

CIS 313 – Telecommunications and Computer Networks EXPANDED SYLLABUS

Sessions 1 - 10

Instructor:

Ken Woo
Director of IT and Facilities, Northwestern University
339 E. Chicago Ave, 6th Floor,
Chicago, IL 60611 - 3008

Email: k-woo@northwestern.edu

Phone:

(312) 503-2972 – Office

(847) 753-9373 – Home; call before 8:30 p.m. central daylight time (strictly enforced)

Course Description:

Welcome to CIS 313 - Telecommunications and Computer Networks

This course provides an overview of telecommunications and data communications. Course work includes LAN and WAN components such as switches, routers, telecommunication circuits, and protocols. Advanced topics such as information security, information assurance, advanced networking technologies, and others will be overviewed as well.

Texts:

The primary text for the course will be *Business Data Networks and Telecommunications* (6th Edition)

Ray Panko

ISBN 0-13-221441-5

The Change Function by Pip Coburn. Students must purchase either the paper copy or the online summary version but the book content is not optional.

Student Goals:

Upon completion of this course, the student will be able to:

- Discuss the OSI Model
- Describe the different components that comprises the OSI Model
- Discuss data transmission and different types of transmission media
- Describe various telecommunication circuit types
- Describe various LAN hardware devices
- Describe transmission efficiency and multiplexing
- Differentiate between the different components that comprises the Data Link layer
- Describe TCP/IP addressing and functionality
- Describe Medium Access Control protocols including CSMA/CD and Token passing
- Discuss LANs, CANs, MANs, & WANs
- Discuss wireless LANs
- Discuss how telecommunications can influence and infiltrate our daily lives and more
- Discuss how communications in all forms are currently in our lives now

Evaluation Method:

Students will be evaluated using the following criteria:

- 8 Assignments: 25%
- Individual or Group Project: 25%
- Attendance (10%) and class participation (5%): 15%
- Midterm Exam: 20%
- Final Exam: 15%

Note: With the exception of the first week of class, late assignments **will not** be accepted.

Course Schedule

Online Synchronous Meetings are Wednesdays from 7-9:00 PM. Some weeks may not have a Sync Session, your Instructor will indicate the exact schedule during the first Sync Session. All readings from the text and articles listed online are to be prepared in advance.

Note: Because the assigned readings are due on the date indicated on the schedule, you need to read ahead in the syllabus to start working on the readings. Articles and discussion questions are listed in the online course management system.

Sessions

Below, you will find a quick reference guide to the readings, assignments and synchronous activities for each session. Links to the slides and articles are on under *Course Content*, located on the left navigation bar.

Session 1 - Introduction to Communications

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> Chapter(s) 1 & 6 from <i>Business Data Networks and Telecommunications</i> (6th Edition) by Ray Panko PowerPoint slides <p>Optional Readings</p> <ul style="list-style-type: none"> PowerPoint Slides: Recap 	<p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> Choose a Case-Study Scenario: The first step in our Case-study is to choose one of four network scenarios to pursue throughout the course. Each scenario poses its own network needs, challenges, and limiting factors: Post Your Decision to the Discussion Board: Once you've chosen the Case-study you plan to pursue, post your decision here on the Discussion Board. Please make your choice before Session 2 synchronous meeting. Build a Network Legend: Based on the information given in the Final Project/Case-study Scenario you have chosen, use a diagramming program to build a network legend. The legend should include the elements you plan to use to build the specific network outlined in the scenario you choose. You will use this legend throughout the course as you continue building your final assignment. 	<p>Synchronous Session: Join the online discussion with your instructor and classmates.)</p> <p>Online Office Hours: Meet online with your instructor to ask any questions you have about Session 1.</p> <p>As office hours may change, ask your instructor for the schedule.</p>

	Chapter Homework:	
--	--------------------------	--

- Chapters 1 & 6

Session 2 – Fundamentals of Communications

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> Chapter 2 from <i>Business Data Networks and Telecommunications</i> (6th Edition) by Ray Panko PowerPoint slides Articles: <ul style="list-style-type: none"> Doctors, Untethered IBM PC Turns 25 <p>Optional Readings</p> <ul style="list-style-type: none"> PPT slides – recap Article: It's 10 pm, do you know where your files are? Any additional books and articles on this topic 	<p>Article Response:</p> <ul style="list-style-type: none"> Submit a 1-page essay outlining your reaction to <i>each</i> assigned article: <ul style="list-style-type: none"> Doctors, Untethered IBM PC Turns 25 <p>Chapter Homework:</p> <ul style="list-style-type: none"> Chapter 2 <p>Discussion Board: Continue sharing your thoughts and questions on the Discussion Board.</p>	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to ask any questions you have about Session 2.</p> <p>As office hours may change, ask your instructor for the schedule.</p>

