SU DEPARTMENT OF COMPUTER SCIENCE
SYLLABUS (Tentative)
COSC 370 *Computer Networks*

Description: Theory and practice of data communication between computing devices. Network architectures, wide-and local-area networks, ISO network layers. Emphasis is on the underlying theory and how network design affects network performance. Encoding systems, routing control, transport protocols. Programming for networks, including socket programming and remote procedure calls. Substantial programming assignments related to theoretical issues as well as written reports and summaries. Three hours lecture per week.

Prerequisites: Discrete Mathematics (MATH 210), and Data Structures & Algorithm Analysis (COSC 220) with a grade of C or better.

Required Text: "Computer Networking: A Top-Down Approach Featuring the Internet," by Kurose and Ross; Addison Wesley, 7th edition.

Recommended "Computer Networks," by Andrew Tanenbaum; Prentice-Hall, 4th edition, 2002.
Texts: "Internetworking with TCP/IP, Vol. I, II, and III," by Douglas Comer; Prentice-Hall. "Computer Networks: A Systems Approach," by Peterson and Davie; Morgan Kaufmann Publishers, Fourth Edition, 2007.

Topics	*Weeks*
Overview of Networks	1.5

Network hardware and software, protocols and services and their relationship. Overview of OSI transport layers. History of computer networking and the Internet.

Aspects of the Physical Layer	1.0

Basic signal analysis, maximum data rates in channels. Network media such as twisted-pair, coaxial cable, microwave, and optical and wireless.

Aspects of the Link Layer	1.0

The data link layer and its services. Error detection and correction techniques. Ethernet, ATM, and Frame Relay.

Aspects of the Network Layer	3.0

Network layer design issues, connectionless and connection-oriented services, routing algorithms, congestion-control algorithms, internetworking.

Aspects of the Transport Layer	3.0

Transport protocols, UDP, TCP. Performance issues, measuring network performance, relationship of design to performance, protocols for very high-speed networks.

Aspects of the Application Layer and Network Programming	2.5

Principles of application layer protocols. Programming techniques and models for networks. Socket programming, remote procedure calls.

Testing and Optional Topics	2.0

Wireless network. Multimedia, Network security.

EVALUATION
Homework, Programs, and Projects 50%
Tests and Final Exam 50%