CS 640 Introduction to Computer Networks **Spring 2004**
http://www.cs.wisc.edu/∼suman/courses/640/s04

Course Description

Handed out: January 20, 2004

Overview

This course will cover the basic principles of networking with a focus on protocols, implementations, and issues specific to the Internet. We will study how routing, transport, and various internetworking protocols work using a number of examples. We will selectively implement new protocols and network services; as such, this course will have a substantial programming component.

General Information

Class Time: Tuesday and Thursday 12:30-1:45pm, at CSS 1325.

Final Exam: May 9, 2004, Sunday at 10:05am.

Instructor: Suman Banerjee. Email `suman@cs.wisc.edu`. Office: CSS 7391.
Office Hours: Tue 4-5pm, Thu 2:30-3:30pm (subject to change, please check webpage).

Teaching Assistant: Sriya Santhanam. Email `sriya@cs.wisc.edu`. Office: CSS 3310.
Office Hours: M W 9:50-10:50am

(Please include the text "CS640" in the Subject line when you send an email.)

Texts: There is a required and a recommended text for this course. Additionally I have listed two other books as useful references. Each week I will specify relevant sections of the required text which I will cover in class.

- **Required:** Computer Networks: A Systems Approach (3rd Edition) by Larry Peterson and Bruce Davie. Morgan Kaufmann, 2003. ISBN: 1-55860-832-X.
- **Recommended:** TCP/IP Sockets in C: Practical Guide for Programmers by Michael Donahoo and Kenneth Calvert. Morgan Kaufmann, 2003. ISBN: 1-55860-826-5.
- **References:**

  Computer Networking: A Top-Down Approach Featuring the Internet by Jim Kurose and Keith Ross, Addison-Wesley. ISBN: 0-201-61274-7.

  TCP/IP Illustrated, Volume 1 by W. Richard Stevens. Addison-Wesley. ISBN: 0-201-63346-9.

Course Work

Syllabus: The following is the broad set of topics that will be covered in this course (roughly in the specified order):

1. Networking basics and protocol layering.
2. Routing — Distance Vector, Link State, etc., IP service model, Internet addressing.

3. Transport — UDP and TCP.
4. Network services and applications — DNS, HTTP, SMTP, MIME, FTP, etc.
5. Physical and Link layer — Framing, Checksms, Aloha, Ethernet, Token Ring, Wireless LANs, etc.
6. Advanced topics — Overlays and P2P, Node mobility, Security, NATs and Firewalls.

Grading: The course will have a midterm and a comprehensive final exam. Apart from that, there will be homeworks, programming assignments, and a significant programming project (in groups of two or three). The grading criteria for this course will be as follows:

- Comprehensive final exam - 25%.
- Midterm exam - 15%.
- Project - 25%.
- Programming Assignments (2) - 20%.
- Homeworks (around 4) - 12%.
- Class participation - 3%.

The class participation component is to encourage you to voice your opinions, raise questions, and actively involve in discussions in the class and in the mailing list.

Mailing List: The class mailing list is cs640-1list@cs.wisc.edu. It should be used for all course related discussions, e.g. assignments, projects, exams, or any topic related to networking. If you have questions about assignments, projects, etc. please post them to the mailing list before writing emails to the TA or the instructor.

Prerequisites: CS 537 or consent of instructor.

Collaboration and Academic Honesty: You may *discuss* homework and programming assignment problems for general solution strategies with your classmates. But the formulation and exposition of the solutions *must* entirely be your own.