

COURSE DESCRIPTION

Department and Course Number: COMP 6320

Course Title: Design and Analysis of Computer Networks

Total Credits: 3

Required: No

Prerequisites: COMP 4320

Class meetings per week: 3 hours

Lab meetings per week: 0 hours

Course Coordinator: Dr. Alvin Lim

Date Prepared: February 17, 2004

Current Catalog Description:

Computer network design, including multiplexing, switching, routing, internetworking, transport protocols, congestion control, and performance evaluation.

Textbooks:

Tanenbaum, Andrew S. 2003. *Computer Networks, 4th Edition*. Prentice Hall. ISBN 0-13-066102-3.

References:

Stevens, W. Richard. 1998. *UNIX Network Programming, Volume I, 2nd Edition*. Prentice Hall. ISBN 0-13-490012-X.

Course Objectives:

1. Gain deeper and more detailed understanding of computer networking topics covered in COMP 4320.
2. Be able to apply network performance analysis techniques.
3. Gain understanding of switching, packet scheduling, and queue management.

Prerequisites by Topic:

1. Familiarity with computer communication networks, and particularly the TCP/IP framework
2. Familiarity with programming in C or C++

Topics Covered: (specify number of hours on each)

1. Introduction to computer network design and analysis (1 hour)
2. Error control (9 hours)
3. Medium access control (9 hours)
4. Routing (6 hours)
5. Switching (4 hours)
6. Packet scheduling (4 hours)
7. Queue management (4 hours)
8. Congestion control (6 hours)
9. Exams (2 hours)

Laboratory Projects: (specify number of weeks on each)

1. Internet Technology Project – network address translation, load balancing, DHCP client, DNS client (12 weeks)

Oral and Written Communications:

All students are required to write a term paper and make an oral presentation on a topic related to the design and analysis of computer networks.

Social and Ethical Issues:

None.

Theoretical Content:

Queuing theory is developed and applied in the course.

Problem Analysis and Solution Design:

All students apply fundamental software engineering practices to analyze, design, implement, test, and document solutions to a significant term project. Students apply the analysis and design skills already acquired to the development of software components and subsystems for computer networks. Each component and subsystem has stated requirements and students are responsible for applying a controlled, iterative process for developing software that meets those desired needs.