Course
Number MIS 320 002
Title Networks and Security
Meeting Time M 7:20pm-10:00pm
Meeting Place Robinson Hall B220
Course Website http://mymason.gmu.edu

Professor
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Office Hours by Appointment only need 48 hours advanced notice

Textbook
Title
Computer Networks, 5th Ed., Tanenbaum
Publishers.
Textbook Online
Resource
http://www.mhhe.com/bdt3e
Notes
Other reading materials will be posted on course blackboard or handed out in class. See class schedule below for a list of additional reading materials. IT IS STRONGLY RECOMMENDED THAT YOU TAKE NOTES IN CLASS.

Undergraduate Learning Goals
Introduces students to fundamentals of networking technologies and their roles in business. Emphasis is on understanding the business implication of different networking technologies solutions. Students learn and understand the business requirements, and bring together the different technological components to design the required communication solutions. Also focuses on the types of security threats to the business network infrastructure, and approach to tackling such threats through business practices combined with appropriate technological solutions.

Evaluation
Hands-on homework projects, two exams, and four will make up a significant part of the evaluation. Working on homework projects will improve your skills on technology requirements, and produce awareness on where security will need to be implemented.

Mid Term and Final Exams will be in-class and closed book. Quizzes may or may not be announced. Quizzes will serve as a way to ensure you understand the material from the book.
**Attendance**
It is important that you attend all classes and take notes. Please read assigned chapters, articles, and cases before each class. Articles and cases will be discussed during sessions in a discussion style rather than as a lecture. Be prepared to answer questions in class, otherwise you will be penalized on class participation points. Attendance will be taken.

**In-Class Discussion**
Each unit in the textbook is preceded by a case. Students will be broken into groups for discussion on cases that will be presented to them in class. You will work with your groups on discussing the cases and be prepared to answer questions. Please come prepared to answer these questions in class when called upon.

**Grade Distribution**
Group Homework Projects (three or more) 20%
Quizzes (four) 20%
Mid Term Exams 25%
Final Exam 25%
Class Participation 10%

**Grading**
You can request a review of a grade (for a deliverable or the final grade) within one week from when the grade was awarded. After that period, no grade will be revised.

- A 93% - 100%
- A- 90% - 93%
- B+ 88% - 90%
- B 83% - 88%
- B- 80% - 83%
- C+ 78% - 80%
- C 71% - 78%
- D 60% - 70%
- F Below 60%

**Make up Exam/Quiz**
Barring extenuating circumstances no exceptions will be made for absence from an exam or case discussion. Exam date/time cannot be rescheduled. Adequate proof must provide to prove extenuating circumstances. Work-related time conflict does not constitute extenuating circumstance. The decision regarding make up will be at the discretion of the instructor. Missed exams/quizzes will be assigned a score of zero.

**Disability**
All academic accommodations due to disability must be arranged through the Disability Resource Center (DRC). If you are a student with a disability and you require academic accommodations, please contact the DRC at 993-2474. I will cooperate fully with the DRC to accommodate a student’s special needs.

**Honor Code**
Students are obligated to strict adherence to the University honor system and code, as described in the current George Mason University catalog.
# Tentative Class Schedule

Date Topic Readings (sub chapters.x refers to pages in the textbook)

## Week 1
**1/28**: UNIT I: NETWORKING – Part 1
- 1.1 Uses of Computer Networks
- 1.2 Networking Hardware
- 1.3 Networking Software

## Week 2
**2/4**: UNIT I: NETWORKING – Part 2
- 1.4 Reference Models
- 1.5 Example Networks
- 1.6 Network Standardization
- Homework #1 Assigned

## Week 3
**2/11**: UNIT II: PHYSICAL LAYER – Part 1
- 2.1 The Theoretical Basis for Data Communications
- 2.2 Guided Transmission Media
- 2.3 Wireless Transmission
- 2.4 Communication Satellites
- Homework #1 Due

## Week 4
**2/18**: UNIT II: PHYSICAL LAYER – Part 2
- 2.5 Digital Modulation and Multiplexing
- 2.6 The Public switched Telephone Network
- 2.7 The Mobile Telephone System
- 2.8 Cable Television

## Week 5
**2/25**: UNIT III: THE DATALINK LAYER
- 3.1 Data Link Layer Design Issues
- 3.2 Error Detection and Correction
- 3.3 Elementary Data Link Protocols
- 3.4 Example Data Link Protocols
- Homework #2 Assigned
Week 6
3/4: - UNIT IV: THE MEDIUM ACCESS CONTROL SUBLAYER - Part 1
- 4.1 The Channel Allocation Problem
- 4.2 Multiple Access Protocols
- 4.3 Ethernet
- 4.4 Wireless LANS
- 4.5 Broadband Wireless
- 4.6 Bluetooth
- 4.7 RFID
- 4.8 Data Link Layer Switching
- Homework #2 Due

Week 7
3/11: - Spring Break

Week 8
3/18: - Mid Term

Week 9
3/25: - UNIT V: THE NETWORK LAYER – Part 1
- 5.1 Network Design Layer Issues
- 5.2 Routing Algorithms
- 5.3 Congestion Control, Algorithms
- 5.4 Quality of Service

Week 10
4/1: - UNIT V: THE NETWORK LAYER - Part 2
- 5.5 Internetworking
- 5.6 The Network Layer in the Internet
UNIT VI: THE NETWORK LAYER – Part 1
- 6.1 The Transport Service
- 6.2 Elements of Transport Protocols
- Homework #3 Assigned

Week 11
4/8 - UNIT VI: THE NETWORK LAYER – Part 2
- 6.3 Congestion Control
- 6.4 The Internet Transport Protocols, UDP
- 6.5 The Internet Transport Protocols, TCP
- 6.6 Performance Issues
- Homework #3 Due
Week 12
4/15 - UNIT VII: THE APPLICATION LAYER – Part 1
- 7.1 DNS – The Domain Name System
- 7.2 Electronic Mail
- 7.3 The World Wide Web
- 7.4 Streaming Audio and Video
- 7.5 Content Delivery

Week 13
- 8.1 Cryptography
- 8.2 Symmetric Key Algorithms
- 8.3 Public Key Algorithms
- 8.4 Digital Signatures
- Homework #4 Assigned

Week 14
- 8.5 Management of Public Keys
- 8.6 Communications Security
- 8.7 Authentication Protocols
- 8.8 Email Security
- 8.9 Web Security
- 8.10 Social Issues
- Homework #4 Due

Week 15
5/6: Review of chapters or remaining lecture from chapter 8

Week 16
5/13 – Final Exam