

表 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Safety and risk in transportation systems, PG_00057094							
Field of study	Transport and Logistics							
Date of commencement of studies	February 2024		Academic year of realisation of subject		2023/2024			
Education level	second-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study			
Mode of study	Full-time studies		Mode of delivery		at the university			
Year of study	1		Language of instruction		Polish			
Semester of study	1		ECTS credits			4.0		
Learning profile	general academic profile		Assessme	ent form		exam		
Conducting unit	Zakład Projektowania Okrętu -> Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology							
Name and surname	Subject supervisor		dr hab. inż. Przemysław Krata					
of lecturer (lecturers)	Teachers dr inż. Roman Liber dr levgen Medvedie							
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	t	Seminar	SUM
	Number of study hours	15.0	30.0	0.0	0.0			45
	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study		SUM
	Number of study hours	45		9.0		46.0		100
Subject objectives	The objective of this of scientific discipline, a informed decision mathematication of the students will be a decision making, hun Network, Fault Tree of	llong with the p aking process. acquainted with nan reliability a	ractical approa	iches to risk ar	nalysis as sment (C	s a task QRA), H	a in a context	of risk- sk-informed

Supplementary literature advances on their foundation, European Journal of Operational Research, Volume 253, Issue 1, 2016, Pages 1-13, https://doi.org 10.1016/j.ejor.2015.12.023 Supplementary literature Goerlandt F., Montewka J., Maritime transportation risk analysis: Review and analysis in light of some foundational issues, Reliability Engineering & System Safety, Volume 138, 2015, Page 115-134, https://doi.org/10.1016/j.ress.2015.01.025. MSC-MEPC.2-Circ.12-Rev.2 - Revised Guidelines For Formal Safety Assessment (Fsa)For Use In The Imo Rule-Making Proces (Secretariat).pdf Supplementary literature 1. Galavotti, M.C. The Interpretation of Probability: Still an Open Issue? <i>Philosophies</i> 2017, 2, 20. https://doi.org/10.3390/ philosophies2030020 Aven T, The risk concepthistorical and recent development trends Reliability Engineering & System Safety, Volume 99, 2012, Pages 33-44, https://doi.org/10.1016/j.ress.2011.11.006. http://c4tx.org/ctx/pub/fsa.pdf Wróbel K., Montewka J., Kujala P., System-theoretic approach to safety of remotely-controlled merchant vessel, Ocean Engineering Volume 152, 2018, Pages 334-345, https://doi.org/10.1016/	Learning outcomes	[K7_W03] The student has extensive knowledge of: reliability and safety of transport systems and environmental protection in transport [K7_U04] The student is able to use the known methods and mathematical models, as well as computer simulations to analyze, design and evaluate the functioning of transport systems or	The student knows the issues related to risk analysis. He is able to formulate a scientific problem related to risk analysis and propose its solution at a certain level of generality. The student is able to carry out a risk analysis for a simple anthropotechnic system. The student is able to determine the scope of knowledge necessary to carry out the risk analysis of a simplified anthropotechnical system and indicate the source of	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge [SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to			
subject contents and safety of transport system in and environmental protection in transport formulate a scientific problem process is subject in a contain process is a contain process is a contain process is a contain process is subject in a contain process is a contain process is subject in a contain process is a contain process is contain process is a contain process is subject in a contain process is a contain process. Subject process is a contain process is contained of process is a contained of process is contain procontain process is a contain procontain process. Subjec		and safety of transport systems and environmental protection in transport [K7_U04] The student is able to use the known methods and mathematical models, as well as computer simulations to analyze, design and evaluate the functioning of transport systems or	to formulate a scientific problem related to risk analysis and propose its solution at a certain level of generality. The student is able to carry out a risk analysis for a simple anthropotechnic system. The student is able to determine the scope of knowledge necessary to carry out the risk analysis of a simplified anthropotechnical system and indicate the source of	projects [SW1] Assessment of factual knowledge [SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to			
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billing participate actively in loctures, seminars and laboratory classes conducted in foreign language and is able to formulate questions and answers on the topics covered. iskills* [K7, W06] The student has an extensive knowledge of transport systems and the principles of transport systems integration The student is able to discuss the functioning of transportation systems and the principles of integration of transportation systems. [SW1] Assessment of factual knowledge [K7, W06] The student has extensive knowledge of law, economics and transport management The student is able to discuss the functioning of transportation systems. [SW1] Assessment of factual knowledge Subject contents 1. Teoretical foundations of risk analysis. 2. Quantitative risk analysis, Hazard identification. 3. Huma Reliability Assessment methods. [SW1] Assessment of factual knowledge Prerequisites and co-requisites and co-requisites 1. Teoretical foundations of risk analysis. 4. Bayesian Networks, Fault Tree, Event Tree. 5. Safety assessment methods Soubject passing criteria Percentage of the final grade facture pass Recommended reading Basic literature 1. Aven T. "Quantitative risk assessment. The scientific platform". Cambridge, 201. 2. Aven T., Risk assessment. The scientific platform". Cambridge. 201. 2. Aven T., The risk concephistorical			mathematical models and	present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task			
