

**MSI 416 (Call # 4676)
Communications, Networking and Security
University at Albany, SUNY
Spring 2004**

Instructor Information

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Office Hours: (Goel) M 12:30-2:00 or by appointment / (Crnkovic) M 10-11:30 & TH 1-2
Office Location: (Goel) BA 310b / (Crnkovic) BA 332

Class Information

Time: MW 8:15-10:00
Venue: BA 233
Dates: Jan 21- April 14
Available Labs: Undergraduate Lab

Course Overview

This course covers the basic technologies required for communication on the networks, including the Internet. The course covers fundamentals of signal transmission, transmission hardware and concepts such as error control and multiplexing. The course also covers Network Topologies, the OSI model, and the TCP/IP protocol suite. We will also discuss the vulnerabilities of the network and techniques for protecting data and networks. Cryptography and Public Key Infrastructure, which are currently used for secure data transmission over the web, will also be discussed. Also discussed in the class are issues of ethics and privacy in the use of computer networks.

Learning Objectives

1. Students learn the hardware and protocols involved in transmission of data over networks
2. Students learn the various networking architectures and their applications
3. Students learn the use of cryptographic techniques used for secure communication on networks
4. Students learn to analyze the threats, vulnerabilities and solutions for information system security
5. Students gain hands-on experience in auditing & testing the security of computer networks
6. Students develop critical thinking skills via debates on the ethics and legal issues in electronic data access

Books & Software

Text Book: Data Communications and Computer Networking by Curt M. White
Reference Book: Security In Computing (Third Edition) by Charles P. Pfleeger & Shari Lawrence Pfleeger
Reference Book: Hackers Beware by Eric Cole

Grading

Assignments and Paper: 40%
Exams: 60%

Course Schedule

Week	Date	Topics	Instructor	Readings
1	1/21	Introduction / The Big Picture of Networks	Crnkovic	1
2	1/26	Fund. of Data & Signals / Hardware & Media Types		2/3
	1/28	Connections		4
3	2/2	Multiplexing / Error Detection & Control		5,6
	2/4	LAN		7
4	2/9	LAN		8,9
	2/11	Telecom. Systems (Exam i)		12
5	2/18	Metropolitan and Wide Area Networks		10
6	2/23	Network Design and Management, cont.		14
	2/25	Network Design and Management, Cont		14
7	3/1	Internet		11
	3/3	Internet		11
8	3/8	e-commerce/m-commerce		Notes
	3/10	Emerging Network Architectures (Exam 2)		Notes
9	3/15	Networking		
	3/17	Introduction to Security		
7	3/22	Hacker Attacks	Goel	
	3/24	Security Lab (Password Auditing)		
8	3/29	Security Lab (Network Penetration)		
	3/31	Cryptography - Symmetric & Asymmetric / Exam		
9	4/14	XML & Web Services		