TCOM 500: Modern Telecommunication
Section 002 and DL1. Fall 2011

Instructor: Dr. Shyam Pandula
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Teaching Assistant: TBA.

Time and Place: Wednesday 7:20 - 10:00 pm. Nguyen Engineering Building, Room 3511.

Office Hours: Monday/Tuesday/Wednesday 1:30- 2:30 pm. Nguyen Engineering Building, Room 3253.

Course Objective is to provide an in-depth introduction to various physical layer aspects of modern telecommunications. This is a core course for TCOM students.

Distance learning section is offered synchronously via the web using Blackboard and live Elluminate sessions. Elluminate student instructions and guidelines for proctored tests are posted on the Blackboard.

Required Textbook

Supplementary Textbook

Course Material
Course slides and homework assignments will be distributed via the Blackboard course management system {http://mymason.gmu.edu}. Login using your GMU email ID and password.

Homework will be assigned weekly and is due the following week. Late homeworks will be penalized by 20%.

Grading
Homework: 15%; Midterm 1: 25%; Midterm 2: 25%; Final Exam: 35%.
Tentative Course Schedule

- Week 1: Aug 31; Chapter 3.
  Data and Signals: Time and frequency domain concepts; channel capacity; transmission impairments.
- Week 2: Sept 7; Chapter 4.
- Week 3: Sept 14; Chapter 5.
  Analog Transmission: Digital modulation. ASK, PSK, FSK, QAM.
- Week 4: Sept 21; Chapter 5.
  Analog Transmission: Cont.
- Week 5: Sept 28
  **Midterm Exam 1**
- Week 6: Oct 5; Chapter 6.
  Multiplexing: FDM, WDM, TDM; spread spectrum: FHSS, DSSS.
- Week 7: Oct 12; Chapter 7.
  Transmission Media: Guided media; wireless media;
- Week 8: Oct 19; Chapter 7 and Hioki Chapter 18.
  Fiber Optics: Total internal reflection; propagation modes; wavelength division multiplexing.
- Week 9: Oct 26; Chapter 9.
  Telephone and Cable Networks: Digital subscriber line; HFC network for data transmission.
- Week 10: Nov 2
  **Midterm Exam 2**
- Week 11: Nov 9; Chapter 10.
  Error Detection and Correction: Block coding, Hamming distance; cyclic codes; Internet checksum.
- Week 12: Nov 16; Chapter 16.
  Wireless Communications: Cellular networks; satellite networks
- Week 13: Nov 23
  **No Class. Thanksgiving recess.**
- Week 14: Nov 30; Chapter 2.
  Network Models: OSI model; TCP/IP protocol suite.
- Week 15: Dec 8; Chapters 30 and 31.
  Cryptography: Symmetric key and asymmetric key cryptography.

- **Dec 15 Final Exam**