Description of course	
Code of course	**1160-TR000-MSA-0108**
Name of course	**Contemporary Issues in Transport Organization and Technology**
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	Subject common to the course of study
Place of teaching of course	*Warsaw University of Technology, Faculty of Transport, Division of Transport Systems Engineering and Logistics*
Place of realization of course	*Not applicable*
Coordinator of course	*Roland Jachimowski, Division of Transport Systems Engineering and Logistics Faculty of Transport, Warsaw University of Technology*
B. *General characteristic of the course*	
Group/*Block of courses*	*Directional subjects*
Level of course	*Intermediate level*
Type of course	*Obligatory subject*
Language of course	*English*
Location of the course in the study plan – nominal semester	1
Location of the course in the academic year	*winter semester*
Preliminary requirements - formal	*Non.*
Limit of students	*Lecture. 100 students*
C. *Effects of education and manner of teaching*	
Purpose of course	After completing the course, students have knowledge of the technology and organization of road, rail and internal transport.

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	The graduate knows and understands contemporary issues in the organization and technology of railway transport	I.P7S_WG.o I.P7S_WK	Tr2A_W05 Tr2A_W11
W02	The graduate knows and understands modern principles of road transport organization.	I.P7S_WG.o I.P7S_WK	Tr2A_W05 Tr2A_W11
W03	The graduate knows and understands modern principles of selecting road transport technology to perform tasks.	I.P7S_WG.o I.P7S_WK	Tr2A_W05 Tr2A_W11
W04	The graduate knows and understands modern technologies of internal transport and storage.	I.P7S_WG.o I.P7S_WK	Tr2A_W05 Tr2A_W11
W05	The graduate knows and understands modern principles of the selection of internal transport and storage technologies as well as the organization of work in warehouse facilities.	I.P7S_WG.o I.P7S_WK	Tr2A_W05 Tr2A_W11
W06	The graduate knows and understands contemporary issues in the organization and technology of passenger car transport.	I.P7S_WG.o I.P7S_WK	Tr2A_W05 Tr2A_W11
Assumed learning outcomes in terms of skills			
U01			
U02			
U02			
Assumed learning outcomes in the field of social competences			
KS01	–	–	–

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

Contents of education - separately for each form of didactic studies	**Rail transport**: Basic concepts concerning the functioning of rail transport. The structure of the passenger and freight rail transport market. Single European Railway Area - Interoperability. Structural and functional subsystem of rail transport. System of efficient and safe public transport. Conditions for the integration of passenger transport at the national, regional and local level, in the inter-industry dimension, along with ticketing, meeting social expectations. Standardization of services provided at railway check-in points, taking into account the needs of passengers with disabilities. Technologies allowing for faster loading and unloading of wagons, tracking shipments entrusted to carriers, automation of station operations and others. Planning of transport routes using information on the logistics infrastructure. Technical, time, traffic and transport requirements for the development of the TEN-T. European network of freight corridors. Railway transport business environment. Train traffic management using the ETCS and GSM-R systems. Intermodal transport. **Road transport**: Passenger transport: Building a public transport system. Minimum standards of public transport services. Integration of local transport systems with higher-level systems (regional and national) in terms of spatial (junctions), ticketing, timetable and passenger information. Means of work in road freight transport. Selected issues of the organization of international and domestic road freight transport. Principles for the selection of vehicle transport technology for the implementation of transport tasks. Technology of loading works in road transport. Road freight costs. **Internal transport**: Basic principles of transforming material and information streams in point elements of logistics infrastructure. Presentation of modern technologies of internal transport and storage in logistic facilities. Basic principles of work organization in warehouse facilities. Basic rules for the selection of internal transport and storage technologies for the implementation of specific tasks and functions of logistics facilities. Basic principles of shaping and dimensioning of modern internal transport systems.
Teaching methods	Multimedia presentation of program content

