

Description of course			
Code of course	1160-TRTSEM-MSA-0208		
Name of course	Human Factor in Intelligent Transport Systems		
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 Information and Mechatronic Systems in Transport		
Place of realization of course	Not applicable		
Coordinator of course	Professor Iwona Grabarek, Ph.D., DSc., Division of Information and Mechatronic Systems in Transport, Faculty of Transport, Warsaw University of Technology		
B. General characteristic of the course			
Group/Block of courses	Specialization subject		
Level of course	Intermediate 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	None.		
Limit of students	Lecture: 100, laboratory: 10		
C. Effects of education and manner of teaching			
Purpose of course	Acquisition of knowledge and skills needed to assess the role and functioning of human beings in intelligent transportation systems.		
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	Knows and understands the role and tasks of people in intelligent transport systems.	I.P7S_WG.o I.P7S_WK	Tr2A_W09 Tr2A_W11 Tr2A_W12
W02	Knows and understands the necessity to take into account the limitations and possibilities of man in the construction of transport systems.	I.P7S_WG.o I.P7S_WK	Tr2A_W11 Tr2A_W12
W03	Knows and understands the methods of human factor assessment in intelligent transport systems.	I.P7S_WG.o I.P7S_WK	Tr2A_W10 Tr2A_W12
Assumed learning outcomes in terms of skills			
U01	Is able to analyze and assess psychomotor features.	I.P7S_UW.o III.P7S_UW.o	Tr2A_U13 Tr2A_U15
U02	Is able to analyze and evaluate the operator's efficiency.	I.P7S_UW.o III.P7S_UW.o	Tr2A_U13 Tr2A_U15
U03	Is able to assess the degree of adaptation of transport systems to users with reduced efficiency.	I.P7S_UW.o III.P7S_UW.o	Tr2A_U07 Tr2A_U13
Assumed learning outcomes in the field of social competences			
KS01	Is prepared to consider the non-technical aspects and implications of the implementation of autonomous systems and vehicles and their impact on the environment and humans, and is aware of the importance of the associated decision-making responsibilities.	I.P7S_KR	Tr2A_K05

Studia stacjonarne drugiego stopnia na kierunku Transport – profil ogólnoakademicki
Card of Course **Human Factor in Intelligent Transport Systems**

<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> <i>Man-machine system in transport systems; Basic definitions, evolution of human factors research in transport technologies. The role and tasks of man in intelligent transportation systems in the field of control and use. Levels of automation and allocation of tasks. ADAS – advanced driver assistance system. User interface - classification, technologies, design.</i> <i>User performance issues (information acquisition and processing, psychophysical efficiency, visual-motor coordination, situational awareness, attention and distraction versus driver behavior). Evaluation of the physical and mental state of the operator (overload and mental underload, fatigue, monotony). Methods of evaluation of the human factor performance in transportation systems. Adaptation of transportation systems to users with dysfunctions.</i> <i>The problem of accepting new technologies among users. Safety aspects in intelligent transportation systems and ergonomic requirements.</i></p> <p><i>Laboratory:</i> <i>Evaluation of individual psychomotor features of the operator. Assessment of the psychophysical status of the operator. Evaluation of adaptation of transportation systems elements for people with disabilities.</i></p>				
<i>Teaching methods</i>	<p><i>Lecture:</i> <i>Multimedia presentations, problem task.</i></p> <p><i>Laboratory:</i> <i>Individual work - the performance of measurements with the use of specialized apparatus</i></p>				
Methods of verification of effects of education					
No. effect	Methods of verification				
Assumed learning outcomes in terms of knowledge					
W01	<i>1 open questions in the written exam. A correct answer of at least 60% is required. Positive evaluation of the problem task.</i>				
W02	<i>1 open questions in the written exam. A correct answer of at least 60% is required. Positive evaluation of the problem task.</i>				
W03	<i>1 open questions in the written exam. A correct answer of at least 60% is required. Positive evaluation of the problem task.</i>				
Assumed learning outcomes in terms of skills					
U01	<i>Completion of the laboratory exercise. The pass mark is to: correctly complete the exercise in terms of its content, prepare a report and write a test with 3 open-ended questions. It is required to give a correct answer in at least 60%.</i>				
U02	<i>Completion of the laboratory exercise. The pass mark is to: correctly complete the exercise in terms of its content, prepare a report and write a test with 3 open-ended questions. It is required to give a correct answer in at least 60%.</i>				
U03	<i>Completion of the laboratory exercise. The pass mark is to: correctly complete the exercise in terms of its content, prepare a report and write a test with 3 open-ended questions. It is required to give a correct answer in at least 60%.</i>				
Assumed learning outcomes in the field of social competences					
KS01	<i>Presentation and defense of an individual problem task as well.</i>				
<i>Methods of evaluation</i>	<p><i>Lecture:</i> <i>Written exam with 3 open-ended questions and 1 problem task.</i></p> <p><i>Laboratories:</i> <i>3 written tests (at the end of each exercise) - each consisting of 3 open-ended questions regarding the content of education covered by the exercises.</i></p> <p><i>Integrated degree:</i> <i>Average of the partial grades.</i></p>				
<i>Exam</i>	<i>Yes</i>				

<i>Literature</i>	<p><i>Basic literature:</i></p> <ol style="list-style-type: none"> 1) Barfield W., Dingus T.A.; Human Factors in Intelligent Transportation Systems, Published by Psychology Press, 1998. 2) Gkikas N.: Automotive Ergonomics. Driver-Vehicle Interaction, CRC Press, Taylor&Francis Group, 2013. 3) Harvey C, Stanton N.: Usability Evaluation for In-Vehicle Systems, CRC Press, Taylor&Francis Group, 2013. 4) Human Factors and Ergonomics Methods /edited by Stanton N. at all/, CRS Press 2005. <p><i>Supplementary literature:</i></p> <ol style="list-style-type: none"> 1) Stanton N., Young M.S., Harvey C. (ed.): Guide to Methodology in Ergonomics – Designing for Human Use, CRS Press 2014 2) Charlton S.G., O’Brien T.G. (ed.): Handbook of Human Factors Testing and Evaluation, Lawrence Erlbaum Associates, Publishers 2002 3) Regan M.A., Lee J.D., Victor T.W.: Driver Distraction and Inattention – Advances in Research and Countermeasures, Vol. 1; ASHGATE, 2013 4) Regan M.A., Horberry T., Stevens A.: Driver Acceptance of New Technology, ASHGATE 2014
<i>Website of the course</i>	–
D. Student’s activity	
<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 laboratory exercises 15 hours, studying the literature on the subject 7 hours, consultation 3 hours (including 2 hours consultations in the laboratory), preparation to pass the exams 6 hours, independent preparation of reports and case studies for 8 hours, familiarization with the software used 5 hours, participation in the exam 1 hour.
<i>Number of ECTS credits on the course with direct participation of academic teacher</i>	1,5 ECTS (34 hours, including: work at lectures 15 hours, work on laboratory exercises 15 hours, consultation 3 hours, participation in the exam 1 hour)
<i>Number of ECTS credits on practical activities on the course</i>	1.0 ECTS (30 hours, including: work on laboratory exercises 15 hours, consultations in the field of laboratory exercises 2 hour, independent preparation of reports and case studies for 8 hours, familiarization with the software used 5 hours)
E. Additional information	
<i>Notes</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>Date of last edition</i>	2021-02-15 10:50