

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF PHYSICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	504	SEMESTER	6, 8
COURSE TITLE	INTRODUCTION TO TELECOMMUNICATIONS		
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	
	4	4	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Special background, skills development		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (Greek)		
COURSE WEBSITE (URL)	http://www.telecomlab.gr/lessons/504		

(2) LEARNING OUTCOMES

<p>Learning outcomes</p> <p><i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i> 												
<p>The course aims to introduce students to the concepts of Digital Telecommunications. After successful completion of the course, students are expected to:</p> <ul style="list-style-type: none"> • Have acquired knowledge of basic transmission and reception signal concepts as well as factors that affecting the design of a digital telecommunication system. • Identify trigonometric Fourier series of periodic signals and calculate channel capacity. • Design a digital telecommunication system. Evaluate parameters that affect the system's performance. • Have acquired knowledge in coding concepts and multiple access techniques. 												
<p>General Competences</p> <p><i>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></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"><i>Decision-making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Working independently</i></td> <td style="border: none;"><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td style="border: none;"><i>Team work</i></td> <td style="border: none;"><i>Criticism and self-criticism</i></td> </tr> <tr> <td style="border: none;"><i>Working in an international environment</i></td> <td style="border: none;"><i>Production of free, creative and inductive thinking</i></td> </tr> </table>	<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>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>

<p>Working independently Search for, analysis and synthesis of data and information, with the use of the necessary technology Production of free, creative and inductive thinking</p>	

(3) SYLLABUS

<p>Time and frequency domain representation of signals, spectrum analysis. Communications networks, network hierarchy. Channels parameters, signal, noise, interference, distortion. Multi-Level signalling, Channel Capacity, Baseband data transmission, Intersymbol interference, Eye diagrams, Raised cosine filtering, Matched filtering. Partial response signalling. Gain, phase and group delay distortion. Interference and noise 2-Level Digital Modulation (ASK, FSK, PSK). Multi-Level Digital Modulation Source, Channel, Block etc coding coding. Multi-User Digital Modulation Techniques (FDMA). Time division multiple access (TDMA). Code division multiple access (CDMA). Combined multiple access systems.</p>
--

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face to face teaching	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Course webpage is used for providing the lecture notes and the communication with the students.	
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	Semester workload
	Lectures	26
	Practice	26
	study and analysis of bibliography	25
	Directed study	20
	Examinations	3
	Course total	100
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>	Practice (40%) <ul style="list-style-type: none"> Problem solving exercises on the course content Written examinations at the end of semester (60%), comprising questions of knowledge and understanding of the course content (25%) as well as problem solving exercises (75%). Prerequisite for participation in the final examination are passing marks on the Practice. The course is successfully completed when passing the final examination.	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Digital Communications, 1st Edition/2000: Bateman A, ISBN: 978- 960-8050-03-7, Tziolas Editions (in Greek)
- Digital and Analog Communication Systems, 1st Edition/1979, ,K. Sam Shanmuga, ISBN: 960-7258-30-4, Pneumatikos Editons (in Greek)
- Communication Systems, 5th Edition/2010, Simon Haykin, Michael Moher, ISBN: 978-960-7182-68-5, Papatotiriou Editions.