extensive knowledge of transport systems and the principles of transportation systems and the principles of integration of transportation systems and the principles of transportation systems and the principles of transportation systems and the principles of transportation treperint transport transport transportation transporta		participate actively in lectures, seminars and laboratory classes	language proficiency to understand the content discussed and is able to formulate questions and answers on the topics	[SK1] Assessment of group work			
extensive knowledge of law, encomics and transport management knowledge of law, encomics and transport management in transportation that enables understanding of typical processes occurring in the TSL industry. knowledge Subject contents 1. Teoretical foundations of risk analysis. 1. Teoretical foundations of risk analysis. 2. Quantitative risk analysis, Hazard Identification. 1. Human Reliability Assessment techniques. 4. Bayesian Networks, Fault Tree, Event Tree. 5. Safety assessment techniques. 4. Bayesian Networks, Fault Tree, Event Tree. 5. Safety assessment methods. Assessment methods and criteria Subject passing criteria Passing threshold Percentage of the final grade 1. Aven T. "Quantitative risk assessment. The scientific platform". Cambridge, 2011. Aven T. "Quantitative risk assessment. The scientific platform". Cambridge, 2011. Aven T. "Quantitative risk assessment. The scientific platform". Cambridge, 2011. 8 Subject is care. 3. Goerland F., Montewka J., Maritime transportation risk analysis. Review and analysis in light of some foundational issues. Reliability Engineering & System Safety. Volume 183, 2015, Page 115-134, https://doi.org/10.1016/j.ress.2015.01.025. 4. MSc.MEPC.2.: Circ.12:Rev.2.: Revised Guidelines For Formal. Safety Assessment feasifier of the robability: Still an Open Issue? Philosophies 2017. 2. 20. https://doi.org/10.3390/ philosophies 20300		extensive knowledge of transport systems and the principles of	functioning of transportation systems and the principles of integration of transportation				
2. Quantitative risk analysis, Hazard identification. 3. Human Reliability Assessment techniques. 4. Bayesian Networks, Fault Tree, Event Tree. 5. Safety assessment methods. Prerequisites Assessment methods and co-requisites Eucture pass Assessment methods and criteria Subject passing criteria Passing threshold Assessment methods and criteria Subject passing criteria Passing threshold Recommended reading Basic literature 1. Aven T. "Quantitative risk assessment. The scientific platform". Cambridge 2011. 2. Aven T., Risk assessment and risk management: Review of recer advances on their foundation, European Journal of Operational Research, Volume 253, Issue 1, 2016, Pages 1-13, https://doi.org 10.1016/j.jeor.2015.12.023 3. Goerlandt F., Montewka J., Maritime transportation risk analysis: Review and analysis in light of some foundational issues, Reliability Engineering & System Safety, Volume 138, 2015, Page 115-134, https://doi.org/10.1016/j.jess.2015.01.025. 4. MSC-MEPC 2-Circ.12: Rev 2 - Revised Guidelines For Formal Safety Assessment (Fsa) For Use In The Ime Rule-Making Proces. (Gecretarial.pdf Supplementary literature 1. Galavorti, M.C. The Interpretation of Probability: Still an Open Issue? Philosophies 2017, 2, 20. https://doi.org/10.1016/j.ress.2012.11.006. 3. Http://dxt.org//dxt.pub/fsa.pdf		extensive knowledge of law, economics and transport	knowledge of law, economics and management in transportation that enables understanding of typical processes occurring in the TSL				
and co-requisites Assessment methods and criteria Subject passing criteria Passing threshold Percentage of the final grade Lecture pass 50.0% 50.0% Assignment pass 50.0% 50.0% Recommended reading Basic literature 1. Aven T. "Quantitative risk assessment. The scientific platform". Cambridge, 2011. Aven T., "Risk assessment and risk management: Review of recer advances on their foundation, European Journal of Operational Research, Volume 253, Issue 1, 2016, Pages 1-13, https://doi.org 10.1016/j.ejor.2015.12.023 Goerlandt F., Montewka J., Maritime transportation risk analysis: Review and analysis in light of some foundational issues, Reliability Engineering & System Safety, Volume 138, 2015, Page 115-134, https://doi.org/10.1016/j.ress.2015.01.025. MSC-MEPC 2-Cric.12-Rev.2 - Revised Guidelines For Formal Safety Assessment (Fsa)For Use In The Imo Rule-Making Proces (Secretarial).pdf Supplementary literature 1. Galavotti, M.C. The Interpretation of Probability: Still an Open Issue? Philosophies 2017, 2, 20. https://doi.org/10.3390/ philosophies2030020 Aven T. The risk concepthistorical and recent development trends Reliability Engineering & System Safety, Volume 99, 2012, Pages 33-44, https://doi.org/10.1016/j.ress.2011.11.006. http://dxt.org/ctv/pub/fsa.pdf 1. Mrobel K., Montewka J., Kujala P., System-theoretic approach to safety of remotely-controled merchant vessel, Occean Engineering Volume 152, 2018, Pages 334-34, https://doi.org/10.1016/	Subject contents	 Quantitative risk analysis, Hazard identification. Human Reliability Assessment techniques. Bayesian Networks, Fault Tree, Event Tree. 					
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eResources addresses Adresy na platformie eNauczanie: Safety and risk in transportation systems - summer semester 2023/2024 - Moodle ID: 36024 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36024 Safety and risk in transportation systems - summer semester 2023/2024 - Moodle ID: 36024 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36024 Safety and risk in transportation systems - summer semester 2023/2024 - Moodle ID: 36024 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36024		eResources addresses	Safety and risk in transportation systems - summer semester 2023/2024 - Moodle ID: 36024 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36024 Safety and risk in transportation systems - summer semester 2023/2024 - Moodle ID: 36024				

Example issues/ example questions/ tasks being completed	 Definition of risk and scientific approaches to risk analysis. Application of Bayesian Networks in the risk analysis process. Risk analysis process - elements, data sources, methods and models.
Work placement	Not applicable