Baruch College
Department of Computer Information Systems
CIS 3500: Networks & Telecom
Spring 2025

Instructor: Todd Rosen Email address: todd.rosen@baruch.cuny.edu
Section: UTA-LEC: 19210
Meeting times: Tuesdays 6:05PM-9:00PM.- 01/25/2025-05/22/2025
Classroom: B - Vert 10-175
Mode of instruction: In Person*
Office hours: By appointment, preferably immediately before or after class.

* There may be instances during the semester when the class must be conducted remotely. If the mode of instruction changes, you will be notified via email and Brightspace Announcements. I will provide you with ample notice if this occurs. Unless you receive notification of a change in modularity, the class will be held in person in classroom B - Vert 10-175.

Course description and prerequisites:
Global Class Search - Details (cuny.edu)

Preprequisite: (CIS 2200 & ZICK/ZKTP stdnt grp) or [CompSci-BS major & (CIS 2300 or MTH 3300)]. Students may receive credit for only one of CIS 3500 or CIS 3501 or CIS 4450.

Description
This course provides a lab-based introduction to the fundamental principles of computer networks, from network topologies and hardware components, to Ethernet protocols (TCP/IP), switching, routing, wireless, cloud, and wide-areanetworks, as well as network design and management. Students will be required to work on a network design project that develops a network plan for a company based on an analysis of their business needs. Given this is one of the most dynamic fields in the computer industry, the latest changes and developments are brought to the course as they occur. Note: Students may receive credit for only one of CIS 3500 or CIS 3501 or CIS 4450.

Key technical and managerial issues in the development of the telecommunications resource by organizations. The course covers technology (the underlying technology of information communications facilities, networking systems, and communications software),

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Our goal in this course is to cover breadth, not depth, emphasizing concepts and principles. While individual technologies become obsolete, the principles endure. This is not a vocational course that teaches you how to set up a network, though there are lab assignments which allow you to observe network communications. This course develops a sound understanding of the basic concepts underlying communications and networking, giving you the background to be able to learn the specifics of any communications technology or product on your own.

Course content:

We will cover the business and technologic factors that are driving the ever-increasing demand for networking facilities; basic concepts, the Internet, network models, the physical layer, encoding, multiplexing, media, packet switching, DSL and cable systems, error detection, data link control, Ethernet and Wi-Fi LANs, switches, VLANs, routers, and TCP/IP.

Due to the interrelated nature of the material in the course, we may deviate at times from the order of topics as listed in the syllabus below.

Required text:
Panko and Panko, *Business Data Networks and Security*, 11th Edition, Pearson, 2019, ISBN 9780134788425. Baruch college bookstore link:
https://baruch.bncollege.com/shop/baruch/page/find-textbooks

Web Links to additional content will be posted on Blackboard. You are responsible for reviewing the content and it may be included on either exam.

Required lab assignments: Lab assignments make use of industry-standard products and are delivered over the INFOSEC Learning platform. You can obtain an access code for Course ID: CVKSIQSOIT from the Baruch bookstore or from https://www.infoseclearning.com/. When linking the labs to your instructor, use my Baruch email address: todd.rosen@baruch.cuny.edu. INFOSEC labs are due at 2:30 on the dates listed in the schedule below; there is a 25% penalty for each day that an assignment is late. Lab scores are manually copied from INFOSEC to Blackboard after the due date. There is also a Wireshark Assignment posted in the Assignments section of Blackboard; see syllabus for due date.

Course website (http://www.cuny.edu) and email:
The class website uses Brightspace; supported browsers are found at https://community.d2l.com/brightspace/kb/articles/5663-browser-support Newspaper articles, chapter materials such as slides, assignments, study guides, handouts, a list of errors in the text and other materials can be found on the website. I frequently post announcements on Brightspace as well. You should check our Brightspace site and your email on a daily basis. I will use it to notify you of newly published articles which you are to read, and for all advisories.

CUNY Policy on Recording of Remote Classes: Please be advised that students who participate in this class with their camera on or use a profile image are agreeing to have their video or image recorded solely for the purpose of creating a record for students enrolled in the class to refer to, including those enrolled students who are unable to attend live. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

Announcements
Email will be used from my Baruch email address to communicate with the class. I will also post announcements on Brightspace. Due to issues I have had in the past with email, with every email I send I will ask for confirmation that it was received.

