

COE 445: Internet Technologies

Instructor: Dr. Uthman Baroudi

Lecture: ST, 10:00-11:15 PM

Location: Bldg. 19-417

Office hours: S.S.M.T.: 12:00-01:00 PM

Office Location: 22-144

Catalog Description:

This course will focus on internet and its architecture: public switched networks, ISP architectures and services, value added services, and ISP creation costs. Internet services business models: peering arrangements, NAPs and traffic exchange, accounting, and Internet2 and GigaPOPPs. Information retrieval architecture, design, and performance evaluation: search engines, proxy servers, and content distribution networks. Technologies and protocols for QoS support in the Internet. Development of web services.

Course Objectives:

- 1) Provide the student with background to pursue a career in architecting Internet based services as a designer, developer, or administrator;
- 2) Prepare the student for graduate studies in the areas of information services and architectures, web programming languages, and multimedia networking.

Course Learning Outcomes

- 1) Understanding the Internet architecture from a service provider point of view;
- 2) Understanding ISP business relationships;
- 3) Learning information retrieval architectures used in Internet;
- 4) Learning technologies and protocols for QoS support in the Internet;
- 5) Learning to use several Internet based applications: web servers, streaming media servers, audio-video conferencing, etc.;
- 6) Learning to architect a web based service using a selected current technology (e.g., HTML, CGI, Java, JavaScript, etc.);

Prerequisite: COE 442

References:

- J. Crowcroft, M. Handley, I. Wakeman, *Internetworking Multimedia*, Morgan Kaufmann, 1999, online: <http://www.cs.ucl.ac.uk/staff/J.Crowcroft/mmbook/book/book.html>
- *Computer Networking: A Top-Down Approach Featuring the Internet* by James F. Kurose and Keith W. Ross, Addison Wesley, 2003.
- *Computer networks* by A. Tanenbaum, 4th edition, 2003

- *High-Speed Networks and Internets*, W. Stallings, 2nd edition, 2002
- *Voice over IP Fundamentals*, Cisco Press
- *Internet Architectures* by Daniel Minoli and Andrew Schmidt, John Wiley, 1998/
- *Internet Application Workbook* by Eve Andersson, Philip Greenspun, and Andrew Grumet. Available on-line from: <http://philip.greenspun.com/internet-application-workbook/>
- *Building Web Services with Java: Making Sense of XML, SOAP, WSDL, and UDDI* by Steve Graham, Doug Davis, Simeon Simeonov, Toufic Boubez, and Ryo Neyama, Pearson Education, December 2001.
- ACM Transactions on Internet Technologies

Grading:

- Homework 15%
- Quizzes 10% (**EVERY other Monday**)
- Major Exam I (Thursday March 22, Morning) 15%
- Major Exam II (Thursday May 10th, Morning) 15%
- Project 20%
- Final Exam 25%

General policy

1. *Check your exam schedule carefully. NO MAKE-UP EXAM will be given.*
2. *NO LATE HOMEWORK will be accepted.*
3. Minimum penalty for cheating is 0 for the homework/project/exam where it occurs.
4. Exceeding **6 absences** without official excuse means DN grade automatically
5. No WP grade will be given for poorly performing students
6. *You are responsible for all the materials covered in the class. So, it is your responsibility to find out what has been covered in those unattended classes.*

Proposed Outline (Subject to Change)

Date	Topic	Reading	Comments
Week 1	Overview, goals, logistics Internet architecture, layering, end-to-end arguments	handout	
Week 2	HTML, XHTML Dynamic Web Document Technologies (CGI, ASP, JSP, PHP)	<i>Tanenbaum: Ch 7</i>	
Week 3	Active Web Document Technologies (Java, JavaScript) Wireless and Mobile Internet	<i>Tanenbaum: Ch 7</i>	
Week 4	Multimedia Networking	Kurose: Ch 6	
Week 5	Continue Exam I-Thursday March 22, Morning		
Week 6			
Week 7			
Week 8	Multicast Routing	Kurose: Ch 4	
Week 9	Network Security	Kurose: Ch 7	
Week 10	Continue		
Week 11	Continue		
Week 12	Continue Exam II-Thursday May 10, Morning		
Week 13	Next Generation Internet Architecture	handout	
Week 14	Project presentation		
Week 15	Project presentation		