

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	School of Engineering		
<b>ACADEMIC UNIT</b>	Department of Naval Architecture		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	NAOME1334	<b>SEMESTER</b>	6 <sup>th</sup>
<b>COURSE TITLE</b>	<b>SHIP DESIGN</b>		
<b>INDEPENDENT TEACHING ACTIVITIES</b>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS (ECTS)</b>
<b>Lectures</b>		5	6
<b>COURSE TYPE</b> <i>general background, specialbackground, specialized general knowledge, skills development</i>	Specialized		
<b>PREREQUISITE COURSES:</b>	NAOME1318 - Ship Hydrostatics and Stability		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	Yes		
<b>COURSEWEBSITE(URL)</b>	<a href="https://eclass.uniwa.gr/courses/NA243/">https://eclass.uniwa.gr/courses/NA243/</a>		

### (2) COURSE GOALS / LEARNING OUTCOMES

Ship Design I is a compositional course in the sense that it combines and uses knowledge of other specialized courses in order to conduct the preliminary design of a specific ship. Starting from ship-owner requirements students come to estimate the basic design parameters of a ship which satisfies, in an optimum manner, both ship-owner and Rules requirements. Aim of the course is students' familiarization with the basic methodologies and stages in Ship Design and especially:

- The estimation of main dimensions and hull-form coefficients of a ship
- The estimation of the various weight groups, the lightship and the weight margin of the ship
- The design of ship lines and the general arrangement
- The preliminary estimation of ship's trim and stability
- The calculation of the required freeboard according to Loadline Rules
- The preliminary estimation of the cost of ship

### (3) COURSE CONTENT / SYLLABUS

Ship Design: Aims, owner's requirements, design specifications, stages in ship design. Preliminary Design: Preliminary estimation of main dimensions and hull-form coefficients. Powering requirements. Weight groups and displacement equation. Displacement control, hold capacity control. Preliminary control of trim and stability, basic stability regulations of IMO. Loadline regulations and freeboard calculation. Preliminary estimation of construction cost.

In the context of the course, the students, divided in small groups of two persons, have to compile a study with subject "Preliminary selection of main dimensions and hull form coefficients. Displacement control". Each group is dealing with a different type and size of ship.

### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> Face-to-face, Distance learning, etc.	Face-to-face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> Use of ICT in teaching, laboratory education, communication with students	<ul style="list-style-type: none"> <li>Support learning through the electronic e-class platform.</li> </ul>	
<b>TEACHING METHODS</b> <i>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</i>	<b>Activity</b>	<b>Workload (hours)</b>
	Lectures	65
	Homework assignments	39
	Study of Lectures	65
	Course total	<b>169</b>
<b>STUDENT PERFORMANCE EVALUATION</b> <i>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</i>	Written examination (70%) Evaluation and oral examination on the work (30%)	

## (5) ATTACHED BIBLIOGRAPHY

### **Text books:**

- Lewis, E.V., (ed), Principles of Naval Architecture, vol. I-III, SNAME Publ., New York, 1988.
- Lamb, T., (ed), Ship Design and Construction, SNAME Publ., New York, 2003.
- Rawson, K.J., Tupper, E.C., Basic Ship Theory, vol. I,II, Longman Scientific and Technical, 4<sup>th</sup> edition, 1994.
- Schneekluth, H., Bertram, V., Ship Design for Efficiency and Economy, Butterworth-Heinemann, 2<sup>nd</sup> edition, 1998.
- Taggart, R., (ed), Ship Design and Construction, SNAME Publ., New York, 1980.
- Αντωνίου, Α., Μελέτη Πλοίου, 2<sup>η</sup> Έκδοση, Εκδόσεις Σελλούντος, Αθήνα, 1984.
- Παπανικολάου, Α., Μελέτη Πλοίου-Μεθοδολογίες Προμελέτης, Τεύχη 1 και 2, Εκδόσεις Συμεών, Αθήνα, 2009.

### **Relevant Journals:**

- Journal of Marine Science and Technology (Springer)
- Computer-Aided Design (Elsevier)
- Journal of Ship Research (SNAME)
- Ocean Engineering (Elsevier)
- Applied Ocean Research (Elsevier)