Announcements of Class Cancelations
Some students posing as instructors have made announcements to classmates via email or through signs affixed to classroom doors. These announcements have indicated that a class in which an exam has been scheduled has been canceled. If I cancel a class, you will be notified via Baruch email (I will never use Gmail or any other account that a student could create in my name) and by posting an announcement on the Brightspace site.

Student email: I will only respond to emails from CUNY email addresses; mail from personal email accounts will be ignored. Please check your email and the Brightspace site on a daily basis. These tools will be used to notify you of assignments and of newly posted materials, and for all advisories.

A word to the wise:
This is a challenging course which covers a large quantity of material and introduces a large number of terms and concepts. In order to succeed in this course, you must become familiar with these terms and their usage. Do not attempt to memorize the material – the only way to do well in this course is to understand the material. That means reading the material before it is discussed in class, rereading it as many times as necessary until you understand it and asking yourself whether everything fits in with other things you have learned, and whether you can explain the material in a clear and succinct fashion. The lecture should be used as an opportunity to ask questions about material you have already familiarized yourself with. Lab Assignments should be started as soon as possible so that you have an opportunity to ask any relevant questions.

I suggest that you form a study group to review the material with your fellow students.
I also strongly recommend that you take notes during the lectures and as you study.

Homework:
You are to complete all Test Your Understanding questions in the sections covered in each chapter and the End-of-Chapter questions. Your answers should be in your own words; verbatim copying of material from the text, web or other sources will not improve your understanding or retention. The homework should be completed for the next class meeting after we complete a chapter and selected questions will be reviewed at that time. The homework is intended to verify and strengthen your understanding of concepts and terminology and to prepare you for exams; it will not be collected.

Electronic Devices:
Please turn off cell phones, smartphones and other devices which may disturb the class. Tablets and laptops may be used for taking notes; they may not be used for any purpose unrelated to the lecture.

Grading:
Letter grades are calculated according to the Official Grading System of Baruch College. **The instructor reserves the right to curve the scale when computing final grades, if deemed necessary. This curve may RAISE or LOWER your final grade**. The below is to be used as guidance for grade distribution but it is **NOT** a guarantee of a grade you will be earning.

From (%)	To (%)	Letter Grade	Grade Distribution
0.0	**59.9**	**F**	To any student who has earned less than C-
60.0	**67.0**	**D**	
67.1	**69.9**	**D+**	
70.0	**72.9**	**C-**	20% or less
73.0	**77.0**	**C**	
77.1	**79.9**	**C+**	
80.0	**82.9**	**B-**	35% or less
83.0	**87.0**	**B**	
87.1	**89.9**	**B+**	
90.0	**92.9**	**A-**	30% or less
93.0	**100.0**	**A**	

These are general guidelines, not strict percentages.

Exam material will be derived from both the reading assignments and from material covered in the lectures and labs. Some of the lecture material may not be found in the text. Therefore, it is very important to attend class regularly, take good notes and keep up with the pace of the reading assignments.

Exams (Mid Term: 35% and Final: 35%)	70%
INFOSEC lab assignments	20%
Class Participation & Attendance	10%

NOTE: Lab assignments and point weight are subject to change.

The labs are intended to foster a deeper understanding of the course material or to illustrate concepts. There is a 25% penalty for each day that an assignment is late.

There will be no "extra-credit" assignments and no make-up exams. Students will have an opportunity to check their graded exams but the instructor will retain all exams.

Exams could consist of a mix of multiple choice, fill-in-the-blank, matching, true/false, short and long answer questions and problems to be worked. In some sections, you will be able to choose among a number of questions. Exams are not cumulative. See Course Documents /Exams for exam study guides.

Electronic devices may not be used during an exam; you may not leave the room for any reason during an exam.

BBA Learning Goals, Assurance of Learning, and Course Mapping

1. BBA Learning Goals

Analytical Skills	Students will possess the analytical and critical thinking skills to evaluate issues faced in business and professional careers.
Technological Skills	Students will possess the necessary technological skills to analyze problems, develop solutions and convey information.

Communication Skills: Oral	Students will have the necessary oral communication skills to convey ideas and information effectively and persuasively.
Communication Skills: Written	Students will have the necessary written communication skills to convey ideas and information effectively and persuasively.
Civic Awareness and Ethical Decision-Making	Students will have the knowledge base and analytical skill to guide them when faced with ethical dilemmas in business. Students will have an awareness of political, civic and public policy issues affecting business.
Global Awareness	Students will know how differences in perspectives and cultures affect business practices around the world.

