

**Studia stacjonarne**  
**Card of Course Safety and ecology in the transport of dangerous goods**

<b>Description of course</b>			
Code of course	<b>Safety and ecology in the transport of dangerous goods</b>		
Version of course	2024/25		
<b>A. Place of the course in system of studies</b>			
Level of education	First- cycle degree		
Form and mode of studies	Full time studies		
Field of studies	Transport		
Profile of studies	General academic profile		
Specialisation	-----		
Place of teaching of course	Faculty of Transport		
Place of realization of course	Warsaw University of Technology, Faculty of Transport, Division of Information Technology and Mechatronics in Transport		
Coordinator of course	Sylvia Bęczkowska, Ph.D.Eng		
<b>B. General characteristic of the course</b>			
Block of course	Erasmus		
Level of course	Intermediate		
Status of course	Mandatory		
Language of course	English		
Location of the course in the study plan - nominal semester	1		
Situation of the course within the academic year	Winter semester		
Prerequisites - formal	No initial requirements		
Limit on the number of students	Lecture: 100 persons		
<b>C. Effects of education and manner of teaching</b>			
Purpose of course	The aim of the course is to familiarize students with the regulations on the transport and storage of dangerous materials. The lecture is informative and covers legal regulations in the field of storage and transport of dangerous goods and loads by various means of transport. Project classes concern the development of exemplary procedures for the transport and storage of dangerous materials.		
<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	The student knows the legal system in the field of storage and transporting dangerous materials by various means of transport.	T1A_W03 T1A_W07	Tr1A_W10, Tr1A_W13
W02	The student knows the rules for the classification of dangerous materials and the basic risks arising from their transport and storage.	T1A_W04 T1A_W05 T1A_W07 T1A_W08	Tr1A_W9, Tr1A_W10
W03	The student knows the legal (formal and technical) requirements for the preparation of dangerous goods for transport and storage.	T1A_W04 T1A_W05 T1A_W07 T1A_W08	Tr1A_W9, Tr1A_W10, Tr1A_W13
<b>Assumed learning outcomes in terms of skills</b>			
U01	The student can use legal sources to describe the properties of dangerous material and the risks associated with its transport and storage.	T1A_U01 T1A_U02 T1A_U03	Tr1A_U01, Tr1A_U02, Tr1A_U03
U02	The student can prepare formally and technically dangerous material for transport and storage, in accordance with the requirements.	T1A_U02 T1A_U03 T1A_U04 T1A_U09	Tr1A_U02, Tr1A_U03, Tr1A_U9
U03	The student can follow the safety rules applicable during the transport and storage of dangerous materials.	T1A_U10 T1A_U11	Tr1A_U14, Tr1A_U15
<b>Assumed learning outcomes in the field of social competences</b>			

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Form of didactic studies and number of hours	Lecture	Exercise	Laboratory	Project	Others
On a weekly plan	1	0	0	0	0
Throughout the semester	30	0	0	0	0
Contents of education - separately for each form of didactic studies	<p><i>Lecture:</i>            Introduction and sources of the law on the transport and storage of dangerous materials. Purpose, scope, structure and basic concepts of the ADR agreement, RID regulations, IATA DGR document, IMDG code and ADN agreement. The scope of application of ADR, RID, IATA DGR, IMDG and ADN documents, rules for selecting exemptions and simplifications used in the transport of certain dangerous materials. Principles of classification of dangerous materials. Principles of labeling and identification of threats. Rules for the selection and labeling of packages and tanks. Principles of selection and marking of transport units. Transport documentation. Requirements for the crew of a transport unit carrying dangerous goods and loads, as well as for employees of a dangerous materials storage facility. Technical requirements for means of transport and storage facilities intended for the transport and storage of dangerous materials. Preparation of equipment for the transport unit and the warehouse facility.</p>				
Teaching methods	<p><i>Lecture:</i>            The lecture is delivered in the form of a multimedia presentation with discussion of individual issues and discussion with students</p>				
<b>Methods of verification of effects of education</b>					
<b>No. effect</b>	<b>Methods of verification</b>				
<b>Assumed learning outcomes in terms of knowledge</b>					
W01	Lecture colloquium; the minimum condition for the achievement of the effect is to obtain a qualitative assessment indicator of more than 50% for the instructions in the subject area of this effect.				
W02	Lecture colloquium; the minimum condition for the achievement of the effect is to obtain a qualitative assessment indicator of more than 50% for the instructions in the subject area of this effect.				
W03	Lecture colloquium; the minimum condition for the achievement of the effect is to obtain a qualitative assessment indicator of more than 50% for the instructions in the subject area of this effect.				
<b>Assumed learning outcomes in terms of skills</b>					
U01	Lecture colloquium; the minimum condition for the achievement of the effect is to obtain a qualitative assessment indicator of more than 50% for the instructions in the subject area of this effect.				
U02	Lecture colloquium; the minimum condition for the achievement of the effect is to obtain a qualitative assessment indicator of more than 50% for the instructions in the subject area of this effect.				
U03	Lecture colloquium; the minimum condition for the achievement of the effect is to obtain a qualitative assessment indicator of more than 50% for the instructions in the subject area of this effect.				
<b>Assumed learning outcomes in the field of social competences</b>					
Methods of evaluation	<p><i>Lecture:</i>            The primary form of credit for the lecture is an colloquium. The colloquium consists of 5 open questions. Lecture colloquium; the minimum condition for the achievement of the effect is to obtain a qualitative assessment indicator of more than 50% for the instructions in the subject area of this effect..</p>				
Exam	No				
Literature	<p><i>Basic literature in English :</i></p> <ul style="list-style-type: none"> <li>• The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). 2023. Available online: <a href="http://www.unece.org/trans/danger/publi/adr/adr_e.html">www.unece.org/trans/danger/publi/adr/adr_e.html</a></li> <li>• Lundin, J. Risk evaluation and risk control in road overbuilding of transport routes for dangerous goods. <i>J.Civ. Eng. Archit.</i> 2018, 12, 428–446</li> <li>• Gamero, N.; Silla, I.; Sainz-González, R.; Sora, B. The Influence of Organizational Factors on Road Transport Safety. <i>Int. J. Environ. Res. Public Health</i> 2018, 15, 1938.</li> <li>• Ntzeremes, P.; Kirytopoulos, K. Evaluating the role of risk assessment for road tunnel fire safety: A comparative review within the EU. <i>J. Traffic Transp. Eng.</i> 2019, 6, 282–296</li> <li>• Flodén, J.; Woxenius, J. A stakeholder analysis of actors and networks for land transport of dangerous goods. <i>Res. Transp. Bus. Manag.</i> 2021, 100629, in press</li> <li>• Bęczkowska S., Grabarek I.: Analysis of Factors Determining Ergonomic Conditions of Drivers Workplace and Safety in Transport of Dangerous Goods, Archives of Transport, vol. 24-3, pp. 297-306, Warszawa 2012</li> <li>• Bogdan I., Gheorghe A., Polinpapilinho F.: Critical Infrastructures: Risk and Vulnerability Assessment in Transportation of Dangerous Goods: Transportation by Road and Rail. Springer International Publishing, Cham 2016.</li> </ul>				

