

INSTITUTION	NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS						
SCHOOL	SCHOOL OF SCIENCE						
DEPARTMENT	INFORMATICS AND TELECOMMUNICATIONS						
COURSE LEVEL	UNDERGRADUATE						
COURSE TITLE	Communication Networks II						
COURSE CODE	K33	Semester	5	ECTS	6		
TEACHING HOURS per week	THEORY	3	SEMINAR.	1	LABORATORY	1	
COURSE TYPE	Electives (ΠΜ)						
	K	E1	E2	E3	E4	E5	E6
	B					Y	
URL	https://eclass.uoa.gr/courses/DI378/						
EXPECTED PRIOR KNOWLEDGE/ PREREQUISITES AND PREPARATION:	Knowledge of basic principles and technologies of packet switched networks and the Internet at the link, network and transport layers. Basic knowledge of applied probabilities. Prerequisite courses: a first course on Communication Networks I (K16).						
TEACHING AND EXAMINATIONS LANGUAGE:	GREEK						
THE COURSE IS OFFERED TO ERASMUS STUDENTS	NO						

COURSE CONTENT
<p>The course aims to cover at the undergraduate level the following thematic units:</p> <ul style="list-style-type: none"> • Queuing Delay in Packet Switched Networks • Wireless/Mobile Networks (Wireless LANs, mobility support for the Internet, new generation mobile networks) • Networking and Multimedia Applications • Network Security

STUDENT LEARNING OBJECTIVES
<p>Teaching-Learning Goals-Expected Learning Outcomes</p> <p>The aim of the course is to provide students with a deeper understanding of the factors that affect latency in packet switched networks, design principles and architectures of wireless / mobile networks, network architectures, and quality of service support mechanisms in multimedia transmission, as well as the techniques</p>

that ensure confidentiality, authentication and integrity of communication and ways of protecting networks from malicious attacks.

Upon successful completion of the course the student will be able to:

- Explain the factors affecting the queuing delay in packet switched networks. More specifically, a) describe the factors that affect the waiting time of packets in Internet routers, b) use simple queuing models to quantitate queue size and delay, c) describe and explain how the delay of a packet differs depending on the flow priority it belongs to; d) recognize why the analysis of a network of interconnected queues is difficult; and e) to apply useful approximations for analyzing the delay and for network dimensioning.
- Describe and explain why the characteristics of wireless links and user mobility make it difficult to provide service quality in today's Internet. Describe and illustrate the basic architecture and protocols of wireless local area networks (IEEE 802.11). Apply the principles of planning Internet access through cellular systems, user mobility management, routing to mobile users and mobile IP.
- Describe and explain multimedia design choices and networking support mechanisms that can best exploit a "best effort" network such as the Internet. Separate, categorize and explain the basic approaches to expanding the Internet architecture to meet multimedia service quality requirements.
- Explain, select and apply techniques that enable encryption / decryption of communications, authentication of the communicating parties and message integrity, as well as use and implement ways to protect against malicious attacks.

TEACHING AND LEARNING METHODS - ASSESSMENT									
TEACHING METHOD	In Class (Face to Face)								
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	<p>Learning process supported by the e-class platform for accessing the course's digital educational content (Power Point Presentations, Recorded Videolectures, Interactive Elements, Self-Assessment Exercises, References) and announcements.</p> <p>Email communication</p> <p>Live streaming of lectures</p> <p>On demand access of recorded lectures (https://delos.uoa.gr/opendelos/search?crs=78e30551).</p>								
TEACHING ORGANIZATION <i>Describe in detail the way and methods of teaching:</i> 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.	<p>Theory is presented using slide projection. During the tutorial sessions, problems are discussed and exercises are presented / solved in an interactive way. The lectures are broadcast via live streaming and are recorded, so that students can view them on demand. Four (4) laboratory sessions, lasting 2 hours and 15 minutes each, are offered.</p>								
	<table border="1"> <thead> <tr> <th>Activity</th> <th>Student Workload (hours)</th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td>39</td> </tr> <tr> <td>Tutorial</td> <td>13</td> </tr> <tr> <td>Laboratory</td> <td>13</td> </tr> </tbody> </table>	Activity	Student Workload (hours)	Lectures	39	Tutorial	13	Laboratory	13
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<p><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></p>	Preparation for the Laboratory	25	
	Independent Study	60	
	Total Course (25 hours of workload per unit of credit)	150	
<p>ASSESSMENT OF STUDENTS <i>Description of the assessment process</i></p> <p><i>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</i></p> <p><i>Fully defined evaluation criteria are mentioned and if and where they are accessible to students.</i></p>	<p>Students are assessed by written examination and the reporting of laboratory exercises. The written examination covers the theoretical part, and counts for 60% of the final grade. In the laboratory part, 4 laboratory exercises are delivered. The grade of the laboratory exercises counts for 40% of the final grade.</p>		
	Assessment methods	Number	Percentage
	Written examination	1	60%
	Laboratory	4	40%

LITERATURE AND STUDY MATERIALS / READING LIST
<p>Main text</p> <ul style="list-style-type: none"> Computer Networking, J. Kurose και K. Ross:, Pearson/Addison-Wesley, 7th Edition (In Greek), Giourdas Publishing <p>Additional reading</p> <ul style="list-style-type: none"> Computer Networks, A.Tanenbaum and D.Wetherall, Kleidarithmos Publishing Computer Networks, L.Peterson and B.Davie, Kleidarithmos Publishing