Session 3 – Communications Equipment and Data Transmissions

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> Chapter(s) 4 & 5 from <i>Business Data Networks and Telecommunications</i> (6th Edition) by Ray Panko PowerPoint slides: <ul style="list-style-type: none"> Chapter 4: Ethernet LANs Chapter 5: Wireless LANs (WLANs) Article: In Baghdad Life Moves Online <p>Optional Readings</p> <ul style="list-style-type: none"> PowerPoint Slides: Chapter 4a: Token-Ring Networks 	<p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> Diagram a Local Area Network (LAN): Based on the information given in the Case-study Scenario, use a diagramming program to build a Local Area Network (LAN). Your diagram must be accompanied by a brief paper that outlines the decisions you made to construct the network. <p>Article Response:</p> <ul style="list-style-type: none"> Submit a 2 page essay outlining your reaction to the assigned article, In Baghdad life moves online <p>Chapter Homework:</p> <ul style="list-style-type: none"> Chapters 4 and 5 <p>Discussion Board: Continue sharing your thoughts and questions on the Discussion Board.</p>	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to ask any questions about Session 3.</p> <p>As office hours may change, ask your instructor for the schedule.</p>

Session 4 - Media

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> • Chapter 3 from <i>Business Data Networks and Telecommunications</i> (6th Edition) by Ray Panko • PowerPoint slides: <ul style="list-style-type: none"> ○ Chapter 3: Physical Layer Propagation ○ Chapter 3A: Hands On: Cutting and Connectorizing • Articles: <ul style="list-style-type: none"> ○ Apple Renames Itself, Unveils iPhone ○ Cisco Sues Apple over Use of iPhone Name ○ Apple Settles with Cisco ○ iPods Help Doctors Recognize Heart Problems <p>Optional Readings</p> <ul style="list-style-type: none"> • Articles: <ul style="list-style-type: none"> ○ Web Reaches New Milestone: 100 Million Sites ○ What the iPhone Should Do ○ Hospital of the Future 	<p>Article Response:</p> <ul style="list-style-type: none"> • Submit a 1-page essay outlining your reaction to each of the 4 assigned articles <p>Chapter Homework:</p> <ul style="list-style-type: none"> • Chapter 3 <p>Discussion Board: Continue sharing your thoughts and questions on the Discussion Board.</p>	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to ask any questions you have about Session 4.</p> <p><u>Reminder:</u> The Midterm Exam is next session, so if you have questions, this is a good time to discuss them with your instructor.</p>

Session 5 – Current Industry Events and Midterm Exam

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> • Review Chapters 1 through 6 from <i>Business Data Networks and Telecommunications</i> (6th Edition) by Ray 	<p>Midterm – this will be available during this session, but not prior to that.</p> <p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> • Submit Draft of Your 	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to ask any</p>

<p>Panko</p> <p>Optional Readings</p> <ul style="list-style-type: none"> Any additional books and articles on this topic 	<p>Network Diagram: Turn in your developing Case-study network diagram. The diagram will receive a credit/no-credit grade and will be returned with instructor-feedback.</p> <p>Chapter Homework:</p> <ul style="list-style-type: none"> Review Chapters 1-6 for the Midterm Examination <p>Discussion Board: Continue sharing your thoughts and questions on the Discussion Board.</p>	<p>questions you have about Session 5.</p>
--	---	--

Session 6 – Wide Area Networks (WANs) and Metropolitan Area Networks (MANs)

