

COURSE OUTLINE

(1) GENERAL

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Naval Architecture		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	NAOME1337	SEMESTER	6 th
COURSE TITLE	SHIP ELECTRICAL SYSTEMS - MARITIME COMMUNICATIONS AND NAVIGATION EQUIPMENT		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS (ECTS)	
Lectures	2	5	
Laboratory	2		
Total	4		
COURSE TYPE <i>general background, specialbackground, specialised general knowledge, skills development</i>	Specialized		
PREREQUISITE COURSES:	NAOME1221 - Fundamentals of Electrical engineering		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/NA238/		

(2) COURSE GOALS / LEARNING OUTCOMES

The main objective of the course is to introduce students to the fundamental principles of ship power distribution systems and also to ship maritime and navigation systems. In more detail, by the end of the course, students will be familiar with a typical topology of a ship's electrical system (including the case of electric propulsion), having a sound understanding of the role and operation of each corresponding element. Furthermore, students will acquire a solid background concerning basic navigation and maritime systems (i.e. GNSS, GMDSS, ECDIS, etc).

(3) COURSE CONTENT / SYLLABUS

- Typical electrical power distribution on a ship
- Basic characteristics of a ship's electrical system (electrical load balance, cable selection, voltage drop, single line diagram, etc)
- Introduction to electric propulsion (review of motor operation, basic power electronic elements, controlled rectification and inversion, converter types, typical electric propulsion plant layout)
- Fundamental principles of telecommunications
- Global Navigation Satellite Systems (GNSS)
- Basic maritime systems (ECDIS, radar, AIS, etc)
- Global Maritime Distress and Safety System (GMDSS)
- Main regulations applied to ship radiocommunications, typical plant layout of a case study

Laboratory: Apart from the 2h weekly instructions, the specific module incorporates also a laboratory part where students perform appropriate “hands-on” exercises.

(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	<ul style="list-style-type: none"> • Use of ICT in teaching • Use of specialized Laboratory equipment • Asynchronous e-learning support through “Open eClass” platform 	
TEACHING METHODS <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>	Activity	Workload (hours)
	Lectures	26
	Laboratory exercises – Laboratory technical reports	26
	Study of Lectures	91
	Course total	143
STUDENT PERFORMANCE EVALUATION <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>	Lectures: Final written examination (75%) Laboratory: - Written examination (20%) - Laboratory technical reports (5%)	

(5) ATTACHED BIBLIOGRAPHY

1. Ηλεκτροτεχνικές εφαρμογές σε πλοία και πλωτές κατασκευές, Ι. Προυσαλίδης, εκδόσεις Συμμετρία, 2012
2. Τεχνολογίες πληροφορικής και επικοινωνιών στη ναυτιλία, Δ. Κόκοτος, Δ. Λιναρδάτος, Ν. Νικητάκος, Ε. Τζανάτος, εκδόσεις Σταμούλη Α.Ε., 2011
3. Θέματα Ηλεκτρονικής τεχνολογίας στη Ναυτιλία και τις μεταφορές, Ν. Νικητάκος – Γ. Ντούρμας, Εκδόσεις Ι. Σιδέρης, 2011.
4. Practical marine electrical knowledge, D. T. Hall, Witherby, 1999
5. Journal of Marine Science and Application, ISSN: 1671-9433
6. Journal of Marine Science and Technology, ISSN: 0948-4280
7. Transactions of the Society of Naval Architects and Marine Engineers [S.N.A.M.E.], ISSN: 0081-161
8. SAE Technical papers, ISSN: 0148-7191