

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF BUSINESS STUDIES		
ACADEMIC UNIT	SHIPPING, TRADE AND TRANSPORT		
LEVEL OF STUDIES	POSTGRADUATE		
COURSE CODE	12051-09	SEMESTER	2 nd Semester (Spring)
COURSE TITLE	ENERGY SYSTEMS FOR SHIPPING AND TRANSPORT – GREEN ENERGY TECHNOLOGIES		
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	4
<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>	special background, specialised general knowledge, skills development ELECTIVE		
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	https://www.stt.aegean.gr/mba-in-shipping/programma-mathimaton/		

(2) LEARNING OUTCOMES

<p>Learning outcomes <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>The course focuses on energy systems and utilization of green technologies in shipping and transport. Presents the basic principles of sustainable development and renewable energy sources. Also, analyses blue growth potential and perspective. The learning outcomes, include:</p> <ul style="list-style-type: none"> - to comprehend life cycle analysis and fundamental principles of sustainable development, - to understand the technologies utilized in order to improve energy efficiency, - to understand relevant IMO regulations and guidelines, - to understand the architecture of intelligent energy systems in maritime sector, - to understand the goals for Green Shipping, - to understand blue-growth perspective and the contribution of renewable energy sources, - to be able to search relevant, reliable scientific sources and write the results of their study in the form of a paper.

General Competences	
<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>	
<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>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>
<i>Production of new research ideas</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 - Adaptation to new situations - Working independently - Team work - Working in an interdisciplinary environment - Production of free, creative and inductive thinking 	

(3) SYLLABUS

<ul style="list-style-type: none"> • Introductory concepts • Ship energy systems and energy efficient technologies • Life cycle analysis and sustainable development • Energy and climate change • Green shipping • Energy efficiency in transport • Renewable energy and blue growth • Transport and storage of energy • Smart grids and alternative maritime power supply in ports • Technological trends and future of transportation systems
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(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face, physical presence in class and implementation of e-class platform	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of ICT in teaching, laboratory education, communication with students, based on synchronous and interactive technologies.	
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.</i>	Activity	Semester workload
	Lectures	18 hours
	Study and analysis of bibliography	35 hours
	Project Assignment	30 hours
	Non-directed study	22 hours
	Course total	105 hours
<i>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>		

<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION</p> <p><i>Description of the evaluation procedure</i></p> <p><i>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</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>Student evaluation procedures and final grading in the course are based on the weighted combination of:</p> <ul style="list-style-type: none"> - Written exam: (50%) - Project assignment and class assignments: (50%). <p>Language of student evaluation: Greek (plus specialized terminology in English).</p>
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(5) ATTACHED BIBLIOGRAPHY

<p><i>- Suggested bibliography:</i></p> <ul style="list-style-type: none"> • Green Economy, Molly Scott Cato (Editing Nikitas Nikitakos), https://service.eudoxus.gr/search/#a/id:12730/0 • Renewable Energy sources, 1st edition 2013, Tsoutsos T., Kanakis I. • IMO, MARPOL Annex VI and NTC 2008 with Guidelines for Implementation, 2013 Edition • <i>Theis T., Tomkin J, Sustainability: A Comprehensive Foundation.</i> http://legacy.cnx.org/content/col11325/1.43/ OpenStax-CNX • Journal of Energy and Natural Resources • Throughout the course additional online sources and publications available in the library are provided for further study. • Also, slides related to the courses, are published in the website of the Department at the educational section (courses).
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