

DEREE COLLEGE SYLLABUS FOR: SH 3131 RISK AND SUSTAINABILITY IN MARITIME TRANSPORT		3/0/3		
(New FALL 2026)		UK LEVEL: 5 UK CREDITS: 15		
PREREQUISITES:	SH 3058 International Shipping Policy			
CATALOG DESCRIPTION:	Integration of sustainability, safety, and risk management in maritime transport. Focus on the environmental, human, and organizational dimensions shaping safe and resilient ship and port operations. By the use of practical tools such as hazard identification, human reliability analysis, and formal safety assessment, the course emphasizes evidence-based improvement for greener, safer, and more secure maritime operations.			
RATIONALE:	Through practical tools, the course addresses the growing need for maritime professionals to manage sustainability and risk in an increasingly complex and regulated global shipping environment. By linking environmental performance with safety, human reliability, and organizational resilience, it equips students with the analytical and practical competencies required to navigate evolving challenges in maritime transport. The course prepares learners to critically assess risks, implement proactive safety measures, and contribute to sustainable maritime operations that balance economic efficiency with environmental responsibility and social accountability.			
LEARNING OUTCOMES:	<i>As a result of taking this course, the student should be able to:</i> 1. Evaluate the interaction between technological, human, and organizational factors influencing maritime safety and sustainability. 2. Apply risk assessment frameworks and human reliability analysis to propose effective risk reduction and safety management strategies in seaborne trade. 3. Formulate evidence-based recommendations to improve safety performance, security practices, and learning from incidents and accidents.			
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: • Lectures and class discussions. • Homework assignments. • Office hours held by the instructor to provide further assistance to students. • Use of library facilities for further study and preparation for the exams • Use of the Blackboard course management platform to further support communication, by posting lecture notes, assignment instruction, timely announcements, formative quizzes and online submission of assignments.			
ASSESSMENT:	Summative: <table><tr><td>1st assessment: First Assessment: Group Written project 3-4 students per group (4,000-5,000 words in total) AND Presentation of the Group Written Project</td><td>60%</td></tr></table>		1 st assessment: First Assessment: Group Written project 3-4 students per group (4,000-5,000 words in total) AND Presentation of the Group Written Project	60%
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	<table border="1" data-bbox="643 147 1441 221"> <tr> <td>Final assessment: Final Examination (Essay type and multiple-choice questions)</td><td>40%</td></tr> </table> Formative: <table border="1" data-bbox="643 293 1441 331"> <tr> <td>Game-based activities</td><td>0</td></tr> </table> The formative game-based activities aims to prepare students for the summative assessments. The First and Second Assessment tests Learning Outcomes 1 and 2 The Final Assessment tests Learning Outcomes 3 Students are required to resit failed assessments in this module.	Final assessment: Final Examination (Essay type and multiple-choice questions)	40%	Game-based activities	0
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Game-based activities	0				
INDICATIVE READING:	REQUIRED READING: Haugen, S., & Kristiansen, S. (2022). Maritime transportation: Safety management and risk analysis (2nd ed.). Routledge. https://doi.org/10.4324/9781003055464 RECOMMENDED READING: BOOKS • Menon, A. (2024). Energy efficiency in shipping for environmental sustainability (1st ed.). Routledge. https://doi.org/10.1201/9781032702568 • Oltedal, H. A., & Lützhöft, M. (Eds.). (2018). Managing maritime safety. Routledge. https://doi.org/10.4324/9780203712979 • Soyer B., Tettenborn A., (2020), Ship Operations New Risks, Liabilities and Technologies in the Maritime Sector, Informa Law from Routledge ARTICLES 1. Min-Ho Park, Siljung Yeo, Jeong-Hwan Kim, Jae-Hyuk Choi, Won-Ju Lee, Comprehensive review on recent progress in renewable and sustainable energy applications in shipping industry, and suggestions for future developments, Renewable and Sustainable Energy Reviews, Volume 225, 2026, 116152, ISSN 1364-0321, https://doi.org/10.1016/j.rser.2025.116152. 2. Chengpeng Wan, Long Shao, Liang Fan, Desheng Cao, Jinfen Zhang, Spatiotemporal evolution of global maritime accidents: Integrating hot spot detection and severity modeling for system safety, Reliability Engineering & System Safety, Volume 266, Part B, 2026, 111687, ISSN 0951-8320, https://doi.org/10.1016/j.ress.2025.111687. 3. Xuri Xin, Zaili Yang, Resilience assessment: Insights from port community structures across the global container shipping network, Reliability Engineering & System Safety, Volume 265, Part A, 2026, 111489, ISSN 0951-8320, https://doi.org/10.1016/j.ress.2025.111489. 4. Fan Zhang, Zhongyi Sui, Yihao Liu, Hualong Chen, Shuaian Wang, Ship importance evaluation based on multi-attribute ranking method for maritime safety management, Reliability Engineering & System Safety, Volume 265, Part B, 2026, 111617, ISSN 0951-8320, https://doi.org/10.1016/j.ress.2025.111617. 5. Qiuwen Wang, Managing emerging port security challenges in developing green and digital shipping corridors: A port governance cooperation perspective under the Belt and Road Initiative, Ocean & Coastal Management, Volume 270, 2025, 107924, ISSN 0964-5691, https://doi.org/10.1016/j.ocecoaman.2025.107924.				

