CS 320 – Internetworking

Weisberg Division of Engineering and Computer Science
College of Information Technology & Engineering
Marshall University

Semester and Year:

Fall, 2011

Classroom Sections, Locations, and Meeting Times:

Section: 101 CRN: 1968 Days: TR Time: 12:30 – 1:45 Location: GH206A

Textbook:

Peterson and Davie, *Computer Networks: A Systems Approach, 5th Ed*, Morgan-Kaufmann, ISBN 978-0123850591

Course Description:

Principles and issues in interconnecting multiple physical networks into a coordinated system, operation of Internet protocols in the interconnected environment, and design of applications to operate in this environment.

Pre-requisites:

CS 210 – Algorithm Analysis and Design
MTH 229 – Calculus with Analytic Geometry I

Instructor:

Jonathan F. Thompson
Office Location: Gullickson Hall Room 205C
Office Hours: MWF 9:00 – 10:00 and TR 2:00 – 3:30 (or by appointment)
Phone: (304) 696-6349
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Student Learning Outcomes (Objectives):

At the completion of this course the student will be able to:

1. Explain the structure of the OSI reference model and its significance
2. Describe architectures for internetworking and their implementation issues.
3. Demonstrate the role of TCP as a transport layer and its implementation.
4. Demonstrate the role of UDP as a transport layer and its implementation.
5. Given the computing environment of an organization, perform network design including address assignment.
6. Demonstrate how networking tools are used for measuring network traffic and application monitoring.
7. Demonstrate knowledge of developing Internet-based applications using the TCP/IP framework.

Course Resources:

Reading assignments, lecture slides, lab exercises, homework assignments, announcements, and quizzes are all available on MUOnline. The detailed schedule of topics and a complete calendar of events for the course are also available. Students are strongly encouraged to visit the site often to check for updates.

Each student has a personal folder for course assignment submissions in the `\\CITEcs\CS320` file share.

Course Activities:

Reading Assignments

You are expected to review the sections of the textbook that compose the in-class topics before the class in which they are covered.

In-class Quizzes

There will be approximately twelve quizzes during the semester. Each quiz will take about five minutes and will be given at the beginning of class.

Programming Assignments

There will be several programming assignments to demonstrate the implementation of the theoretical material presented in the text. You are expected to complete the assignments outside of class and submit them on or before the due date.

Homework Assignments

There will be approximately twelve homework assignments during the semester that emphasize the quantitative aspects of internetworking.

Lab Assignments

There will be five lab assignments designed to give you hands-on experience using networking equipment. These labs are to be completed outside of class using the two networking workstations in GH206A. Check the Gullickson Hall Room 206A room schedule to determine when the lab is open during non-class hours. We will use a sign-up list so you and your lab partner can reserve the equipment in advance.

Exams

There will be a mid-term and a final exam.

Class Attendance, Participation, and Decorum

Students are expected to attend all class sessions and participate in class activities. Students are also expected to maintain a certain level of decorum that includes turning off (or silencing) cell phones, arriving to class on time, not sleeping during class, and keeping side conversations to a minimum.

Evaluation/Grade Computation:

Your final grade is computed by multiplying each Student Activity score by the weighted percentage and summing all of the weighted percentage values.

Student Activity	Score	Weighted %	Value
In-class quizzes		x 0.10	
Programming Assignments		x 0.15	
Homework Assignments		x 0.15	
Lab Assignments		x 0.15	
Midterm		x 0.15	
Final Exam		x 0.20	
Class Attendance, Participation, and Decorum		x 0.10	
		Grand Total =	

Evaluation Scale				
90 & Above =A	80 - 89 = B	70 - 79 = C	60 - 69 = D	59 & Below = F

Course Schedule of Topics

This is the tentative list of topics and due dates. This will be adjusted as the semester progresses: please see the course entry on MUOnline for the current schedule of course topics and activities.

Date	Day	Topic	Reading	Items Due
23-Aug	T	Course Intro	1.2, 1.3	
25-Aug	R	Performance	1.5	
30-Aug	T	Implementing Network Software	1.4	
01-Sep	R	Hardware, Encoding, and Framing	2.1 - 2.3	HW 1
06-Sep	T	Error Detection	2.4	Quiz 1
08-Sep	R	Reliable Transmission	2.5	HW 2
13-Sep	T	HW 2 Solutions		Quiz 2, Pgm 1
15-Sep	R	Ethernet	2.6	HW 3, ILab 1
20-Sep	T	HW 3 Solutions, Pgm 1 Solution		
22-Sep	R	Wireless	2.8	
27-Sep	T	Switching and Forwarding	3.1 - 3.2	HW 4
29-Sep	R	HW 4 solutions		
04-Oct	T	Implementation/Performance	3.4	Quiz 3, HW5
06-Oct	R	HW 5 Solutions		Pgm 2
11-Oct	T	Simple Internetworking I	4.1	Quiz 4, ILab 2
13-Oct	R	Mid-term Exam (Chapters 1, 2, and 3)		
18-Oct	T	Simple Internetworking II	4.1	
20-Oct	R	Routing I	4.2	
25-Oct	T	Routing II	4.2	Quiz 5
27-Oct	R	Subnetting	4.3.1 - 4.3.2	Pgm 3, HW 6
01-Nov	T	Interdomain Routing, IPv6, and HTTP	4.3.3 - 4.3.5, 9.1.2	Quiz 6
03-Nov	R	End-to-End Protocols	5.1 - 5.2	HW 7
08-Nov	T	Remote Procedure Call	5.3	Quiz 7
10-Nov	R	Congestion Control	6.1 - 6.4	HW 8
15-Nov	T	End-to-End Data	7.*	Quiz 8
17-Nov	R	Domain Name System	9.1.3	Quiz 9
29-Nov	T	Data Compression and Applications		ILab 3
01-Dec	R	Applications, continued		Quiz 10, HW 9
06-Dec	T	Last Class		Pgm 4
13-Dec	T	Final Exam		

Exam Attendance

Students are required to take exams at the scheduled class period. Students may take an exam at a different time under one of the following conditions:

- They present a University Excused Absence
- They present a valid medical excuse
- Other extraordinary circumstance as determined by the instructor

Academic Conduct:

Working through the homework problems, the programming assignments, and the lab exercises are key factors in assuring your command of the course material. To encourage completion of these assignments, a significant portion of the final grade (45%) will be based on your performance in these exercises.

You are allowed and encouraged to work with other students on the completion of these assignments, subject to the following constraints:

- copying someone else's work and submitting it as your own is plagiarism and will not be tolerated
- you may work with others to develop a solution to a problem but the material you submit must be your own work and you must acknowledge your collaborators
- unless designated as a team exercise, you may not sub-divide the tasks of an assignment; each student is expected to complete the whole assignment

It is your responsibility to satisfy the spirit of this conduct. If you have any questions, please ask the instructor for clarification. Depending on the severity of the offense, the instructor may:

- Take no action
- Penalize the student on the assignment in question
- Assign the student a failing grade in the course

Bibliography:

Tannenbaum, Andrew, *Computer Networks, 4th Ed*. Prentice Hall, Upper Saddle River, NJ 07458

Kurose and Ross, *Computer Networking: A Top-Down Approach, 4th Ed*, Addison-Wesley, ISBN 978-0-321-49770-8

Internet Web Sites:

Course Materials	www.mkp.com/pd4e
Java software and documentation	java.sun.com

Affirmative Action Policy:

This course will follow Marshall University's policy on Affirmative Action, which can be found on p. 64 of the 2011-2012 undergraduate catalog. Specifically, all students will be afforded equal opportunity without regard to race, color, sex, religion, age, disability, national origin, or sexual orientation.

Inclement Weather Policy

Students can find information concerning Marshall's policy regarding inclement weather on p. 65 of the 2011-2012 undergraduate catalog.

Policy for Students with Disabilities:

Marshall University is committed to equal opportunity in education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disabled Student Services (DSS) in Prichard Hall Room 117, phone 304 696-2271 to provide documentation of their disability. Following this, the DSS Coordinator will send a letter to each of the student's instructors outlining the academic accommodation they will need to ensure equality in classroom experiences, outside assignment, testing and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, please visit http://www.marshall.edu/disabled or contact Disabled Student Services Office at Prichard Hall Room 117, phone 304-696-2271.

University Computing Services Acceptable Use Policy:

Students are expected to read, understand, and follow the Acceptable Use Policy which can be found at http://www.marshall.edu/ucs/CS/accptuse.asp.