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> Chapter 7 from <i>Business Data Networks and Telecommunications</i> (6th Edition) by Ray Panko PowerPoint Slides: Chapter 7: Wide Area Networks (WANs) <ul style="list-style-type: none"> Review the First Bank of Paradise case-study on wide area networks, pages 342-343 Articles: <ul style="list-style-type: none"> First All-Digital Heart Hospital Hospital of the Future (Slideshow) <p>Optional Readings</p> <ul style="list-style-type: none"> Any additional books and articles on this topic 	<p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> Diagram a Wide Area Network (WAN): Based on the information given in the Case-study Scenario, use a diagramming program to build a Wide Area Network (WAN). Your diagram must be accompanied by a brief paper that outlines the decisions you made to construct the network. <p>Article Response:</p> <ul style="list-style-type: none"> Submit a 2-page essay outlining your reaction to the assigned article, First All-Digital Heart Hospital. <p>Chapter Homework:</p> <ul style="list-style-type: none"> Chapter 7 <p>Discussion Board: Continue sharing your thoughts and questions on the Discussion Board.</p>	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to ask any questions you have about Session 6.</p>

Session 7 – Network Management and Security

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> Chapter(s) 8 & 9 from <i>Business Data Networks and</i> 	<p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> Draft a Security Analysis: 	<p>Synchronous Session: TBA</p>

<p><i>Telecommunications</i> (6th Edition) by Ray Panko</p> <ul style="list-style-type: none"> • PowerPoint slides: <ul style="list-style-type: none"> ○ Chapter 8: TCP/IP Internetworking ○ Chapter 9: Security • Articles: <ul style="list-style-type: none"> ○ Living the Dream: IT Telecommuting ○ Believe the Hype: 3G Broadband Data Cards Rock! ○ Disuse of System is Cited in Gaps in Soldiers' Care <p>Optional Readings</p> <ul style="list-style-type: none"> • Articles: <ul style="list-style-type: none"> ○ Worldwide Bandwidth Use ○ Ultraband Devices Interferes with GPS • Any additional books and articles on this topic 	<p>Based on the information given in the Case-study Scenario, outline the steps you plan to take to make sure your network reasonably addresses security risks.</p> <p>Article Response:</p> <ul style="list-style-type: none"> • Submit a 2-page essay outlining your reaction to each of these two articles: <ul style="list-style-type: none"> ○ IT Telecommuting ○ Believe the Hype: 3G Broadband Data Cards Rock! • Write an outline and be prepared to discuss "Disuse of System is Cited in Gaps in Soldiers' Care" during the synch session (this outline is not to be turned in as an assignment; it's just for the discussion) <p>Discussion Board: Continue sharing your thoughts and questions on the Discussion Board.</p>	<p>Online Office Hours: Meet online with your instructor to ask any questions you have about Session 7.</p>
--	--	--

Session 8 – Networks: Management and Applications

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> • Chapters 8 & 9 from <i>Business Data Networks and Telecommunications</i> (6th Edition) by Ray Panko • PowerPoint slides: <ul style="list-style-type: none"> ○ Chapter 10: Network Management ○ Chapter 11: Networked Applications <p>Optional Readings</p> <ul style="list-style-type: none"> • Article: <ul style="list-style-type: none"> ○ Mobile Med Monitoring 	<p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> • Draft a Capacity/Future-Growth Analysis: Based on your developing network and information given in the Case-study Scenario, perform a capacity analysis that also accounts for future growth. <p>The Change Function Response:</p> <ul style="list-style-type: none"> • Submit a 2 page essay outlining your reaction to the audio you heard or the chapters you read for the assigned text, <i>The Change Function</i>. 	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to ask any questions about Session 8.</p>

<ul style="list-style-type: none"> Any additional books and articles on this topic 		
---	--	--

Session 9 – E-Business and the Challenge of Living in a Connected World

Readings	Assignments	Synchronous Meeting(s)
<p>Assigned Readings</p> <ul style="list-style-type: none"> Article <ul style="list-style-type: none"> Fixing Hospitals <p>Optional Readings</p> <ul style="list-style-type: none"> Any additional books and articles on this topic 	<p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> Present Completed Case-Study: During this session you will present your completed Case-study to the instructor during online office hours. Consult the Announcements page and/or instructor email for online office hours and presentation schedule. <p>Article Response:</p> <ul style="list-style-type: none"> Submit a brief essay outlining your reaction to the assigned article, Fixing Hospitals. 	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to present your completed Case-study.</p>

Session 10 – Future Trends and Final Exam

Readings	Assignments	Synchronous Meeting(s)
None	<p>Final Project/Case-Study:</p> <ul style="list-style-type: none"> Submit Completed Case-study: Turn in your Case-study network diagram and accompanying paper. <p>Final Exam</p>	<p>Synchronous Session: TBA</p> <p>Online Office Hours: Meet online with your instructor to ask any questions you have about Session 10.</p>