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 write programs in Java or C++. *Prerequisites: CSCI 261 and one Computer Science course beyond CSCI 261, or permission of instructor.* Offered Fall term only.

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

II. Required Topics (cont.)

    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 2nd Edition, David Flanagan

Java Examples, David Flanagan

A Practical Introduction to Data Structures and Algorithm Analysis, Java Edition, Clifford A. Shaffer.