COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Naval Architecture		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	NAOME1352	**SEMESTER**	9th
COURSE TITLE	**SPECIAL ISSUES ON SHIP DESIGN**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS (ECTS)**
Lectures	4	6
Laboratory		

COURSE TYPE *general background, specialbackground, specialised general knowledge, skills development*	Specialized
PREREQUISITE COURSES:	Ship Design
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	eclass.uniwa.gr/courses/NA244

(2) COURSE GOALS / LEARNING OUTCOMES

The aim of the course is to deepen the study of the main ship design procedures. Emphasis is given to the factors affecting the estimation of ship main particulars and ship hull coefficients.

Moreover, the students are introduced to the methodologies of ship design optimization, according to given objectives and constraints. For the better understanding of the optimization procedures the students analyze and present in the class relevant research papers from the bibliography.

Also, the main International Conventions SOLAS and MARPOL are presented, with emphasis to the issues that mainly affect ship design, both in terms of operation and building cost.

After the successful completion of the course the students should be able to:

- Calculate the main design parameters of a ship for given requirements
- Optimize the main ship dimensions and form coefficients
- Compare and assess different designs
- Check the ship's compliance with the rules and regulations

(3) COURSE CONTENT / SYLLABUS

Ship design: Factors affecting the calculation of the main dimensions of a ship and hull-form coefficients.

Ship hull form: Distribution of displacement, Form of waterlines, Form of sections, Form of Bow and Stern, Design based on systematic Ship Hull Form Series.

Introduction to ship hull optimization: Parametric geometric ship design, optimization methods, multi-objective optimization, Pareto surfaces, applications.

International Conventions:

- SOLAS: Regulations on damage stability, Lifesaving appliances, Fire fighting
- MARPOL: Annex I: Regulations for the prevention of pollution by oil
- Tonnage measurement of ships

In the context of the course, the students, in small groups of two persons maximum, undertake the responsibility to study and present in the class a research paper on ship design optimization. Moreover, each student has to compile a study on life-saving appliances and the tonnage measurement of a ship.

(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.	
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	52
	Study and analysis of bibliography	26
	Homework assignments	39
	Study of Lectures	39
	Study and preparation for exam	
	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*	• Written examination (40%) • Public presentation of a research paper on ship design optimization (40%) • Evaluation of homework (20%)	

ATTACHED BIBLIOGRAPHY

Textbooks:

1. Lewis, E.V., (ed), Principles of Naval Architecture, vol. I-III, SNAME Publ., New York, 1988.

2. Lamb, T., (ed), Ship Design and Construction, SNAME Publ., New York, 2003.

3. Schneekluth, H., Bertram, V., Ship Design for Efficiency and Economy, Butterworth-Heinemann, 2nd edition, 1998.

4. Taggart, R., (ed), Ship Design and Construction, SNAME Publ., New York, 1980.

5. Αντωνίου, Α., Μελέτη Πλοίου, 2η Έκδοση, Εκδόσεις Σελλούντος, Αθήνα, 1984.

6. Παπανικολάου, Α., Μελέτη Πλοίου-Μεθοδολογίες Προμελέτης, Τεύχη 1 και 2, Εκδόσεις Συμεών, Αθήνα, 2009.

Related 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)