CS410: Networks and Networking

Course Objective

The purpose of this course is to provide a good foundation for further studies of computer networks. We will investigate the important protocols and architectures deployed in the Internet and to give you first-hand, practical experience in issues concerning the application of those protocols in real-world scenarios. We will focus on the Internet protocol stack, including TCP/IP and common application layer protocols, investigate issues such as reliable data transfer, congestion, traffic management, and latency in modern networks, and learn simple network programming techniques using sockets in Java and C/C++. The learning approach in this class will utilize classroom lectures, supported by frequent quizzes and two major exams, and home works and programming projects.

Not a study of the OSI model, or older technologies and protocols.

Not a certification course for Network Specialists.

Not a study of network hardware or data communications equipment

Instructor: Beenish Chaudry (bchaudhry@cs.earlham.edu)

Class Web Site: http://cs.earlham.edu/~bchaudhry/teaching/cs410.html

Required Text: *Computer Networking - A Top-Down Approach Featuring the Internet*, 5th edition, Kurose-Ross (ISBN: 0-321-22735-2)

Reference Texts: (interesting supplements, but not required): *Computer Networks*, 5th Edition, Tanenbaum (0-13-066102-3)

Network Security Essentials – Applications and Standards, 3rd Edition, Stallings (0-13-035128-8)

Learning Outcomes:

At the end of the course a student will:

- Ability to apply knowledge of mathematics, probability, and statistics to model and analyze some networking protocols.
- Ability to design, implement and analyze simple computer networks.
- Ability to identify, formulate and solve network engineering problems.
- Knowledge of contemporary issues in computer networks.
- Ability to use techniques, skills, and modern networking tools necessary for engineering practice

Policies

Attendance may be taken at any time. Will be recorded in the first few weeks of the semester

Make-Up Policy

Homework, Programs/Projects: 10%/day, max of 40%, then zero

Quizzes and Exams: NO make-ups. NO early quizzes/exams, Absence = zero grade.

Grading Policy

Total Homework Assignments: 5-10

Homework: 50%

Midterm: 10%

Quizzes: 15%

Final: 25%

Final Grade Assignment (guideline only)

Based on final numeric score out of 100% possible:

A 100-90

B 89- 80

C 79-70

D 69-60

F 59 & below

Probable final grade curve based on class performance

Academic Honesty Policy

Discussions, brainstorming are encouraged however homework, programming assignments, quizzes etc. are to be solely YOUR individual work. See the Earlham Academic Honesty Policy. Dishonesty will be penalized.

Contesting Grades

Individual grades or questions on grading of individual quizzes, exams, etc. are discussed only in my office (i.e. NOT at the end of the class period or via email)

Schedule (Tentative)

Overview (Ch. 1)	Weeks 1-2
Application Layer and Socket Programming (Ch. 2 and Supplements)	Weeks 3-6
Transport Layer (Ch. 3) (Midterm about week 8)	Weeks 7-8
Network Layer (Ch. 4)	Weeks 9-11
Link Layer (Ch. 5)	Weeks 12–14
Wireless (Ch. 6) or Security (Ch. 8)	Weeks 15

Disabilities:

Please let me know as early in the semester as possible if there are any adaptations or accommodations you require.

The Earlham policy is:

> Any student with a documented disability (e.g., physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact Academic Support Services and the instructor at the beginning of each semester. Accommodation arrangements must be made during the first-two weeks of the semester.