2. Assurance of Learning

BBA LEARNING GOALS	Significant Part of Course	Moderate Part of Course	Minimal Part of Course	Not Part of Course
Analytical Skills	☒	☐	☐	☐
Technological Skills	☒	☐	☐	☐
Communication Skills: Oral	☐	☐	☐	☒
Communication Skills: Written	☐	☐	☒	☐
Civic Awareness and Ethical Decision-Making	☐	☒	☐	☐
Global Awareness	☐	☐	☒	☐

3. Course Mapping

Assignments	Course Learning Goals	BBA Learning Goals
Lectures. Discuss the role and importance of computer networks in business, the TCP/IP protocol stack, wired and wireless LANs and wide-area networking. Understand the role of the network manager and network management tools and protocols.	Understand the technology components utilized in modern computer networks	• Analytical Skills • Technological Skills • Communication Skills: Written
Readings. Textbook chapters (with case studies) and online articles.	Be aware of current and recent issues related to computer networks.	• Analytical Skills • Civic Awareness and Ethical Decision-Making
Mid Term Exam consisting of a variety of question types (True/false, multiple choice, matching, fill-in-blank, written answers) covering discussions, readings and PowerPoint presentations from classes 1 to 6.	Demonstrate an under-standing of networks concepts and terminology, network standards and network design and management.	• Analytical Skills • Technological Skills • Communication Skills: Written

Final Exam consisting of a variety of question types (True/false, multiple choice, matching, fill-in-blank, written answers) covering discussions, readings PowerPoint presentations and demonstration (including Wireshark Demo) from classes 7 to 14.	Demonstrate an understanding of wired and wireless LANs. Demonstrate an understanding of advanced wireless LAN, TCP/IP and wide-area networking and related protocols.	• Analytical Skills • Technological Skills • Communication Skills: Written
Labs. Several lab assignments in which students will explore network parameters, protocols and performance.	Discover the settings used for various crucial network parameters. Experience actual operation of the TCP/IP protocols.	• Analytical Skills • Technological Skills • Communication Skills: Written

Academic integrity:
Baruch College's policy on Academic Honesty states, in part:

"Academic dishonesty is unacceptable and will not be tolerated. Cheating, forgery, plagiarism and collusion in dishonest acts undermine the college's educational mission and the students' personal and intellectual growth. Baruch students are expected to bear individual responsibility for their work, to learn the rules and definitions that underlie the practice of academic integrity, and to uphold its ideals. Ignorance of the rules is not an acceptable excuse for disobeying them. Any student who attempts to compromise or devalue the academic process will be sanctioned."

Additional information and definitions can be found at:
http://www.baruch.cuny.edu/academic/academic_honesty.html

I have **zero tolerance** for any of the offenses described above. The Vice President for Student Affairs will be advised of any incident of suspected academic dishonesty.

Students with disabilities:
Students with disabilities may receive assistance and accommodation of various sorts to enable them to participate fully in courses at Baruch. To establish the accommodation appropriate for each student, please alert your instructor to your needs and contact the Office of Services for Students with Disabilities, part of the Division of Student Development and Counseling. For more information contact Ms. Barbara Sirois, Director of this office in B2-271 or call (646) 312-4590.

Attendance:
You are expected to be present and punctual for each class meeting.

Academic calendar:
See Academic Calendar - Enrollment Management (cuny.edu)

Schedule: Course content and schedule may be changed based on class progress and the instructor's discretion. The dates for holidays, withdrawal, and final exams were taken from the academic calendar and should be checked by the student against the official academic calendar.

