IST 220: Networking and Telecommunications
(Subject to Change)

Teaching Team
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Course Information
Credits: 3
Course: 220
Location: TBD

Required Text
Additional readings are available in the course web site.

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.

Tentative Schedule (Subject to Change)

Introduction of Networks and Communications
Week 1 Course introduction and overview
    Network models and Internet Trends (Ch. 1 & 2)
    Group research assignment 1: IP Phone
Week 2 Internet applications (Ch3.1-3.12, Ch. 4)
    Group research project time

Data Communications
Week 3 Data communications, information sources and signals (Ch. 5 & 6)
    Information sources and signals (Ch. 6)
    Group research assignment 2: Broadband/Cellular Phone
    Due: Group research assignment 1
Week 4 Transmission media (Ch. 7)
    Transmission modes (Ch. 9)
    Due: Group lab assignment 1(9/21/2008)
Week 5 Modulation and modems (Ch. 10)
    Multiplexing and demultiplexing (Ch. 11)
Week 6 Access and Interconnection (Ch. 12)
    Review
Week 7 Midterm I
    Group research project time

Local Area Networks and Wide Area Network
Week 8 LAN topologies (Ch. 13)
    Packets and frames (Ch. 13)
    Group research assignment 3: Private Network
    Due: Group research assignment 2
    Due: Group lab assignment 2
Week 9 Wired LAN (Ch. 15)
    Wireless LAN, 16)
Week 10 LAN Extensions and WAN (Ch. 17 & 18)
    Internet and IP (Ch. 20 & 21)
Week 11 Group research project time
    Data forwarding and Routing (Ch. 22 & 27)

Internetworking
Week 12 Guest Speaker: Network Infrastructure in Penn State, Staff Member, ITS, Penn State
    ITS tour (Report to the Telecommunication Building at 2:30pm)
    Group research assignment 4: Municipal Broadband/P2PTV
Course Prerequisites
IST 110

Examination Policy
Mid-term: There are two in-class mid-terms.
Final: This course has no final exam.
Quizzes: Three unannounced quizzes. It usually takes five to ten minutes to complete a quiz in class. The one with the lowest score will be dropped in final grading.

Grading Policy
Group Lab Assignment 30% (7.5% each)
Group Research Assignment 35% (7.5% each and 5% for final presentation)
Midterms 25% (10% for Midterm I and 15% for Midterm II)
Quizzes 5%
Class participation 5%
Extra credit Participating in research studies in IST
Up to 3 points (one point per participation)

A 90 and above
A- 85-90
B+ 80-85
B 75-80
B- 70-75
C+ 65-70
C 60-65
D 50-60
F below 50

Attendance Policy
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.

**Academic Integrity**
Individual assignments must be completed independently. Students are strongly encouraged to form study groups and to learn from peer students. However, discussion on homework questions in study group should be limited to general approaches to solutions. Specific answers should never be discussed. Penn State’s policy regarding Academic Integrity must be followed.

**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.