

SCHOOL	School of Engineering		
ACADEMIC UNIT	Department of Electronics Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	2607008	SEMESTER	7
COURSE TITLE	Marine Electronics and Communications		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS (ECTS)
	Lectures	3	6
	Practice	0	
	Laboratory	2	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Degree-Specific Course (SPC)		
PREREQUISITE COURSES:	None		
LANGUAGE of INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED AT ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	http://www.electronics.teipir.gr/index.php/en/2016-02-01-10-11-06/2016-02-01-10-12-32/undergraduate-curriculum/7th-semester		

1. LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- Guidelines for writing Learning Outcomes*

Upon successful completion of this course module students possess advanced knowledge, skills and competences in the subject of Communication Systems that enable them to:

- Understand and describe the use of Marine Electronics and Communications Systems per type of waterborne vessel
- Discriminate and categorize Marine Electronics and Communications Systems according to their relationship to the state of the art
- Recognize, categorize, describe and use the wireless and satellite communications protocols for waterborne vessels
- Analyze and calculate the basic link budget results of wireless and satellite communications links
- Describe the most widely used international regulations for shipping, anchoring and mooring and their environmental effects
- Work alone and within a team on the design, installation and service of marine electronics systems for surveillance and communications of waterborne vessels

Keywords: Marine Electronics, Marine Communications, RADAR, Radio Navigation, Satellite Communications, Environmental Protection Regulations.

General Competencies

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>
<i>Production of new research ideas</i>	<i>Others...</i>

- Search, analyze and synthesize information using Information and Communications Technologies
- Work within a Team

2. COURSE CONTENT

1. Introduction
 - Waterborne vessels and electronic systems: (i) surveillance / supervision / navigation / safety and security (ii) communications
2. Wireless Communications for the Maritime Sector
 - Wireless Communications VHF, MF/ HF, DSC
 - Automatic Identification System (AIS)
 - Distress Communications (GMDSS, EPIRB)
 - Satellite Communications (Inmarsat, Iridium, VSAT)
 - Telex Communications (NAVTEX)
3. Navigation Systems
 - Radio-navigation (RADAR, ECDIS, gyros and compass, SONAR, Echo Sounders, bathometers)
 - Global Navigational Satellite Systems (GNSS, Differential GNSS, GPS, GLONASS, Galileo)
 - Voyage Data Recorder Systems (SVDR & VDR)
4. Specialized Electronic Systems and Simulators
 - Marine Simulators Ναυτικοί προσομοιωτές γέφυρας, μηχανοστασίου
 - Marine GMDSS Simulators
 - Satellite Communications Simulators
 - Traffic Management Systems (VTMIS)
5. International Conventions and Legislation (MARPOL), Classification Societies (IACS, DNV, Veritas)

3. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY <i>Face to face, Distance Learning methods etc.</i>	<ul style="list-style-type: none"> • Face to face, in Class (main method) • Distance learning 						
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGIES <i>Use of ICT in teaching, laboratory education, communication with students</i>	<ul style="list-style-type: none"> • Multimedia slides • Specialized Marine Simulators • Web Support 						
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</i>	<p>Lectures, Laboratory Experiments, Study.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Activity</th> <th style="text-align: center;">Semester Workload (Hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: center;">39</td> </tr> <tr> <td>Study and homework</td> <td style="text-align: center;">39</td> </tr> </tbody> </table>	Activity	Semester Workload (Hours)	Lectures	39	Study and homework	39
Activity	Semester Workload (Hours)						
Lectures	39						
Study and homework	39						

<i>activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Laboratory exercises	26
	Report writing	26
	Project	30
	Study for the final exams	20
	Course Total	180
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 Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	<p>The final grade of the course will result as the weighted average of the lectures and laboratories parts' grades:</p> <p>Final Course Grade = 0.60 x Lectures Part Grade + 0.40 x Laboratories Part Grade</p> <p>1. With regard to the <i>lectures part</i>, there are final exams that take place upon the lectures' completion. There is also a final project that students may undertake each one on their own or within small teams of 2-3 persons.</p> <p>I. The project (20 %) starts at the beginning of the Semester with subject that are proposed to the students and are published at the Course's website. II. The final exams (80%) are in Greek.</p> <p>2. With regard to the <i>laboratories part</i>, there are exams during the classes as well as upon completion of the laboratories.</p> <p>I. Oral evaluation (10%) during laboratories classes II. Intermediate evaluation (60%) through experimental reports. III. Final exams in Greek (30%).</p>	

4. ATTACHED BIBLIOGRAPHY

-Recommended Books:

1. J. C. Payne, "Marine Electrical & Electronics Bible", 3rd ed., Sheridan House Inc., 2007 [ISBN: 9781574092424]
2. I. Waugh, "Maritime Radio & Satellite Communications Manual", 1998 [ISBN: 1-85310-471-X]

-Scientific Journals: