# COURSE OUTLINE

## (1) OVERVIEW

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|---|---|---|---|
| SCHOOL | MARITIME & INDUSTRY | | |
| DEPARTMENT | MARITIME STUDIES | | |
| LEVEL OF STUDIES | UNDERGRADUATE | | |
| COURSE CODE | NA105 | SEMESTER | 7 |
| COURSE TITLE | SHIP TECHNOLOGY | | |

| DISCRETE TEACHING ACTIVITIES<br>*In cases where ECTS credits are awarded to distinct components of the course (e.g., Lectures, Laboratory Exercises, etc.), please indicate them separately. If the credits are awarded as a whole for the entire course, please state the weekly teaching hours and the total number of credits* | WEEKLY TEACHING HOURS | ECTS |
|---|---|---|
| Lectures | 4 | 5.5 |
| | | |
| | | |
| *Please add additional rows if needed. A detailed description of the teaching organization and instructional methods is provided in Section (4).* | | |

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|---|---|
| COURSE TYPE<br>*core (C), core elective (CE), elective (E) - background, specialization, skill development* | E - Specialization |
| PREREQUISITE COURSES: | None. |
| LANGUAGE OF TEACHING AND EXAMINATIONS: | Greek (English for ERASMUS students) |
| THIS COURSE IS AVAILABLE TO ERASMUS STUDENTS | Yes |
| COURSE WEBPAGE (URL) | |

## (2) LEARNING OUTCOMES

**Learning Outcomes**

*The learning outcomes of the course are described, specifying the particular knowledge, skills, and competencies at the appropriate level that students will acquire upon successful completion of the course.*

*Please refer to Appendix A*

- *Description of the Level of Learning Outcomes for each study cycle according to the Qualifications Framework of the European Higher Education Area.*
- *Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B.*
- *Concise Guide for Writing Learning Outcomes*

This course is an introduction to the fundamental concepts of ship technology. The course content aims to familiarize students with the basic concepts of ship technology and to help them understand the main design, construction, and operational characteristics of ships, with a focus on describing the essential elements of the general arrangement of modern vessels.

The syllabus also includes basic topics of ship theory, such as the displacement equation and transverse stability for small angles of heel. For large angle stability, the course outlines the main requirements of international regulations. The course presents the structure of the regulatory framework of commercial shipping concerning the design, construction, and operation of ships, highlighting the roles of the various stakeholders and the main international regulations that are enforced. Examples are provided to demonstrate how inspections, surveys, and certification of commercial vessels are conducted throughout their life cycle, based on the requirements of flag states, classification societies, and port state control authorities.

Upon successful completion of the course, the student will be able to:

- Understand the basic ship terminology and identify the elements of the general arrangement of modern commercial vessels.
- Have knowledge of the weight groups in the displacement equation and be able to solve practical problems using the relevant formulas (including weight components, principal dimensions, and form coefficients).
- Understand and justify the key design, construction, and operational features of modern commercial ships.
- Comprehend the fundamental principles of transverse stability and interpret/evaluate a ship's stability condition using the applicable regulations.
- Understand the structure of the international maritime regulatory framework related to the design, construction, and operation of commercial ships, and identify the primary roles of the authorities enforcing these regulations.

**General Competences**

*Taking into account the general competences that a graduate should have acquired (as listed in the Diploma Supplement and outlined below), which of these competences does the course aim to develop?*

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|---|---|
| *Searching, analyzing, and synthesizing data and information, using the necessary technologies* | *Project design and management* |
| *Adaptation to new situations* | *Respect for diversity and multiculturalism* |
| *Decision making* | *Respect for the natural environment* |
| *Autonomous work* | *Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues* |
| *Teamwork* | *Exercising critical and self-critical thinking* |
| *Working in an international environment* | *Promotion of free, creative, and inductive thinking* |
| *Working in an interdisciplinary environment* | *…* |
| *Generation of new research ideas* | *Other competences: …* |

