

## COURSE OUTLINE

### (1) General information

<b>FACULTY/SCHOOL</b>	School of Maritime & Industrial Studies		
<b>DEPARTMENT</b>	Department of Maritime Studies		
<b>LEVEL OF STUDY</b>	Undergraduate		
<b>COURSE UNIT CODE</b>	NAAIT40	<b>SEMESTER</b>	Spring semester elective
<b>COURSE TITLE</b>	Ship Technological Efficiency		
<b>INSTRUCTOR'S NAME</b>	Professor Ernestos Spyridon Tzannatos		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
	4	6	
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
<b>COURSE TYPE</b> <i>Background knowledge, Scientific expertise, General Knowledge, Skills Development</i>	Scientific expertise		
<b>PREREQUISITE COURSES:</b>	Compulsory: Ship Technology (1 <sup>st</sup> Semester) Recommended: Ship Systems (3 <sup>rd</sup> Semester)		
<b>LANGUAGE OF INSTRUCTION:</b>	English		
<b>LANGUAGE OF EXAMINATION/ASSESSMENT:</b>			
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSE WEBSITE (URL)</b>	<a href="https://eclass.unipi.gr/courses/NAS127/">https://eclass.unipi.gr/courses/NAS127/</a>		

### (2) LEARNING OUTCOMES

#### **Learning Outcomes**

*The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.*

*It is necessary to consult:*

#### **APPENDIX A**

- Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.
- Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and

#### **APPENDIX B**

- Guidelines for writing Learning Outcomes

<p><b>General Competences</b></p> <p><i>Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?</i></p>	
<p><i>Search for, analysis and synthesis of data and information by the use of appropriate technologies,</i></p> <p><i>Adapting to new situations</i></p> <p><i>Decision-making</i></p> <p><i>Individual/Independent work</i></p> <p><i>Group/Team work</i></p> <p><i>Working in an international environment</i></p> <p><i>Working in an interdisciplinary environment</i></p> <p><i>Introduction of innovative research</i></p>	<p><i>Project planning and management</i></p> <p><i>Respect for diversity and multiculturalism</i></p> <p><i>Environmental awareness</i></p> <p><i>Social, professional and ethical responsibility and sensitivity to gender issues</i></p> <p><i>Critical thinking</i></p> <p><i>Development of free, creative and inductive thinking</i></p> <p><i>.....</i></p> <p><i>(Other.....citizenship, spiritual freedom, social awareness, altruism etc.)</i></p> <p><i>.....</i></p>
<p>decision-making, introduction to innovative research, environmental awareness, critical thinking</p>	

### (3) COURSE CONTENT

<ul style="list-style-type: none"> <li>- Transport efficiency &amp; Transport effectiveness</li> <li>- Admiralty constant and Fuel constant</li> <li>- Criteria of propulsion system selection</li> <li>- Ship resistance: <ul style="list-style-type: none"> <li>• components of resistance</li> <li>• control measures</li> </ul> </li> <li>- Efficiency of propulsion engine and power transmission system</li> <li>- Estimation of propulsion power – Towing tests</li> <li>- Propulsion power vs Ship speed relationship</li> <li>- Specific fuel consumption vs propulsion power relationship</li> <li>- Fuel consumption vs ship speed relationship</li> <li>- Control measures of atmospheric pollution from ships</li> <li>- Definition and improvement measures of EEDI and SEEMP (EEOI)</li> </ul>
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### (4) TEACHING METHODS--ASSESSMENT

<p><b>MODES OF DELIVERY</b></p> <p><i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	<p>In class lecturing or Online</p>
<p><b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b></p> <p><i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<p>Use of ICT in teaching (ppt slides &amp; video)</p>

<p align="center"><b>COURSE DESIGN</b></p> <p><i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i></p> <p><i>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</i></p>	<b>Activity/Method</b>	<b>Semester workload</b>
	Lectures	13 lect. x 4 hrs = 52 hrs
	Self-directed study	98 hrs
	<b>Total</b>	<b>150 hours</b>
<p align="center"><b>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</b></p> <p><i>Detailed description of the evaluation procedures:</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	Multiple Choice Test	

**(5) SUGGESTED BIBLIOGRAPHY:**

- «Μελέτη πλοίου - Μεθοδολογίες προμελέτης: Τεύχος 2», Παπανικολάου Απόστολος, 2009.
- «Ship design for efficiency and economy», Schneekluth, H., Bertram, V., 1998.