

INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS																			
SCHOOL	SCHOOL OF SCIENCE																			
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS																			
COURSE LEVEL	UNDERGRADUATE																			
COURSE TITLE	Digital Communications																			
COURSE CODE	ΕΠ04	Semester	7	ECTS	6															
TEACHING HOURS per week	THEORY	3	SEMINAR.	1	LABORATORY															
COURSE TYPE	<p>Select one of the following and delete the rest Elective</p> <table border="1"> <thead> <tr> <th>K</th> <th>E1</th> <th>E2</th> <th>E3</th> <th>E4</th> <th>E5</th> <th>E6</th> </tr> </thead> <tbody> <tr> <td>B</td> <td></td> <td></td> <td></td> <td>E</td> <td></td> <td></td> </tr> </tbody> </table> <p>Fill the table as in the curriculum: Track (A-Computer Science, B- Computer Engineering) / Specialization Compulsory (Y) / Core Specialization (B)/ Elective Specialization (E)</p>						K	E1	E2	E3	E4	E5	E6	B				E		
K	E1	E2	E3	E4	E5	E6														
B				E																
URL	https://eclass.uoa.gr/courses/ΕΠ04																			
EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:	Communication Systems (K21)																			
TEACHING AND EXAMINATIONS LANGUAGE:	GREEK																			
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO																			

COURSE CONTENT
Digital Modulation, Digital Modulation for Signals with High Efficiency, Digital Communication over Inter-Symbol-Interference Channels, Synchronization

STUDENT LEARNING OBJECTIVES
<p>Course objectives:</p> <ul style="list-style-type: none"> to provide a detailed analysis of the various digital modulation and demodulation techniques to provide an overview of the digital modulation methods for high spectral efficient signals

- to introduce the principles of inter-symbol-interference (ISI) channels and to evaluate the performance of digital communication systems operating over such channels
- to present the basic principles of the synchronization techniques (carrier and symbol timing recovery)

After the successful completion of the course the student could:

- Describe the operation of spectrally efficient digital communication systems
- Explain the principles of ISI channels and how to design digital communication systems for such channels
- Illustrate the basic concepts of synchronization for the proper operation of digital communication systems

TEACHING AND LEARNING METHODS - ASSESSMENT													
TEACHING METHOD	In Class (Face to Face)												
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Learning process supported by the e-class platform (Provision of educational content, Announcements, Discussions) Email communication Live transmission of lectures Ability to track recorded lectures												
TEACHING ORGANIZATION <i>Describe in detail the way and methods of teaching: Enhanced Lectures, Online Lectures, Seminars, Tutorial, Laboratory, Laboratory Exercise, Study & analysis of literature, Practice (Positioning), Interactive teaching, Developing a project, Individual / group work Telework (reference to tools) etc.</i>	The theory is presented with power-point slides that are available in the e-class. More solution of more than 50 exercises are explained during the tutorials.												
<i>Details of the student's study hours for each learning activity and hours of non-guided study are shown to ensure that the total workload at the semester corresponds to the ECTS</i>	<table border="1"> <thead> <tr> <th>Activity</th> <th>Student Workload (hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures (attendance)</td> <td>39</td> </tr> <tr> <td>Tutorial (attendance)</td> <td>13</td> </tr> <tr> <td>Independent Study of exercises</td> <td>48</td> </tr> <tr> <td>Independent Study of theory</td> <td>50</td> </tr> <tr> <td>Total Course (25 hours of workload per unit of credit)</td> <td>150</td> </tr> </tbody> </table>	Activity	Student Workload (hours)	Lectures (attendance)	39	Tutorial (attendance)	13	Independent Study of exercises	48	Independent Study of theory	50	Total Course (25 hours of workload per unit of credit)	150
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ASSESSMENT OF STUDENTS

Description of the assessment process

Assessment Methods, Formative or Concluding, Multiple Choice Test, Quick Response Questions, Test Development Questions, Problem Solving, Written Work, Report / Report, Oral Examination, Public Presentation, Laboratory Work, Other / Other

Fully defined evaluation criteria are mentioned and if and where they are accessible to students.

The evaluation method is based on a written examination with exercises of variable difficulty. After the marks have been announced, all students can review the marking on their written examinations and ask for a re-evaluation of their exam.

Assessment methods	Number	Percentage
Written examination	1	100%

LITERATURE AND STUDY MATERIALS / READING LIST

- G. Karagiannidis and K. Pappi "Communicational Systems", A. Tziolas, 4th edition 2017 (in Greek)
- Β. Sklar και Ν. Μήτρου, Ψηφιακές Επικοινωνίες και CD, 2η Έκδοση 2011 Α. ΠΑΠΑΣΩΤΗΡΙΟΥ & ΣΙΑ Α.Ε