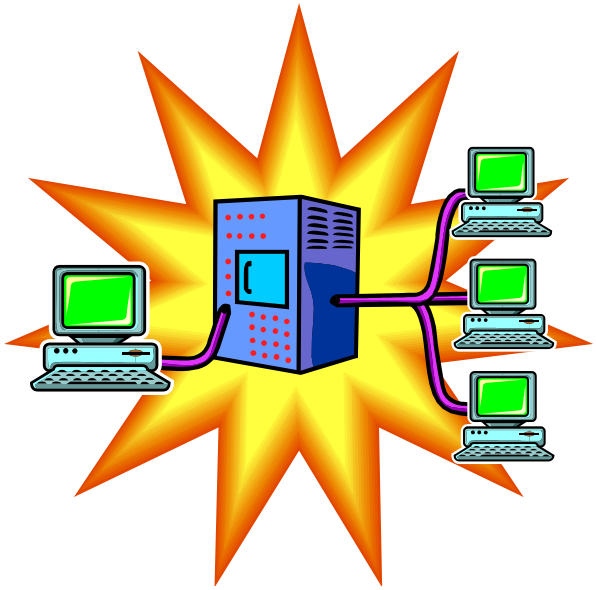
CISC 250:
Business Telecommunication Networks



Instructor	**Jinwei Cao**	Phone	302-831-1796
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Office Hours	T TH 1:45PM – 2:45PM or by appointment	Class Hours	T TH11:00AM-12:15PM or T TH 12:30PM-1:45PM

* Email is the best way to contact me to get a quick response. If you leave a voicemail message, your response will take much longer. I tend to monitor email all day. I tend to forget about voicemail.

Description:

Internet is one of the most interesting and exciting phenomena in this century. This course introduces basic technologies of data communication and provides analysis of Internet applications from a business perspective. It includes a detailed review of the communication environment, data communication and telecommunication equipment and local and wide area networks. Security issues are also considered.

Course Objective:

This is an **introductory** course and is targeted at advanced undergraduate who have little or no background in the subject. This course is designed to familiarize you with principles and concepts related to data communication, computer networks, and Internet. Moreover, the connection among technologies and business implications will be emphasized. You will be expected to master the terminology, basic applications, and an overall picture of business communication networks, but not the engineering details. At the end of the course, you will gain:

- A practical understanding of the technical concepts and principles used in the design and implementation of data communications systems.
- A practical business perspective on how data communications technology can provide organizations with a competitive advantage in the marketplace.

My Expectations of You:

You should understand that you will have a lot of opportunities to participate in discussions and practice with hands-on assignments, and you MUST participate in discussions and practice with hands-on assignments to really understand the class material. However, my goal is that you find this effort to be worthwhile in terms of the new knowledge that you gain from the class. Particularly, upon successfully completing this course, you can add the following skills and experiences to your resume with confidence:

1. Computer skills: familiar with Wireshark, a network analysis tool
2. Experiences:
    a. Examine and analyze networking protocols running on live networks
    b. Design computer networks based on real world business requirements

Recommended Text:

There is no required textbook for this class. I will assign free online readings to you before each class.

Required Software:

- Wireshark, a free network analysis tool which can be downloaded from http://www.wireshark.org/

Evaluation:

Class assignments will be a mixture of group and individual assignments as follows.

Assignment	**Ind./Group Assessment**	**Approx. Due Date**	**Weight**
Homework Assignments	Individual	Varies	12%
Cooperative Learning Exercises *	Group	Varies	8%
Exam 1 **	Individual	March	25%
Exam 2 **	Individual	May	25%
Lab Exercises ***	Individual	Varies	15%
Final Project ****	Individual/Group	May	10%
Class Participation	Individual	/	5%

* Cooperative Learning – There will be two cooperative learning sessions this semester. During these sessions you will be randomly assigned to small groups and be asked to solve a number of problems related to a specific topic. Each cooperative learning session counts for 4% of your grade.

** Exams – Unless prior notice is given, in-class exams will be closed-book and closed-note. Questions may be drawn from materials presented in lecture or from the assigned readings. Dates for exams are provided in the class schedule.

*** Lab Exercises – There will be three lab exercises in this course. All lab exercises are individual assignment and you are required to present in class for these assignment. Each lab exercise counts for 5% of your grade (within this 5%, 1% is for lab participation and 4% is for the final deliverables).

**** Final Project – Besides regular assignments, the course work includes a final project. You are allowed to work in groups of maximum **4** people for this final project. The detailed requirements of this project will be provided to you in a separate document.

Final grades will be determined by the following scale:

	A: 93 to 100	A-: 90 to less than 93
B+: 87 to less than 90	B: 83 to less than 87	B-: 80 to less than 83
C+: 77 to less than 80	C: 73 to less than 77	C-: 70 to less than 73
D+: 67 to less than 70	D: 63 to less than 67	D-: 60 to less than 63
	F: less than 60	

Assignment Policy:

- For Homework Assignments, Lab Exercises (deliverables) & Final Project:
  Late assignments will result in **30%** reduction **per day** late unless approved by the instructor prior to the due date. I don't accept assignments of three days or more than three days late.

- For Cooperative Learning Exercises, Exams, & Lab Exercises (lab participation):
  Since these assignments require your presence in class, no late assignments will be accepted. If you miss an exam, a make-up exam can be arranged, provided **both** of the following conditions are met:
  1. You can provide a valid medical excuse which must state that you were physically unable to take the exam, AND
  2. You contact me before one calendar day has passed the exam date. The contact may be via phone or email.

