COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Naval Architecture		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	NAOME1361	**SEMESTER**	9th
COURSE TITLE	**DAMAGED STABILITY OF SHIPS**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS (ECTS)**
Lectures	5	6

COURSE TYPE *general background, specialbackground, specialised general knowledge, skills development*	Specialised
PREREQUISITE COURSES:	NAOME1318 - SHIP HYDROSTATICS AND STABILITY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English)
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/NA255/

(2) COURSE GOALS / LEARNING OUTCOMES

Flooding of a ship's internal compartments significantly affects her stability. Accordingly, vessels should be properly designed in order to have adequate stability not only in intact condition, but also after damage and flooding of one or more internal compartments in order to avoid sinkage and/or capsize.

By successful completion of the module, students will be able to:

- Calculate the vessel's *equilibrium waterline* after flooding of one or more compartments
- Calculate the *ship's floodable lengths* that are essential especially during ship's preliminary design
- To assess ship's reserved stability after flooding by using both *deterministic* and *probabilistic Damaged Stability Criteria*, as per SOLAS Regulations.

Students will learn how to search and analyse data in order to compose solutions required for decision making. Such will be also accomplished by course assignment.

(3) COURSE CONTENT / SYLLABUS

Subject module discusses the watertight subdivision and stability of ships after damage. The aspects of permeability and subdivision length are also thoroughly explained.
The following aspects are discussed in detail:

- Calculation of *floodable lengths.*

- Stability of ships after damage by using the methods of *lost buoyancy* and *added mass.*
- *Deterministic* and *Probabilistic* methodologies for assessing the damaged stability of ships in accordance with *SOLAS* requirements, including the calculation of the *Attained* and *Required Subdivision Index*.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY Face-to-face, Distance learning, etc.	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY Use of ICT in teaching, laboratory education, communication with students	• Support learning through the electronic e-class platform. • Specialized Ship Stability Software
TEACHING METHODS *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.* *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*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *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*	Final written exam (60%). Evaluation of assignments and oral exam (40%)

Activity	***Workload (hours)***
Lecturing	65
Assignments	39
Self-Study	52
Course total	***156***

(5) ATTACHED BIBLIOGRAPHY

1. Baxter, B. (1967), Naval Architecture. Examples and Theory, London: Charles Griffin & Co.
2. Biran, A. (2003), Ship Hydrostatics and Stability, Oxford: Butterworth Heinemann
3. Comstock, J.P. (Ed.) (1968), Principles of Naval Architecture, New York: The Society of Naval Architects and Marine Engineers (SNAME).
4. Rawson, K.J. and Tupper, E.C. (2001), Basic Ship Theory, Vols. 1-2, Oxford: Butterworth Heinemann (original work published 1968).
5. Kobylinsky, L. K. and Kastner, S. (2003), Stability and Safety of Ships, (Vols. 1-2), Elsevier Ocean Engineering Book Series.
6. Λουκάκης, Θ., Πέρρας, Π. και Τζαμπίρας, Γ. (2000), Υδροστατική και ευστάθεια πλοίου, Σημειώσεις, τόμ. 1-2, Θωμαΐδειο Ίδρυμα ΕΜΠ, Αθήνα.

7. Τζαμπίρας, Γ., 2015. *Υδροστατική και ευστάθεια πλοίου*. [ηλεκτρ. βιβλ.] Αθήνα, Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών.
8. Σπύρου, Κ. (2015), Δυναμική ευστάθεια πλοίου. [ηλεκτρ. βιβλ.] Αθήνα, Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών.