COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Naval Architecture		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	NAOME1346	**SEMESTER**	8th
COURSE TITLE	**DECK EQUIPMENT AND STEERING SYSTEMS**		
INDEPENDENT TEACHING ACTIVITIES		**WEEKLY TEACHING HOURS**	**CREDITS (ECTS)**
Lectures and case studies		3	4
COURSE TYPE *general background, specialbackground, specialised general knowledge, skills development*	Specialised		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/NAFP122/ https://ocp.teiath.gr/courses/NAFP_UNDER115/		

(2) COURSE GOALS / LEARNING OUTCOMES

The course refers to the mechanical installations of the deck of ships and floating structures with emphasis on the hydraulic high pressure systems. The aim of the course is to introduce students to the basic concepts of deck equipment requirements, ship's steering equipment as well as the installation / operation / equipment / calculation of the hydraulic networks of deck and superstructure. Also the course familiarizes students with the importance of deck machinery and the analysis, study and design of these systems. Besides students will be familiarized with the operation of ship loading / unloading systems, steering systems and the design / construction of the rudder and its hydraulic control mechanism.

(3) COURSE CONTENT / SYLLABUS

1. Introduction to high-pressure hydraulic systems of ships.
2. Advantages and Disadvantages of Hydraulic Systems.
3. Classification of Hydraulic Systems according to operating pressure.
4. Symbols of Hydraulic Systems.
5. Types of Hydraulic Systems (Open-Closed Circuit).
6. High-pressure pumps and positive displacement motors: torque, non-dimensional coefficients, dimensional calculation of drive mechanism.
7. High Pressure Hydraulic Valve Characteristics: Loads, Losses, Moving Mechanism Selection.
8. Design and analysis of high pressure hydraulic circuits: Standard circuit with constant load and speed, standard circuit with load varies with speed.
9. Deck Auxiliary Machinery: Steam engines, Electric motors, Hydraulic Motors, anchors and fastening systems, anchor brake calculation, anchor engine power calculation, loading and

unloading systems.
10. Maneuvering and heel control Equipment: Rudder mechanism, rudder design, regulations for the construction and operation of steering gears, stability devices (active fins - stability tanks).

(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 teaching. • 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*	
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*	i) Written final examination (80%) that includes solving problems related to the theory. ii) Evaluation of technical work reports -exercises (20%).

Activity	*Workload (hours)*
Lectures	26
Exercises on theory	13
Technical essays	26
Personal study	52
Course total	**117**

(5) ATTACHED BIBLIOGRAPHY

1. Smith D.W., Marine Auxiliary Machinery, 6th edition, Butterworth-Heinemann
2. H D MCGEORGE, Marine Auxiliary Machinery, Seventh Edition, Butterworth-Heinemann, 1999