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	<ul style="list-style-type: none"> <li>• The United Nations Economic Commission for Europe. <i>European Agreement Concerning the International Carriage of Dangerous Goods by Road</i>; United Nations Economic Commission for Europe: Geneva, Switzerland, 2014.</li> <li>• Andrea, M.; Péter, P. <i>Management of Risks Associated with Dangerous Goods Transportation-Review. Characteristics, Cause, and Severity Analysis for Hazmat Transportation Risk Management</i>; Vedelem Tudomány: Zwolen, Poland, 2019</li> <li>• Bęczkowska, S.; Choromański, W.; Grabarek, I. Risk and human factor in carriage of dangerous goods by road. <i>Transport Probl.</i> 2020</li> <li>• Bęczkowska, S.A.; Grabarek, I. The Importance of the Human Factor in Safety for the Transport of Dangerous Goods. <i>Int. J. Environ. Res. Public Health</i> 2021, 18, 7525. <a href="https://doi.org/10.3390/ijerph18147525">https://doi.org/10.3390/ijerph18147525</a></li> </ul> <p><i>Basic literature in polish language:</i></p> <ul style="list-style-type: none"> <li>• Kołdys K.: <i>Magazynowanie chemikaliów</i>. ODDK, Gdańsk 2016 r.</li> <li>• Kwaśniewski S.: <i>Ładunki niebezpieczne w transporcie towarów</i>. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2014 r.</li> <li>• Grzegorzczak K., Buchcar R.: <i>Przewóz drogowy towarów niebezpiecznych ADR 2021 r.</i> Wydawnictwo ADeR Buch-Car, Błonie 2021 r.</li> <li>• Lasota M.: <i>Problematyka przewozu materiałów niebezpiecznych drogą powietrzną</i>. Wydawnictwo Akademii Sztuki Wojennej, Warszawa 2016 r.</li> <li>• Kołdys K.: <i>Bezpieczeństwo przewozu towarów niebezpiecznych w transporcie morskim: IMDG Code (Kodeks IMDG)</i>. Ośrodek Doradztwa i Doskonalenia Kadr, Gdańsk 2019 r.</li> <li>• Kizyn M.: <i>Poradnik przechowywania substancji niebezpiecznych zgodnie z wytycznymi unijnymi REACH i CLP</i>. Instytut Logistyki i Magazynowania 2011 r.</li> <li>• Różycki M.: <i>Vademecum magazynowania chemikaliów: podręcznik taktyczny</i>. Redakcja „Towary Niebezpieczne”, Mikołów 2010 r.</li> <li>• Janczak A.: <i>ADR w spedycji i magazynie: składowanie i przewóz materiałów niebezpiecznych</i>. Zacharek – Dom Wydawniczy, Warszawa 2010 r.</li> </ul>
Website of the course	www.wt.pw.edu.pl
<b>D. Student's activity</b>	
Number of ECTS credits	2
Number of hours of student's work to achieve effects of education	30 hours of lecture, familiarization with the literature 5, 5 Consultation hours, Preparing to pass colloquium 10 h; colloquium 2h
Number of ECTS credits on the course with direct participation of academic teacher	1 ECTS – 30 Lecture hours, 5 Consultation hours, colloquium 2 h
Number of ECTS credits on practical activities on the course	-----
<b>E. Additional information</b>	
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	2025-02-09