

COURSE OUTLINE

(1) GENERAL

SCHOOL	Economics, Management and Informatics		
ACADEMIC UNIT	Department of Informatics & Telecommunications		
LEVEL OF STUDIES	MSc		
COURSE CODE		SEMESTER	3 rd
COURSE TITLE	Satellite Systems and Networks		
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
	Total	3	8
<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>	Specialised general knowledge		
PREREQUISITE COURSES:	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-		
COURSE WEBSITE (URL)	https://eclass.uop.gr/courses/DIT125/index.php		

(2) LEARNING OUTCOMES

<p>Learning outcomes <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>On successfully completing this course, students will be able to:</p> <ul style="list-style-type: none"> • Understand, describe and analyze key features of different space communications techniques with emphasis to recent technological advances • Describe satellite systems and networks and their key elements • Understand, describe and analyze teletraffic issues and applications of satellite networks • Understand key development issues of micro-nano satellites 																			
<p>General Competences <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 border="0"> <tr> <td><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td><i>Project planning and management</i></td> </tr> <tr> <td><i>Adapting to new situations</i></td> <td><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td><i>Decision-making</i></td> <td><i>Respect for the natural environment</i></td> </tr> <tr> <td><i>Working independently</i></td> <td><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td> </tr> <tr> <td><i>Team work</i></td> <td><i>Criticism and self-criticism</i></td> </tr> <tr> <td><i>Working in an international environment</i></td> <td><i>Production of free, creative and inductive thinking</i></td> </tr> <tr> <td><i>Working in an interdisciplinary environment</i></td> <td>.....</td> </tr> <tr> <td><i>Production of new research ideas</i></td> <td><i>Others...</i></td> </tr> <tr> <td></td> <td>.....</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>Working in an interdisciplinary environment</i>	<i>Production of new research ideas</i>	<i>Others...</i>	
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(3) SYLLABUS

<ul style="list-style-type: none"> • Multiple access protocols • Radio channel characteristics • Multiplexing techniques (CDMA, OFDMA) • Beamforming, MIMO, SDMA, large antenna array techniques • Teletraffic & applications in satellite networks • Satellite communication systems • Satellite architectures and handover • Micro-Nano satellites
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(4) TEACHING and LEARNING METHODS - EVALUATION

<p style="text-align: center;">DELIVERY <i>Face-to-face, Distance learning, etc.</i></p>	Face to face													
<p style="text-align: center;">USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	PowerPoint presentations Course Management System for Asynchronous eLearning via web browser (e-class)													
<p style="text-align: center;">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.</i></p> <p><i>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></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><i>Activity</i></th> <th style="text-align: center;"><i>Semester workload</i></th> </tr> </thead> <tbody> <tr> <td>lectures</td> <td style="text-align: center;">39 hours</td> </tr> <tr> <td>Individual study</td> <td style="text-align: center;">83 ώρες</td> </tr> <tr> <td>Study and analysis of bibliography</td> <td style="text-align: center;">75 ώρες</td> </tr> <tr> <td>Exams</td> <td style="text-align: center;">3 ώρες</td> </tr> <tr> <td>Course total</td> <td style="text-align: center;">200 hours</td> </tr> </tbody> </table>		<i>Activity</i>	<i>Semester workload</i>	lectures	39 hours	Individual study	83 ώρες	Study and analysis of bibliography	75 ώρες	Exams	3 ώρες	Course total	200 hours
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<p style="text-align: center;">STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i></p> <p><i>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></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<p>The language of evaluation is English.</p> <p>The performance evaluation will be with written exams at the end of the semester. It is possible that home assignments will be given, which will contribute to the final grade with a percentage ranging between 25% and 40%.</p> <p>The written exams will include a mix of problem solving, multiple choice and short-answer questions.</p> <p>The home assignments can include problem solving, public presentation, report writing.</p>													

(5) ATTACHED BIBLIOGRAPHY

<p><i>- Suggested bibliography:</i></p> <ul style="list-style-type: none"> • Satellite Communication systems, B.Evans • Satellite Communications Systems: Systems, Techniques and Technology, Maral, M.Bousquet • Antenna Theory: Analysis and Design, 3rd edition, C.Balanis, 2005 • MIMO System Technology for Wireless Communications, G.V.Tsoulos (ed.), CRC Press, 2006, ISBN-13: 978-0-8493-4190-8. • Lal Chand Godara, Smart Antennas, CRC Press, 2004 • Bandwidth-Efficient Digital Modulation with Application to Deep-Space Communications, Marvin K. Simon, Wiley • Low-Noise Systems in the Deep Space Network / Edition 1, Macgregor S. Reid • Satellite Networking: Principles and Protocols, Z. Sun, Wiley 2014 • Computer Networking: A Top-Down Approach, James F. Kurose and Keith W. Ross, Pearson 2012 <p><i>- Related academic journals:</i></p> <p>Extended list will be provided during the semester</p> <ul style="list-style-type: none"> • International Journal of Satellite Communications and Networking • IEEE Transactions on Broadcasting
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