- Searching, analyzing, and synthesizing data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Working in an interdisciplinary environment
- Respect for diversity and multiculturalism
- Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues
- Exercising critical and self-critical thinking
- Promotion of free, creative, and inductive thinking

## (3) COURSE CONTENT

The course covers the following topics:

1. Ship Terminology
2. Principal Dimensions and Form Coefficients
3. Design Principles, General Arrangement of Ships, Displacement and Volume (Non-displacement) Ships
4. Weight Groups, Displacement Equation
5. Load Line
6. Basic Principles of Transverse Stability
7. Global Merchant Fleet Distribution
8. Main Types of Ships: Design, Construction, and Operational Characteristics
9. Introduction to the Maritime Regulatory Framework
10. Key International Regulations for Ship Construction and Certification (SOLAS, MARPOL 73/78, Class Rules)

Also, case studies from international bibliography are presented to the students.. Furthermore, articles, audiovisual lecture material, web links to useful resources, exercises, and software are uploaded in electronic format on the eClass platform..

## (4) TEACHING and LEARNING METHODS - ASSESSMENT

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|---|---|
| **TEACHING MODE**<br>*Face-to-face, in-class lecturing, distance teaching and distance learning etc.* | • Face-to-face in a classroom<br>• Distance teaching & learning (if required) |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGY**<br>*Use of ICT in Teaching, Laboratory Education, Communication with students* | **Teaching**: Lectures using modern audiovisual equipment, learning support through the eClass electronic platform, synchronous distance teaching via MS Teams.<br>**Communication with students**: face-to-face during office hours, email, eClass platform, MS Teams tools |
| **Organization of Teaching**<br>*A detailed description of the teaching methods and approach is provided.*<br>*Lectures, seminars, laboratory exercises, fieldwork, study and analysis of literature, tutorials, internships (placements), clinical practice, artistic workshops, interactive teaching, educational visits, project work, writing assignments, artistic creation, etc.*<br><br>*The student's study hours for each learning activity, as well as the hours of independent study,* | |

| Activity | Semester Workload |
|---|---|
| Lectures | 44 |
| Exercises | 8 |
| Field trips | 2 |
| Seminars | 2 |
| Case studies | 24 |
| Self-study of lecture material | 55 |
| Consultation Support | 0.5 |

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|---|---|---|---|
| *are specified in accordance with the principles of ECTS* | | Exams (written) | 2 |
| | | Course Total | 137.5 |
| STUDENT ASSESSMENT<br>*Description of the assessment process*<br><br>*Language of assessment, assessment methods, formative or summative evaluation, multiple-choice tests, short-answer questions, essay questions, problem-solving, written assignments, reports, oral examinations, public presentations, laboratory work, clinical patient examination, artistic interpretation, other(s)*<br><br>*Explicitly state assessment criteria and information on whether and where these criteria are accessible to students are included.* | **Language of Assessment**: Greek (English for ERASMUS students)<br>**Assessment Mode**: Face-to-face and/or distance learning (if required)<br>**Assessment Methods**: The final grade for the course is determined 100% by the written examination during the winter semester exam period and, in case of failure, during the September resits.<br>The written exam includes multiple-choice, short-answer and essay-type questions. It is conducted as a closed-book exam.<br>**Students with Learning Difficulties**: Students with certified learning difficulties in reading and writing (as recognized by the competent authority) are assessed according to the procedures established by the Department.<br>**Disclosure of Assessment Criteria**: The assessment criteria are communicated during the first class and are clearly stated on the course website and the eClass platform. The exam syllabus is announced on eClass following the final lecture of the semester. The exam answers are posted on eClass after the examinations take place. Students have the right to review their graded exams and receive explanations regarding their grades. In cases of further requests, the procedures outlined in the current Study Regulations apply. | | |

## (5) SUGGESTED BIBLIOGRAPHY

*- Books:*

- Papanikolaou, A. (2009). Ship Design – Pre-design Methodologies, Kalamara Publications, ISBN: 9789609400107 [50662293]– in Greek

*- Journals:*

*- Other educational material:*

- Lecture Notes and Supporting Material provided by the Instructor