COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Naval Architecture		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	NAOME1318	**SEMESTER**	3rd
COURSE TITLE	**SHIP HYDROSTATICS AND STABILITY**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS (ECTS)**
Lectures	3	6
Laboratory	2	
Total	5	

COURSE TYPE *general background, specialbackground, specialized general knowledge, skills development*	Specialized
PREREQUISITE COURSES:	Ship Lines Drawing and introduction to CASD (NAOME1212)
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/NA254/

(2) COURSE GOALS / LEARNING OUTCOMES

Ship Hydrostatics and Stability is one of the most important fields in naval architecture. It deals with the capability of a ship to transport passengers and/or cargo and the safety of the transport. With respect to the capability of transport we are concerned with the determination of the flotation position of the ship in calm water, while with respect to the safety we are concerned with ship ability to ride a storm out. Trim and Stability Booklet is considered as one of the basic studies for a new ship, as well as in the case of conversion or transformation of an existing ship. After the successful completion of the course students will be able to:

- Calculate the geometric characteristics of a ship.
- Calculate the hydrostatic curves of a ship.
- Calculate the drafts, trim and heel of a ship in various loading conditions.
- Calculate the cross curves of a ship.
- Calculate the static stability curve of a ship in intact condition and in various loading conditions.
- Examine the compliance of a ship with existing stability rules.

(3) COURSE CONTENT / SYLLABUS

Forces and moments on floating bodies. Basic equations of hydrostatic equilibrium. Geometric characteristics of floating bodies. The general problem of variation under constant or variable displacement of a floating body.
Intact stability: Hydrostatic curves. Transverse stability. Initial stability and stability at large angles. Cross curves. Free-surface correction. Curve of static stability. Dynamic stability. Stability Rules.
Trim: Calculation of drafts and displacement in trimmed conditions. Trim diagrams.

Laboratory exercises:

- Calculation of ship geometric characteristics
- Calculation of hydrostatic diagram
- Calculation of cross curves
- Calculation of static stability curve in a given loading condition

(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	• Use of ICT in reaching • Use of specialized CAD software • Support learning through the electronic e-class platform.
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*	***Activity*** / ***Workload (hours)*** Lectures: 39 Laboratory exercises: 26 Homework assignments: 39 Study of Lectures: 52 Course total: **156**
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 examination (60%) Evaluation of homework essays and oral examination (40%)

(5) ATTACHED BIBLIOGRAPHY

Text books:

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. Tzampiras, G. (2015). Hydrostatic and stability ship. [ebook] Athens: Hellenic Academic Libraries Link. Available Online at: http://hdl.handle.net/11419/550

Relevant Journals:

1. Journal of Marine Science and Technology (Springer)
2. Computer-Aided Design (Elsevier)
3. Journal of Ship Research (SNAME)
4. Ocean Engineering (Elsevier)
5. Applied Ocean Research (Elsevier)