

## COMPUTER SCIENCE 325 NETWORK PROGRAMMING

### I. Introduction

#### A. Catalog Description

This course is an introduction to computer networks. Topics to be covered include the Java programming language, TCP/IP, the implementation of common network programs such as Mail, FTP, Web Browsers and Servers, and client/server programs. Students will write programs in Java or C++. *Prerequisite: CSCI 261, one Computer Science course beyond CSCI261, or permission of instructor.* Offered every other year; offered Fall 2001.

#### B. Objective

1. Students will learn how to use the Java programming language;
2. Students will learn how to write network programs in other high level languages such as C++;
3. Students will develop an understanding of how the Internet works.
4. Students will learn how TCP/IP works.
5. Students will learn how Internet programs such as Mail, Web Browsers, and Web Robots work.
6. Students will learn how to write network client/server programs.

#### C. Prerequisites

Computer Science 261, one CS beyond CSCI 261, or permission of instructor.

### II. Required Topics

1. Introduction to Java
  - 1.1. Packages and Interfaces
  - 1.2. Exceptions
  - 1.3. Threads
  - 1.4. The Event Model
  - 1.5. Applets
  - 1.6. The Abstract Window Toolkit (AWT)
2. Basic Network Concepts
  - 2.1. IP, TCP, and UDP
3. Basic Web Concepts
  - 3.1. URLs, HTML, HTTP, MIME, CGI
4. Processing Internet Addresses
  - 4.1. DNS, and IP addresses
5. Retrieving Data with URLs
  - 5.1. The URL Class
6. Network Methods in Java
7. Sockets for Clients
8. Sockets for Servers
9. UDP Datagrams and Sockets
10. Telnet, FTP, SMTP, POP
11. Network programming in C++

### III. Bibliography

*Internetworking With TCP/IP, Volume I Principles, Protocols, and Architecture*, Douglas E. Comer

*Internetworking With TCP/IP, Volume II Design, Implementation, and Internals*, Douglas E. Comer

*The Internet Book*, Douglas E. Comer

*Introduction to Data Communications and Networking*, Behrouz and Forouzan

*Java in a Nutshell 2<sup>nd</sup> Edition*, David Flanagan

*Java Examples* David Flanagan