

In The Name of God, The Merciful, The Compassionate

Healthcare Multimedia Networks

Faculty of New Sciences and Technologies

University of Tehran

Spring 2013

Instructors: Mostafa Salehi

Class Hours & Location: Saturdays & Mondays; 14:00 – 15:30

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TAs: (TA Sessions are held on Saturdays 12:00 – 13:15, Room FNST-102)

Course Website:

Course Objectives:

With recent trends and technology advancement in the development of converged broadband next generation networks (NGNs) and advanced multimedia services, the potential has increased for delivering various e-Health services to end users “anywhere, anytime”. This course is an graduate level course that covers the concepts and principles that underlie the delivery of e-Health services across modern packet-switched computer networks and wireless networks with the required quality of service.

Prerequisites: Computer Networks, Multimedia Systems

Course References:

The course will be based on a list of required and supplemental readings (research papers and book chapters). The required research papers for reading will be posted on the course web site. For the background on computer networks and also for some class lectures we suggest following reference books:

1. "Computer Networking: A Top-Down Approach (5th edition)," by J. Kurose and K. Ross, Addison-Wesley, 2010.
2. "Computer Networks, (5th Edition)," by Andrew Tanenbaum, Prentice Hall, 2011. ISBN 0-13-066102-3.
3. "Fundamentals of Multimedia," by Z-N. Li, M.S. Drew, Pearson Prentice Hall Upper Saddle River, NJ, 2004.
4. "Quality of Service Control in High-Speed Networks," by H. J. Chao, X. Guo , John Wiley and Sons, Chichester, UK, 2002.

Grading:

- Homework: 20%
- Research Project: 20%
- Quizzes: 10% (on Saturdays)
- Midterm Exams (#2): 20%
- Final Exam: 30%

Policy

Course policy for late submission of homework problems or projects is mentioned below:

- 50% of the whole point for delivery up to three days after the deadline.
- 20% of the whole point for delivery up to one week after the deadline.

- Do not even think of submission after more than one week delay!

Tentative Course Outline:

Session No		Topic	Reading
1 (91.11.16)	Course overview and objectives.	Network Structure	Ref#1-Ch#1
2 (91.11.21)	Computer Networking	Application and Transport Layers	Ref#1-Ch#2,3
3 (91.11.23)		Network Layers	Ref#1-Ch#4
4 (91.11.28)		Physical and Link layer	Ref#1-Ch#5 Ref#2-Ch#5
5 (91.11.30)		Fundamentals of Multimedia	Characteristics of Audio, Image and Video Signals
6 (91.12.05)		Audio Compression	Ref3-Ch#13
7 (91.12.07)		Image Compression	Ref#3-Ch#9
8 (91.12.12)		Video Compression	Ref#3-Ch#10
9 (91.12.19)		Midterm Exam#1	
10 (91.12.21)	Quality of Service	Principles	Ref#1-Ch#7
11 (92.01.17)		Scheduling and Policing	Ref#1-Ch#7
12 (92.01.19)		QoS Architecture (Integrated services; Differentiated services)	Ref#1-Ch#7
13 (92.01.24)		QoS Architecture (Integrated services; Differentiated services)	Ref#1-Ch#7
14 (92.01.26)	Multimedia over IP	IP Multicast	Handouts
15 (92.01.31)	Multimedia over overlay networks	Application level multicast	Handouts
16 (92.02.02)	Multimedia Protocols	Signaling Protocols (SIP, H.323) Streaming (Real-time) Protocols (RTP, RTCP)	Handouts
17 (92.02.07)	IP Multimedia Subsystem (IMS)	Emerging Multimedia architecture	Handouts
18 (92.02.09)	Multimedia over Wireless/ sensor network	Multimedia over Wireless Networks	Handouts
19 (92.02.14)		Multimedia over Sensor Networks	Handouts
20 (92.02.16)	Multimedia Network Security	Encryption, authentication, IP security	Handouts
21 (92.02.21)		watermarking, secure media streaming	Handouts
22 (92.02.23)	Midterm Exam#2		
23 (92.02.28)	e-Health services	Types (Tele-medicine, ...)	Handouts
		Standards	Handouts
24 (92.02.30)		QoS requirements	Handouts
26 (92.03.04)		Network Design	Handouts
27 (92.03.06)		Network Design	Handouts
28 (92.03.11)		Case studies	Handouts
29 (92.03.13)	Course Review	Course Review	