	6. Zhangyuan He, Pengjun Zhao, Guangyu Huang, Zhaoxiang Li, Zhucheng Huang, Yingnan Niu, Caixia Zhang, Unrevealing the adaptivity of container shipping network during disruption events by AIS trajectory data, Ocean & Coastal Management, Volume 270, 2025, 107862, ISSN 0964-5691, https://doi.org/10.1016/j.ocecoaman.2025.107862. 7. Kazi Khaled Mahmud, Wahidul Sheikh, Mohammed Mojahid Hossain Chowdhury, Decision framework for sustainability assessment of alternative fuels to achieve shipping decarbonization, Ocean & Coastal Management, Volume 265, 2025, 107637, ISSN 0964-5691, https://doi.org/10.1016/j.ocecoaman.2025.107637. 8. Bo Lu, Lijie Fan, Jian-Jun Wang, Yonggang Li, Does the EU ETS promote shipping decarbonization? Green investment and sustainability strategies of shipping alliances, Transportation Research Part A: Policy and Practice, Volume 199, 2025, 104569, ISSN 0965-8564, https://doi.org/10.1016/j.tra.2025.104569. 9. Bugra Arda Zincir, Transitioning to sustainable shipping: A multidimensional analysis of maritime emission strategies, Ocean & Coastal Management, Volume 269, 2025, 107823, ISSN 0964-5691, https://doi.org/10.1016/j.ocecoaman.2025.107823. 10. Yusheng Zhou, Kum Fai Yuen, Prepare for the sustainability era: A quantitative risk analysis model for container shipping sustainability-related risks, Journal of Cleaner Production, Volume 475, 2024, 143661, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2024.143661. 11. United Nations Conference on Trade and Development (UNCTAD) (Annual Publication). Review of Maritime Transport. Other sources, including journal and newspapers' articles, research papers etc. recommended by the instructor throughout the semester.
INDICATIVE MATERIAL: <i>(e.g. audiovisual, digital material, etc.)</i>	REQUIRED MATERIAL: Click or tap here to enter text. RECOMMENDED MATERIAL: https://www.youtube.com/watch?v=0ey5d1J6CjM https://www.youtube.com/playlist?list=PL-Kbjik4MwlgD6MdLIW0hIRcznvF8Res8 https://www.youtube.com/watch?v=5ScM_4bluiY
COMMUNICATION REQUIREMENTS:	Use of appropriate academic terminology as applicable in oral and written communications
SOFTWARE REQUIREMENTS:	MS Office and Blackboard CMS Enter any additional s/w requirements.
WWW RESOURCES:	https://www.ics-shipping.org/explaining/esg-in-shipping/ www.imo.org www.bimco.org www.internationaltransportforum.org www.wto.org www.icons.org www.emsa.eu.int www.ilo.org www.porteconomics.eu www.unctad.org

INDICATIVE CONTENT:	1. Innovative Environmental Efforts by the Shipping Industry 2. Risk Picture and Terminology 3. The role of stakeholders for a safe and sustainable seaborne trade 4. Human and Organisational Factors 5. Practical Aspects of Safety Management Systems 6. Risk Acceptance 7. Risk Analysis Methods and Assessment Framework 8. Measuring Risk and Monitoring Risk Level 9. Risk Reduction Measures 10. Human Reliability Analysis 11. Formal Safety Assessment 12. Practical Aspects of Maritime Security 13. Learning from Accidents and Incidents
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