COURSE OUTLINE

(1) General information

FACULTY/SCHOOL	School of Maritime & Industrial Studies		
DEPARTMENT	Department of Maritime Studies		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	ΝΑΑΓΓ40	**SEMESTER**	Spring semester elective
COURSE TITLE	Ship Technological Efficiency		
INSTRUCTOR'S NAME	Professor Ernestos Spyridon Tzannatos		
INDEPENDENT TEACHING ACTIVITIES *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*		**WEEKLY TEACHNG HOURS**	**CREDITS**
		4	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4			
COURSE TYPE *Background knowledge, Scientific expertise, General Knowledge, Skills Development*	Scientific expertise		
PREREQUISITE COURSES:	Compulsory: Ship Technology (1st Semester) Recommended: Ship Systems (3rd Semester)		
LANGUAGE OF INSTRUCTION:	English		
LANGUAGE OF EXAMINATION/ASSESSMENT:			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.unipi.gr/courses/NAS127/		

(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*

General Competences *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?* *Search for, analysis and synthesis of data and information by the use of appropriate technologies,* *Adapting to new situations* *Decision-making* *Individual/Independent work* *Group/Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Introduction of innovative research* *Project planning and management* *Respect for diversity and multiculturalism* *Environmental awareness* *Social, professional and ethical responsibility and sensitivity to gender issues* *Critical thinking* *Development of free, creative and inductive thinking* *……* *(Other…….citizenship, spiritual freedom, social awareness, altruism etc.)* *…….*
decision-making, introduction to innovative research, environmental awareness, critical thinking

(3) COURSE CONTENT

- Transport efficiency & Transport effectiveness
- Admiralty constant and Fuel constant
- Criteria of propulsion system selection
- Ship resistance:
  - components of resistance
  - control measures
- Efficiency of propulsion engine and power transmission system
- Estimation of propulsion power – Towing tests
- Propulsion power vs Ship speed relationship
- Specific fuel consumption vs propulsion power relationship
- Fuel consumption vs ship speed relationship
- Control measures of atmospheric pollution from ships
- Definition and improvement measures of EEDI and SEEMP (EEOI)

(4) TEACHING METHODS--ASSESSMENT

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

COURSE DESIGN *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.* *The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.*	

Activity/Method	*Semester workload*
Lectures	52
Case studies	38
Self-directed study	98
Total	150 hours

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS *Detailed description of the evaluation procedures:* *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.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	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.