  Students who do not meet condition (1) but do contact me within one day of the exam will be allowed to make up the exam, but will be docked **15 percentage** points in fairness to the other members of the class. Students who do not meet either condition will receive a **zero** on the exam.

Given the dynamics of a class discussion or assignment, I may assign additional assignments in class. If you miss class, you are responsible for completing these assignments.

Class Participation:

Class work will count for **5%** of the grade points available for the term, and it will comprise both everyday participation and preparation (as assessed by the instructor). Class participation goes beyond simply attending class. You will receive credit for involved participation and sharing of ideas, problems, and misunderstandings in class – a standard that is different from attentive note-taking. Excessive absence may negatively affect the participation portion of your final grade.

Cheating and Plagiarism:

I encourage students to learn from each other, since working together on the material is an effective way to understand difficult material. Please keep in mind that "learning" is not "copying". Students who are in violation of the academic code of conduct will be approached according to the University of Delaware policy: (http://www.udel.edu/stuguide/15-16/code.html#honesty).

Course Schedule (tentative)**:** Subject to change during the semester.

Readings Listed in the Schedule

TCP/IP Guide – the free version of The TCP/IP Guide at http://www.tcpipguide.com/free/index.htm

Cisco – Cisco Internetworking Handbook at http://docwiki.cisco.com/wiki/Internetworking_Technology_Handbook

Date / Classroom	Topic	Required Reading	Due	Grade %
2/7 (T)	Class Introduction			
2/9 (TH)	Networking Fundamentals	**TCP/IP Guide** – Fundamentals		
2/14 (T)	OSI Model & TCP/IP	**TCP/IP Guide** – OSI model & TCP/IP suite		
2/16 (TH)	Application Layer – DNS, Email	**TCP/IP Guide** – DNS & Email		
2/21 (T)	Application Layer – HTTP	**TCP/IP Guide** – HTTP		
2/23 (TH)	Transport Layer – TCP, UDP	**TCP/IP Guide** – TCP & UDP	Assignment 1	3%
2/28 (T) *	Lab 1 Walkthrough			1%
3/2 (TH)	Network Layer and Routing	**TCP/IP Guide** – IP concepts & addressing		
3/7 (T)	Network Layer and Routing	**TCP/IP Guide** – IP addressing	Lab 1	4%
3/9 (TH)	Network Layer and Routing	**TCP/IP Guide** – IP routing		
3/14 (T)	Cooperative learning on Routing		COOP Assignment 2	4% 3%
3/16 (TH)	Exam 1 Review			
3/21 (T) *	Lab 2 Walkthrough			1%
3/23 (TH)	Exam 1			25%

Date	Topic	Required Reading	Due	Grade %
4/4 (T)	Link Layer and Local Area Networks	**Cisco -** LAN, Ethernet		
4/6 (TH)	Link Layer and Local Area Networks	**Cisco -** Bridging, LAN Switching	Lab 2	4%
4/11 (T)	Link Layer and Wide Area Networks	**Cisco -** WAN		
4/13 (TH)	Transmission Media	TBA		
4/18 (T) *****	Lab 3 Walkthrough		Lab 3 Participation Assignment 3	1% 3%
4/20 (TH)	Wireless Network	TBA		
4/25 (T)	Wireless Network	TBA	Lab 3	4%
4/27 (TH)	Mobile Network	TBA		
5/2 (T) *	Cooperative learning on Local Area Networks		COOP	4%
5/4 (TH)	Network Security	TBA		
5/9 (T)	Exam 2 Review & Final Project Working Day		Assignment 4	3%
5/11 (TH)	Network Security	TBA	Final project due **5/18** at 11:59pm	10%
5/16 (T)	Exam 2			25%

* Lab sessions will be held in **Purnell 028 or Purnell 022.**

You will be notified if there is any change to the location.

[Closing Note]

Upon finishing this course, if you want to pursue further about computer networking, you may consider the following CISC or MISY courses.

CISC477 Systems Administration

Introduces students to the internals of UNIX, trouble-shooting system and network problems, hardware and software configuration and installation, and security aspects of hosts on the internet. Multi-operating system integration will also be discussed.

CISC474 Advanced Web Technologies

Programming and architecture of web servers and the technologies for implementing high performance, sophisticated web sites for applications like e-commerce. Students learn how to install and set-up a web server, how to write and install programs for a web server, and how to design and implement multi-tier client/server applications with database backends.

CISC452 Telecommunications Systems

Presents basic concepts in telecommunications, emphasizing topics such as SONET, Cell and Frame Relay and multimedia switching. Concepts of the operation and maintenance of large communications networks are discussed.

MISY810 Telecommunications and Networks I

Leadership skills in information technology, telecommunications and internet technology for technology management. Introduces concepts in data and image compression, digital audio and digital cellular telephony. Provides fundamental knowledge of transmission and storage technology and a system-level understanding of computer networks and the internet.

MISY811 Telecommunications and Networks II

Considers technology trends and their impact on industry and the global economy. Topics include the convergence of computation and communications; emerging standards in high-capacity cellular telephony; the impact of global positioning systems on business applications; and the future capabilities of the internet. COREQ: CPEG810. May also be taken as prerequisite.

MISY850 Security and Control

Considers state-of-the-art technological and organizational approaches to enhancing the security and integrity of corporate information resources in a cost-effective manner.