

IST220 Networking and Telecommunications (Section 001) **(Subject to Change)**

Teaching Team

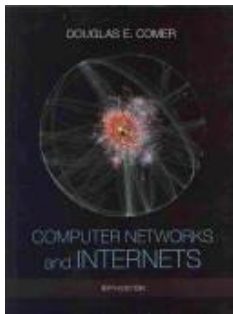
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Course Information

Credits 3
Class Time 12:20 – 1:10pm Monday, Wednesday, and Friday
Classroom IST 205

Required Text



Computer Networks and Internets
Douglas E. Comer
6th Edition

Course Description

IST 220 is an introduction to digital networking and telecommunications and their applications in information systems. It is a required core course for four-year Information Sciences and Technology degrees, and is a critical part of the curriculum. Its objective is to provide the students with a basic understanding of the working of digital networks and the ability to apply this knowledge to specific applications and situations.

Course Objectives

Upon completion of this course, each student should be able to:

- Identify benefits and applications of computer networks;
- Recognize key components of data communications and their roles in supporting data communications;
- Plan, design, and build appropriate wired or wireless networks in given application contexts;
- Evaluate and analyze organizational network architecture; and
- Assess new telecommunications or network technologies and related applications.

Weekly Schedule (Subject to Change)

- Week 1: Course introduction and overview (01/11)
Network models and Internet Trends (Ch. 1 & 2)
Group work on research assignment 1: VoIP
- Week 2 MLK Day (No class) (01/18)
Internet applications (Ch. 3.1-3.12, Ch. 4)
Group work on Research assignment 1 and research assignment 2: Broadband Myth
Due: Group research assignment 1 (01/22)
- Week 3 Data communications (Ch. 5 & 6) (01/25)
Information sources and signals (Ch. 6)
Group work on research assignment 2
- Week 4 Transmission media (Ch. 7) (02/01)
Reliability and Channel Coding (Ch. 8); Transmission modes (Ch. 9)
Midterm Review I
Group work on research assignment 2 and research assignment 3: Private Network
Due: Group research assignment 2 (02/05)
- Week 5 Midterm I (02/08)
Modulation and modems (Ch. 10)
Group work on research assignment 3
- Week 6 Multiplexing and demultiplexing (Ch. 11) (02/15)
Access and Interconnection (Ch. 12)
Group work on research assignment 3 and research assignment 4: Network Neutrality
Due: Group research assignment 3 (02/19)
- Week 7 LAN topologies (Ch. 13) (02/22)
Packets and frames (Ch. 13)
Group work on research assignment 4
- Week 8 Wired LAN (Ch. 15) (02/29)
Wireless LAN (Ch. 16)
Individual Lab 1
Due: Group research assignment 4 (03/04)
- Week 9 Spring Break: No Class (03/07)
- Week 10 LAN Extensions and WAN (Ch. 17 & 18) (03/14)
Midterm Review II
Individual Lab 2
Due: Individual Lab 1 (03/18)
- Week 11 Midterm II (03/21)
Internet and IP Addressing (Ch. 20 & 21)
Individual Lab 3
Due: Individual Lab 2 (03/25)
- Week 12 Datagram forwarding and Routing (Ch. 22 & 23) (03/28)
DHCP, NAT, and IPv6 (Ch 26);
Group lab 1
Due: Individual Lab 3 1(04/01)

Week 13 TCP & UDP (Ch. 24 & 25) (04/04)
Network Performances, VoIP, Network Security (Ch. 27 – 29)
Group Lab 1

Week 14 Midterm III review (04/11)
The Internet of Things, Trends in Networking (Ch. 31 &32)
Group Lab 2
Due: Group Lab 1 (04/15)

Week 15 Midterm III (04/13)
Penn State Campus Networks (04/18)
Group Lab 2

Week 16 IST Networks; Tour to IST Network Infrastructure (04/25)
Tour to Penn State Telecom Building
Group Lab 2
Due: Group Lab 2 (04/29)

Examinations, Quizzes, and Assignments

- Four group research assignments
- One individual lab assignment
- Four group lab assignments
- Three unannounced pop-up quizzes. The best two will be counted towards final grade.
- Three closed-book mid-term exams. No final exam.

Grading

Group research assignments	30% (7.5% for each assignment)
Individual labs	20% (8%, 6%, 6% for Lab 1, 2, 3 respectively)
Group labs	20% (10% each)
Midterms	20% (6% for Midterm I, 7% for Midterm II, and 7% for Midterm III)
Quizzes	5%
Class participation	5%

Extra credits up to 3%

A	95 and above
A-	90-95
B+	85-90
B	80-85
B-	75-80
C+	70-75
C	65-70
D	60-65
F	below 60

Course Policies:

Classes, Exams, and Assignments:

- **Exams:** There will be NO make-up examinations unless an official excuse (document) is submitted and pre-approved by the instructor.
- **Group assignment:** Each group submits a report through ANGEL only.
- **Late Policy:** No late submission is accepted.
- **Attendance:** Attending class is required. If you cannot come, please let the instructor know beforehand. You will be expected to engage in class discussion actively. I encourage you to read various resources, such as information technology trade press or technology section in newspaper,

- to know the current hot issues and try to think about what roles database technology may play. You are also encouraged to use weblogs, or blogs, to keep personal journals of your readings and share your journals with others. Your class participation will count 5% of your final course grade. Class participation includes class attendance and active involvement in the class activity.
- **Readings:** Some sections in the textbook will be assigned as reading materials. Students are expected to read the materials that will be discussed in the class before the class meeting.

Academic Integrity:

- According to the Penn State Principles and University Code of Conduct: **Academic integrity is a basic guiding principle for all academic activity at Penn State University, allowing the pursuit of scholarly activity in an open, honest, and responsible manner. In accordance with the University's Code of Conduct, you must not engage in or tolerate academic dishonesty. This includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used without informing the instructor, or tampering with the academic work of other students.**
- Any violation of academic integrity will be investigated, and where warranted, punitive action will be taken. For every incident when a penalty of any kind is assessed, a report must be filed. This form is used for both undergraduate and graduate courses. This report must be signed by both the instructor and the student, and then submitted to the dean.

Affirmative Action & Sexual Harassment:

- The Pennsylvania State University is committed to a policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by Commonwealth or Federal authorities. Penn State does not discriminate against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, gender, sexual orientation, or veteran status. Direct all inquiries to the Affirmative Action Office, 211 Willard Building.

Americans with Disabilities Act:

- IST welcomes persons with disabilities to all of its classes, programs, and events. If you need accommodations, or have questions about access to buildings where IST activities are held, please contact us in advance of your participation or visit. If you need assistance during a class, program, or event, please contact the member of our staff or faculty in charge.

An Invitation to Students with Learning Disabilities:

- It is Penn State's policy to not discriminate against qualified students with documented disabilities in its educational programs. If you have a disability-related need for modifications in your testing or learning situation, your instructor should be notified during the first week of classes so that your needs can be accommodated. You will be asked to present documentation from the Office of Disability Services (located in 116 Bouclé Building, 863-1807) that describes the nature of your disability and the recommended remedy. You may refer to the Nondiscrimination Policy in the Student Guide to University Policies and Rules.