COURSE OUTLINE

(1) General information

FACULTY/SCHOOL	Maritime and Industrial Studies		
DEPARTMENT	Maritime Studies		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	NA306	**SEMESTER**	3rd Semester
COURSE TITLE	SHIP SYSTEMS		
INSTRUCTOR'S NAME	Asst. Professor Peter J. Stavroulakis		
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 TEACHING HOURS**	**CREDITS**
Lectures and coursework		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*	General Knowledge		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION:	Greek		
LANGUAGE OF EXAMINATION/ASSESSMENT:			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://eclass.unipi.gr/courses/NAS480/		

(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*
The course introduces students to the theory of resistance/propulsion, main and auxiliary systems, and ship networks. Basic principles of fluid mechanics and solid body resistance in a

fluid field, historical propulsion methods, propulsion systems and their combinations are analyzed, as well as various propulsion means, types of rudders, and propellers, as well as basic and auxiliary ship networks. Upon completion of the course, students will be able to:

- Analyze the basic principles governing ship resistance and propulsion
- Model the ship's engine room and perform a ship drive train analysis
- Analyze various types of propulsion systems and propulsion means
- Describe and compare the various types of rudders and propellers
- Analyze and decompose the main and auxiliary ship networks

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.)
…….

- Search for, analysis and synthesis of data and information by the use of appropriate technologies
- Adapting to new situations
- Decision-making
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- Critical thinking
- Development of free, creative, and inductive thinking

(3) COURSE CONTENT

- Introduction to fluid mechanics
- Ship resistance theory
- Historical propulsion methods
- Modern propulsion systems and future trends
- Rudders
- Propellers
- Types of propulsion systems
- Types of marine engines and supercharging
- Propulsion means
- Combined propulsion
- Engine room arrangement

▪ Ship drive train analysis ▪ Ship networks

(4) TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Face-to-face and provision for synchronous distance learning in cases of force majeure and/or extraordinary circumstances (as per Law 4957/2022, A76, Par. E)
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	▪ Asynchronous e-class learning platform ▪ Notes in pdf ▪ PowerPoint presentations ▪ Organization of in-depth courses and tutorial exercises via MS Teams ▪ Guest lectures using MS Teams
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 — 48 Tutorials — 24 Solving exercises and writing assignments — 30 Self-guided study — 48 **Total** — **150**
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.*	Written final exam that includes: ▪ Solving exercises ▪ Development questions ▪ Multiple choice questions

(5) SUGGESTED BIBLIOGRAPHY:

Suggested bibliography

- *Introduction to Marine Engineering*
- *Introduction to Ship Engine Room Systems*
- *Basic Ship Theory*
- *Marine Propellers and Propulsion*
- *Ship Design and Performance for Masters and Mates*
- *Lecture notes*

International Journals

- *Journal of Marine Environmental Engineering*
- *Coastal Engineering*
- *Ocean Engineering*
- *Journal of Ocean Engineering and Science*
- *Journal of Marine Science and Technology*
- *Journal of Marine Engineering and Technology*