	<i>Exercise</i>	<i>Laboratory</i>	<i>Project</i>	<i>Other</i>
<i>On a weekly plan</i>	1	0	1	0	0
<i>Throughout the semester</i>	15	0	15	0	0
<i>Contents of education - separately for each form of didactic studies</i>	<p><i>Lecture:</i> Types of information systems in transport and their basic models. The measure of information amount and an overview of the parameters that affect the bandwidth and performance of the channel. Information encoding. The role of encoding in the transmission of information. An overview of selected information, security, and transmission codes. Objectives, methods, and tasks of signal compression. Signal modulation. The essence and types of modulation. Teleinformatics networks issues. Types of networks. Networks topologies. An overview of the components of the ICT networks. Transmission media and their classes. An overview of the basic protocols for data transmission of data in ICT networks. Selected problems of information transfer and storage in ICT networks. Examples of information technology application in transport in terms of management, organization, and control.</p> <p><i>Laboratory:</i> Lab classes: familiarization with switch configuration in the ICT network. Configuration of the router. Configuration of wireless network devices. Study of image transmission over a TCP/IP network. Configuration of ICT services.</p>				
<i>Teaching methods</i>	<p><i>Lecture:</i> Presentation with the use of multimedia systems and discussion.</p> <p><i>Lab classes:</i> Students perform laboratory exercises in a room with appropriate equipment and software required to complete individual experiments, a LAN network, a PC for each team of students, specialized DHCP, DNS servers, and Internet access.</p>				
<b>Methods of verification of effects of education</b>					
<i>No. effect</i>	<i>Methods of verification</i>				
<b>Assumed learning outcomes in terms of knowledge</b>					
W01	From 2 to 5 questions in the written test. Over 50% of correct answers is positive rating.				
W02	From 2 to 5 questions in the written test. Over 50% of correct answers is positive rating.				
W03					
<b>Assumed learning outcomes in terms of skills</b>					
U01	Assessment of reports and conclusions drawn by laboratory teams for each of the exercises. More than 50% of correctness is a positive assessment.				
U02	Assessment of reports and conclusions drawn by laboratory teams for each of the exercises. More than 50% of correctness is a positive assessment.				
U03	Observation during classes and assessment of exercise reports and conversation.				
<b>Assumed learning outcomes in the field of social competences</b>					
KS01	–				
<i>Methods of evaluation</i>	<p><i>Lecture:</i> forming evaluation: 2 tests concerning selected theoretical problems, summary evaluation: written test containing from 5 to 10 tasks and questions drawn from a pool of 100.</p> <p><i>Lab classes:</i> forming evaluation: evaluation of each exercise in lab team concerning research skills, cooperation and knowledge of the tested devices, summary evaluation: assessment of the lessons learned by the laboratory teams for each exercise on the base of report.</p> <p>Final rating will average value of rating from lecture and from lab classes but both should be positive.</p>				
<i>Exam</i>	<i>No</i>				
<i>Literature</i>	<p><i>Basic literature:</i></p> <ol style="list-style-type: none"> <li>1) Sportack M.: Networking Essentials Unleashed. Sams Publishing 2006.</li> <li>2) Gast M. 802.11 Wireless Networks: The Definitive Guide, 2nd Edition, O'Reilly Media 2009.</li> <li>3) Albitz P. Cricked L. DNS and BIND, 5th Edition, O'Reilly Media 2009.</li> </ol> <p><i>Supplementary literature:</i></p>				

	1) 4) RFC <a href="http://www.rfc-archive.org">www.rfc-archive.org</a> . 2) IEEE 802.x <a href="http://www.ieee802.org">www.ieee802.org</a> .
<i>Website of the course</i>	–
<b>D. Student's activity</b>	
<i>Number of ECTS credits</i>	2
<i>Number of hours of student's work to achieve effects of education</i>	60 hours, including: work at lectures 15 hours, work on project exercises 15 hours, a study of literature on the subject 10 hours, consultations on the lecture 2 hours, consultations on the project 3 hours, project work out of classes 7 hours, preparation for the exam 7 hours, defense of the project work 1 hour)
<i>Number of ECTS credits on the course with direct participation of academic teacher</i>	1.5 ECTS points (36 hours, including: lectures 15 hours, work on project exercises 15 hours, consultations in the field of lectures 2 hours, consultations in the field of the project 3 hours, defense of the project work 1 hour. )
<i>Number of ECTS credits on practical activities on the course</i>	1.0 ECTS points (26 hours, including: work on project exercises 15 hours, consultations on the project 3 hours, the performance of project work outside class hours 7 hours, defense of project work 1 hour)
<b>E. Additional information</b>	
<i>Notes</i>	<i>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.</i>
<i>Date of last edition</i>	2021-08-22