Week	Date	Topic	Assignments – Do all reading prior to class meeting
1	1/28/2025	Core Network Concepts and Terminology	Read the Preface and Chapter 1. View *Into the Cloud* (http://www.nytimes.com/interactive/2012/09/22/technology/data-center-tour.html) and *Bundled, Buried and Behind Closed Doors (http://vimeo.com/30642376)*
2	2/4/2025	Core Network Concepts, cont. Network Standards	Read Chapter 2
3	2/11/2025	Network Standards, cont.	**RECORDED CLASS** Lab: Types of Networks
4	2/18/2025		**Classes follow Monday schedule**
5	2/25/2025	Network Design and Management Ethernet (802.3) Switched LANs	Read Chapter 3. Read Chapter 5.
6	3/4/2025	Ethernet (802.3), cont.	
7	3/11/2025	Ethernet (802.3) Switched LANs, continued	
8	**3/18/2025**	**MID TERM EXAM**	
9	**3/25/2025**	Wireless LANs I	Read Chapter 6.
10	4/1/2025	Wireless LANs I, continued Wireless LANs II	Read Chapter 7 through page 241
11	4/8/2025	TCP/IP Internetworking I	Read Chapter 8 except bottom p. 276 – top p. 282.
12	4/15/2025	**Spring Recess**	
13	4/22/2025	TCP/IP Internetworking I, cont. TCP/IP Internetworking II	Read Chapter 9 except middle pp. 297 - 298.
14	4/29/2025	Wireshark demo	Lab: Implementing Common Protocols and Services Install Wireshark on a laptop per Lab: Wireshark and bring to class for demo. The demo will use Understanding TCP Sequence and Acknowledgment Numbers. Lab: TCP/IP Protocols – The Core Protocols (http://packetlife.net/blog/2010/jun/7/understanding-tcp-sequence-acknowledgment-numbers/)
15	5/6/2025	TCP/IP Internetworking II, cont.	Lab: IPv4 vs IPv6 – Calculating, Configuring, and Testing
16	5/13/2025	**LAST DAY OF CLASSES** TCP/IP Internetworking II, cont. Carrier Wide Area Networking	Lab: IPv4 vs IPv6 – Calculating, Configuring, and Testing Lab: Implementing TCP/IP Protocols- Other Key Protocols Lab: Implementing NAT and Allowing Remote Access Read Chapter 10. Subnet Addressing, ARP and NAT Practice Exercises due (see Course Documents/Review Exercises subfolder on Brightspace).
17	5/20/2025	**FINAL EXAM**	**TENTATIVE**

Supplementary references:
These books are either available for loan or are on reserve in the library and can be optionally used to explore topics in more detail:

Bates, Regis, *Voice and Data Communications Handbook*, 5th Ed., McGraw-Hill, TK5105 .B395 2007
Comer, Douglas, *Computer Networks and Internets*, 4th Ed., Prentice-Hall, TK5105.5 .C5897 2004
Comer, Douglas E., *Computer Networks and Internets*, 5th Ed., Prentice-Hall, TK5105.5 .C5897 2009
Comer, Douglas, *The Internet Book*, Prentice-Hall, 3rd Ed., TK5105.875.I57 C65 2000
Dean, Tamara, *Guide to Telecommunications Technology*, Thomson Course Technology, TK5101 .D43 2003
Dodd, A., *The Essential Guide to Telecommunications*, 4th Ed., Prentice-Hall, TK 5101 .D54 2005
Dumas and Schwartz, *Principles of Computer Networks and Communications*, Pearson Prentice Hall, TK5105.5 .D8925 2009
Forouzan B., *Data Communications and Networking*, 4th Ed., McGraw-Hill, TK 5105 .F6617 2007
Goldman, James, *Applied Data Communications*, 4th Ed., Wiley, HF 5548.33 .G65 2004
Goleniewski, Lillian, *Telecommunications Essentials*, 2nd Ed., Addison Wesley, TK5101 .G598 2007
Kurose and Ross, *Computer Networking*, 3rd Ed., Pearson Addison-Wesley, TK5105.875.157 K88 2010
Shay, William. *Understanding Data Communications and Networks*, 3rd Ed., Brooks/Cole Publishing, TK5105 .S49 2004
Stallings, William, *Data Communications*, 7th Ed., Prentice-Hall, TK5105 .S73 2003
Stallings, William, *Data Communications*, 9th Ed., Prentice-Hall, TK5105 .S73 2011
Stallings and Case, *Business Data Communications*, 7th Edition, Pearson Prentice Hall, HF 5548.2 .S7728 2013
Tanenbaum, Andrew, *Computer Networks*, 4th Ed., Prentice-Hall, TK 5105.5 .T36 2003
Tanenbaum, Andrew, *Computer Networks*, 5th Ed., Prentice-Hall, TK 5105.5 .T36 2011