

COURSE OUTLINE

(1) GENERAL

SCHOOL	Maritime and Industrial Studies		
ACADEMIC UNIT	Maritime Studies		
LEVEL OF STUDIES	Postgraduate		
COURSE CODE		SEMESTER	
COURSE TITLE	Management of Marine Resources and Blue Growth		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		3	5
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	General background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)	eclass.unipi.gr		

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
<p>Upon successful completion of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand critical issues regarding environmental impacts of the shipping industry 2. Build upon a concise framework that integrates ocean governance and sustainable development 3. Understand the value and economic potential of the various blue growth sectors 4. Learn the existing and future environmental legislative framework as expressed by the IMO, the EU and other governing bodies 5. Demonstrate comprehensive knowledge of the prospects and challenges related to shipping decarbonisation
<p>General Competences</p> <p><i>Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?</i></p> <p><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i> <i>Project planning and management</i> <i>Respect for difference and multiculturalism</i></p>

<i>Adapting to new situations</i> <i>Decision-making</i> <i>Working independently</i> <i>Team work</i> <i>Working in an international environment</i> <i>Working in an interdisciplinary environment</i> <i>Production of new research ideas</i>	<i>Respect for the natural environment</i> <i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i> <i>Criticism and self-criticism</i> <i>Production of free, creative and inductive thinking</i> <i>Others...</i>
<ul style="list-style-type: none"> • Search for, analysis and synthesis of data and information, with the use of the necessary technology • Working independently • Team work • Working in an international environment • Working in an interdisciplinary environment • Respect for the natural environment • Production of free, creative and inductive thinking 	

(3) SYLLABUS

Week 1: Ocean governance and sustainable development

- Value and vulnerability of the oceans
- United Nations Sustainable Development Goals (UN SDGs)
- Sustainable use of the oceans
- United Nations Convention on the Law of the Sea (UNCLOS)

Reading material:

- Heather M. L. et al. (2012): Why value the oceans? Discussion paper prepared by UNEP/GRID-Arendal and Duke University's Nicholas Institute for Environmental Solutions in collaboration with the UNEP TEEB Office and the UNEP Regional Seas Programme.
- IMO (2014): Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization.

Week 2: Marine Protected Areas (MPAs)

- Tragedy of the commons
- Understanding Marine Protected Areas and their networks
- EU policy framework for Marine Protected Areas

Reading material:

- Reker J. et al. (2015): Marine Protected Areas in Europe's Seas. An overview and perspectives for the future. EEA Report no 3/2015.

Week 3: Blue Economy

- Introduction to the ecosystem-based management (EBM) approach
- The Blue Economy Concept
- Blue Growth Sectors

Reading material:

- European Commission (2024): The EU Blue Economy Report 2024.

Week 4: Maritime environmental issues and the role of the IMO

- Atmospheric emissions/Oil pollution/Sewage/Garbage/ballast water/recycling
- The MARPOL 73/78 Convention
- Ballast Water Management Convention
- The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships

Reading material:

- Walker, T. R., Adebambo, O., Feijoo, M. C. D. A., Elhaimer, E., Hossain, T., Edwards, S. J., ... & Zomorodi, S. (2019). Environmental effects of marine transportation. In World seas: an environmental evaluation (pp. 505-530). Academic Press.
- David, M., Gollasch, S., Elliott, B. and Wiley, C., 2015. Ballast water management under the ballast water management convention. Global Maritime Transport and Ballast Water Management: Issues and Solutions, pp.89-108.

Week 5: Climate change and the shipping industry

- Greenhouse Gas (GHG) emissions from shipping
- Global regulatory framework
- The Initial IMO Strategy for the Reduction of GHG emissions from Ships
- Measures, policies and incentives for the decarbonization of shipping

Reading material:

- Bouman, E.A., Lindstad, E., Riialand, A.I. and Strømman, A.H., 2017. State-of-the-art technologies, measures, and potential for reducing GHG emissions from shipping—A review. Transportation Research Part D: Transport and Environment, 52, pp.408-421.
- Wan, Z., El Makhloufi, A., Chen, Y. and Tang, J., 2018. Decarbonizing the international shipping industry: Solutions and policy recommendations. Marine pollution bulletin, 126, pp.428-435.

Week 6: Market-based Measures (MBMs) for the abatement of GHG emissions from shipping

- A global levy on marine fuels
- A Maritime Emission Trading System
- Are the MBMs effective for the reduction of GHG emissions from ships?

Reading material:

- Kosmas, V. and Acciaro, M., 2017. Bunker levy schemes for greenhouse gas (GHG) emission reduction in international shipping. Transportation Research Part D: Transport and Environment, 57, pp.195-206.
- Christodoulou, A. and Cullinane, K., 2024. The prospects for, and implications of, emissions trading in shipping. Maritime Economics & Logistics, 26(1), pp.168-184.

Week 7: European Green Deal and shipping

- Regional regulatory framework for shipping decarbonisation
- Inclusion of shipping in the EU Emission Trading System (EU ETS)
- The upcoming FuelEU Maritime Regulation
- The Alternative Fuels Infrastructure Directive (AFID)

Reading material:

- Christodoulou, A. and Cullinane, K., 2022. Potential alternative fuel pathways for compliance with the 'FuelEU Maritime Initiative'. Transportation research part D: Transport and environment, 112, p.103492.
- Flodén, J., Zetterberg, L., Christodoulou, A., Parsmo, R., Fridell, E., Hansson, J., Rootzén, J. and Woxenius, J., 2024. Shipping in the EU emissions trading system: implications for mitigation, costs and modal split. Climate Policy, pp.1-19.

Week 8: The role of ports for 'green' maritime supply chains

- Sustainable port operations
- Green port charges
- Adoption of a port energy management plan
- Production and use of renewable energy

Reading material:

- Winnes, H., Styhre, L. and Fridell, E., 2015. Reducing GHG emissions from ships in port areas. Research in Transportation Business & Management, 17, pp.73-82.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of the electronic platform eclass	
TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Activity	Semester workload
	Lectures, exercises & applications, laboratory exercises	24
	Self-study	101
	Written assignments	
	Final exams	
	Course total	125
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	The module will be assessed on the basis of two components: a) Individual performance (20%): class participation, assignments, cases, exercises, tests b) Written exams (80%): A final written exam	

(5) ATTACHED BIBLIOGRAPHY

Suggested bibliography:

- Kimball, L. A. (2003). International ocean governance: using international law and organizations to manage marine resources sustainably. IUCN, Gland, Switzerland and Cambridge, UK.
- Ehlers, P. (2016). Blue growth and ocean governance—how to balance the use and the protection of the seas. WMU Journal of Maritime Affairs, 15, 187-203.

Additional Course Material:

- Course slides
- Selected academic articles

Related academic journals:

- Transportation Research Part D
- Marine Policy
- Marine Pollution Bulletin
- Ocean and Coastal Management
- Maritime Policy and Management
- Maritime Economics and Logistics