

COURSE SYLLABUS

Course Prefix/Number: CEN6520

Course Title: Advanced Computer Networks

Course Credit Hours: 3

Instructor Name and Contact Information:

Dr. Sharon Simmons	SSimmons@cs.uwf.edu
Building 79, Room 193	Phone: 473-7349 Fax: 857-6056
Computer Science Department	Department: 474-2542

Prerequisites or Co-Requisites:

CEN4516 Computer Networks
STA2023 *or* STA4321 Elements of Statistics *or* Introduction to Mathematical Statistics I
MAC2233 *or* MAC231 Calculus with Business Applications *or* Analytic Geometry and Calculus I

Course Description:

Builds on topics introduced in the undergraduate computer networks course and investigates more advanced concepts. Topics to be addressed includes LANs, Protocols, TCP/IP Suite and Data Networks. Overview of probability and stochastic processes, queuing analysis and self-similar traffic, high speed LANs, link level flow and error control, transport level traffic control, traffic management and congestion, routing and switching. Wireless and mobile communications, network security and gigabit ethernet.

Student Learning Outcomes:

Student who successfully complete this course will be able to:

- Write programs using the TCP/IP Suite of protocols
- Differentiate between IPV4 and IPV6
- Create interrupt-driven programs using sockets, multithreading, and multiprocessing
- Explain how the differences between high speed network protocols and traditional protocols aim at meeting the demands of high speed applications
- Use queueing theory to design and model a network
- Explain network protocols for routing, flow control and congestion control
- Describe the changes needed for real-time applications and quality of service demands

Topics Covered:

Ch1-3	Introduction to TCP/IP	Ch11	Link-Level Flow and Error Control
Apdx B	Socket Programming	Ch12	TCP Traffic Control
Ch4	Frame Relay	Ch13	ATM Traffic & Congestion Control

Ch5	Asynchronous Transfer Mode	Ch14	Graph Theory & Least-Cost Paths
Ch6	High-Speed LANs	Ch15	Interior Routing Protocols
Ch7	Probability, Stochastic Processes	Ch16	Exterior Routing Protocols
Ch8	Queuing Analysis	Ch17	Quality of Service
Ch9	Self-Similar Traffic	Ch18	Protocols for Quality of Service
Ch10	Congestion Control	Supp	Network Security

Texts:

Required texts:

High-Speed Networks and Internets, 2nd ed.
 William Stallings
 Prentice Hall
 ISBN: 0-13-032221-0

Recommended texts:

The C Programming Language, ANSI Edition, 2nd ed.
 B. Kernighan, D. Ritchie
 Pearson Education
 ISBN: 0131103628

Designing ATM Switching Networks, M. Guizani, McGraw-Hill, 1999.
 Computer Networks and Internets, 2nd edition, D. Comer, Prentice Hall, 1999.
 TCP/IP Illustrated, Vol. I, D. Stevens, Addison-Wesley, 1994.
 Internetworking with TCP/IP, Vol. I, D. Comer, Prentice-Hall, 1991.
 Data and Computer Communications, 5th edition, W. Stallings, Prentice-Hall, 1991.

Grading/Evaluation:

30% Midterm
 25% Comprehensive Final
 35% 5-7 Projects
 10% Literature Reviews and Papers

Special Technology Utilized by Students:

Programs will be written using the Sun Microsystems computers in the Computer Science laboratory. These computers use the Solaris operating system which is a version of Unix.

Expectations for Academic Conduct/Plagiarism Policy:

Academic Conduct Policy:

Academic conduct problems will be referred to the Department Chair for disciplinary action as described by the Student Handbook.

Plagiarism Policy:

You are responsible for keeping your work secure and not allowing others to copy it. Plagiarism will result in a minimum of a 0 grade for the assignment. Please see the University's Plagiarism Policy for examples of work constituting plagiarism.

<http://uwf.edu/StudentAffairs/division/publications/PlagBroch.pdf>

Student Handbook:

Please refer to the on-line version of the UWF Student Handbook.

<http://www.uwf.edu/uwfmain/stuHandbk/>

Printed copies are available through the University.

ASSISTANCE:

Students with special needs who require specific examination-related or other course-related accommodations should contact Barbara Fitzpatrick, Director of Disabled Student Services (DDS), dss@uwf.edu, (850) 474-2387. DSS will provide the student with a letter for the instructor that will specify any recommended accommodations.