IIST 423 Networking Essentials
College of Computing and Information
University at Albany

Spring 2006
Mondays and Wednesday 2:45pm – 4:05 pm
LC 021
Instructor: Sherly Abraham

Course Description:
This course is designed to convey the essentials of data communication networks. It will cover concepts, technologies and architectures. There will be practical lessons built into the semester's topics and assignments whenever possible. A single course cannot cover all possible networking topics and issues, so we will cover the major conceptual areas balanced with practical discussions and exercises. We will also discuss important network management topics such as domain management and security.

Learning Objectives:
_ To understand the fundamental concepts of communication and data networks.
_ To gain the necessary knowledge and skills to work effectively with network engineers and administrators.
_ To learn how to research and communicate network and related IT issues by reading relevant industry publications.
_ To understand the basic technologies and steps required for setting up and managing a small Local Area Network.

Major Areas Covered
Fundamentals of Networking Technologies
OSI Model
Physical Layer
Data Link Layer
Local Area Networks
Wireless Local Area Networks
Network, Transport Layers TCP/IP
Backbone Networks
Wide Area Networks
Application Layer
The Internet
Network Design
Network Management and Network Troubleshooting
Network Security
Voice over IP

Required Text:
Business Data Communications and Networking, By Fitzgerald and Dennis, John
Wiley & Sons, 2005 (ISBN: 0-471-34807-4). This is available at the University Bookstore. In addition, there will be selected articles distributed via the web site.

Assessment:
All readings and assignments must be completed by the beginning of the date that it is due. See the Course Schedule for details on assignment due dates, lecture topics and readings. The learning objectives of this course will be assessed through a mix of short, individual homework assignments on topics covered in the readings and lectures, a Team Project, and three exams. Weight distributions are as follows:

Team Project: 30% broken down as follows:
Final Report – 15%
Final Presentation – 10%
Creativity – 5%
Homework: 20%
Class Participation: 5%
Exams: 45%
20% for Test 1 and Test 2
There will be two tests and the best score of the two tests will be selected. Students are required to take both the tests.
25% for Final Exam

Team Project:
Teams will research and report on a networking related topic. The project is broken down into two major parts.
Part 1 – Selection of Team, Topic, Creativity and Annotated Outline
Selection of Team:
Teams should be formed on the first day of class and the names of all team members emailed to the instructor by Wednesday, January 25, 2006 (See schedule). Teams must be comprised of no more than 5 members (max). One member should be designated a "team leader." Communications about the Team Project with the instructor should be through the team leader only (unless there is an individual concern or question that must be addressed individually). The team leader should email me by the above date with the names of the team members.

Selection of Topic:
All topics must be approved by the instructor. As such, teams (the entire team) must meet with the instructor to discuss and come up with a topic. I strongly recommend meeting with me before the Winter Break. All meetings must be by appointment (see Faculty Contact Information). The designated team leader should coordinate with me when and where we will meet.

Final Team Presentation and Report
Each group will present their topic in a written report and a 35 - 40 minute presentation to the class. Reports should be 20 – 25 double spaced pages (not including cover and references). Detailed specifications for the written report document will be provided to team leaders and will also be posted on the course website. In addition to the written report, the following must be handed in **on the day of the presentation**:
_ Handouts should be prepared for and distributed to the entire class.
_ The slides and written report must be provided to the instructor (hard copy and emailed).
_ Notes for the presentation should be provided to the instructor (hard copy)
_ A list describing what each team member contributed to the project.

Possible Team Project Topics (many other topics are also possible)
Directory Services
WSDL
SOAP
XSLT
Proxy
XML Protocol WG
Semantic Web
MPLS
LDAP
SIP
ATM
ADSL
SDSL

CDPC
Secure HTTP (SSL)
SMNP
SMS or SIDF
APPN
CDC
PGP
802.7
802.8
802.9
802.10
Frame Relay
SONET
OC series
VoIP
Wireless Security
IPv6

Homework Assignments:
There will be six individual homework assignments based on the readings; class lectures and team presented topics (see Schedule). Homework should be handed in to the instructor on the due date (hard copy). **Late assignments will not be accepted.**

Class Participation:
This will constitute class attendance and students are encouraged to ask questions and contribute to class discussions.

Exams:
There will be two class tests and one final exam

Faculty Contact Information:
Office Hours: **By appointment only**
Sherly Abraham : 518-437-3812; e-mail: sabraham@uamail.albany.edu

Course Policies:
Students are expected to arrive on time, and stay for the duration of each class. **There will be absolutely no make up exams except for a compelling reason**. The last classes are for Team Project Presentations **for which attendance is mandatory.** Attendance is mandatory for any guest lecture appearances. If you must miss any class, you must talk to the instructor about the problem and resolve how you would make up for that absence. **The use of cell phones in class is prohibited** since it affects the learning of the other students hint: shut off your cell phones before entering the classroom). Class participation is critical to get the best value from the lectures, and will be used to upgrade or downgrade performances at the margin. Students are expected to be familiar with the University's "Community Rights and Responsibilities" document (www.albany.edu/judicial_affairs/standardsofconduct.html) and to conduct themselves accordingly.

Class Schedule

Class	Day	Date	Topic	Readings	Materials Due
1	M	1/23/2006	Intro to Course, Networking and Technology Basics		
2	W	1/25/2006	Networking and Technology Basics	Chapter 1	Email: Team member list, background info
3	M	1/30/2006	The Physical Layer	Chapter 3	
4	W	2/1/2006	The Physical Layer		
5	M	2/6/2006	The Local Area Network, Setting up a LAN	Chapter 6	
6	W	2/8/2006	The Local Area Network		Assignment 1
7	M	2/13/2006	Wireless Local Area Networks	Chapter 7	
8	W	2/15/2006	Wireless Local Area Networks		Assignment 2
	M	2/20/2006	NO Class Winter Break		
	W	2/22/2006	NO Class Winter Break		
9	M	2/27/2006	Data Link Layer/Review	Chapter 4	
10	W	3/1/2006	Test 1		Chapter 1, 3,6,7
11	M	3/6/2006	Network, Transport Layers, TCP/IP	Chapter 5	
12	W	3/8/2006	Network and Transport Layers, TCP/IP		Assignment 3
13	M	3/13/2006	Backbone Networks	Chapters 8, 9	Project - Annotated Outline
14	W	3/15/2006	Wide Area Networks		
15	M	3/20/2006	Application Layer	Chapter 2	
16	W	3/22/2006	The Internet	Chapter 10	Assignment 4
17	M	3/27/2006	Network Design	Chapter 12	
18	W	3/29/2006	Network Design		Assignment 5
19	M	4/3/2006	Managing a Network, Troubleshooting Network Problems	Chapter 13	
20	W	4/5/2006	Utilities for Network Management:		Assignment 6
	M	4/10/2006	NO Class Spring Break		
	W	4/12/2006	NO Class Spring Break		
21	M	4/17/2006	Field Trip/Demos	TBA	
22	W	4/19/2006	Test 2		Chapter 4,5,8,9,10,12
23	M	4/24/2006	Network Security	TBA	Chapter 11
24	W	4/26/2006	Network Security	TBA	
25	M	5/1/2006	Presentations		Teams 1, 2: Final Team Report, Presentation Slides
26	W	5/3/2006	Presentations		Team 3,4: Final Team Report, Presentation Slides
27	M	5/8/2006	VOIP Introduction / Presentations		Team 5 Presentation
29	M	5/15/2006	Final Exam		