Methods of verification of effects of education

No. effect	***Methods of verification***
	Assumed learning outcomes in terms of knowledge
W01	Written exam in the form of open-ended questions or test questions. In both cases, it is required to provide a correct answer to at least 51% of the questions asked (or at least half of the questions to be answered correctly) regarding a given learning outcome.
W02	Written exam, 4 open-ended questions, where at least 2 of these questions are to be answered fully, or 12 single-choice test questions, where at least 6 questions are to be answered correctly.
W03	Written exam, 2 open-ended questions, where it is required to answer at least 1 of these questions in full, or 6 single-choice test questions, where it is required to answer at least 3 questions correctly.
W04	Written exam in the form of open-ended questions or test questions. In both cases, it is required to answer at least 51% of the questions asked (or at least half of the answers to the question asked) regarding a given educational result.
W05	Written exam in the form of open-ended questions or test questions. In both cases, it is required to answer at least 51% of the questions asked (or at least half of the answers to the question asked) regarding a given educational result.
W06	Written exam in the form of open-ended questions or test questions. In both cases, it is required to provide a correct answer to at least 51% of the questions asked (or at least half of the questions to be answered correctly) regarding a given learning outcome.
	Assumed learning outcomes in terms of skills
U01	
U02	
U03	

Assumed learning outcomes in the field of social competences	
KS01	–

Methods of evaluation	Assessment carried out in the form of open questions. Multiple-choice test and oral answer to questions possible in the case of distance learning.
Exam	*Yes*
Literature	*Basic literature*: 1) Jacyna M., Gołębiowski P., Krześniak M., Szkopiński J.: Organizacja ruchu kolejowego. Warszawa 2019. 2) Madej B., Pruciak K., Madej R.: Publiczny transport miejski - Zasady tworzenie rozkładów jazdy. Warszawa 2017. 3) Ceder A.: Public Transit Planning and Operation: Modeling, Practice and Behavior, Second Edition. CRC Press 2019. 4) Vuchic V.: Urban Transit: Operations, Planning, and Economics. Wiley, 2005. 5) Daganzo C., Ouyang Y.: Public Transportation Systems: Basic Principles of System Design, Operations Planning and Real-time Control. World Scientific, 2019. 6) Jacyna M., Pyza D., Jachimowski R.: Transport intermodalny. Projektowanie terminali przeładunkowych. Warszawa 2017. 7) Jakubowski L.: Technologia prac ładunkowych. Warszawa 2002. 8) Międzynarodowe wytyczne odnośnie bezpiecznego mocowania ładunków w transporcie drogowym. IRU_CIT-2014 version 01. 9) Wasiak M., Jacyna-Gołda I.: Transport drogowy w łańcuchach dostaw: wyznaczanie kosztów. Warszawa 2016. 10) Mindur L.: Technologie transportowe XXI w., Warszawa 2008. 11) Jacyna M., Lewczuk K.: Projektowanie systemów logistycznych, Wydawnictwo Naukowe PWN SA, Warszawa 2016. 12) Kłodawski M.: Modelowanie procesów magazynowych w zastosowaniu do oceny wydajności i bezpieczeństwa pracy w magazynach, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2018. 13) Fijałkowski J.: Technologia magazynowania. Wybrane zagadnienia, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 1995. 14) Fijałkowski J.: Transport wewnętrzny w systemach logistycznych. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2000. *Supplementary literature*: 1) Bartholdi J, Hackman S.: Warehouse & distribution science, 2019.
Website of the course	–
D. ***Student's activity***	
Number of ECTS credits	2
Number of hours of student's work to achieve effects of education	50 hours, including: work during lectures 30 hours, studying the literature of the subject 10 hours, preparation for the exam 6 hours, consultations 2 hours, participation in exams 2 hours.
Number of ECTS credits on the course with direct participation of academic teacher	1.5 points ECTS (34 hours, including: work during lectures 30 hours, consultations 2 hours, participation in exams 2 hours)
Number of ECTS credits on practical activities on the course	0
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.*
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