

# University of Maryland-College Park

## Department of Electrical and Computer Engineering

### ENEE 426: Communication Networks (Spring 2007)

#### Course Syllabus

- **Instructor:** Vahid Tabatabaee
- **Office:** AVW 4165
- **Email:** vahidt@umd.edu
  
- **Lecture time:** Tu-Th 2:00-3:15
- **First class:** Jan. 25
- **Last class:** May 10
- **Lecture location:** EGR 1108
- **Office hours:** M 11:00-12:00, Tu: 3:30-4:30
  
- **Required books:**
  - A. Leon-Garcia and I. Widjaja, *Communication Networks*, 2nd edition, McGraw Hill, 2004, ISBN 0-07-246352-X
  - E. Aboelela, *Network Simulation Experiments Manual* (for Peterson and Davie's textbook *Computer Networks*), 3<sup>rd</sup> edition, Morgan Kaufmann, 2003, ISBN 0-12-042171-2
  
- **Software:** OPNET IT Guru Academic Edition. Available free of charge at [www.opnet.com/itguru-academic/mk-setup.html](http://www.opnet.com/itguru-academic/mk-setup.html)
  
- **Course outline (26 lectures) (subject to revisions)**
  - Overview of communication networks and service (2 lectures) (reading: Chapter 1)
  - Layering and the OSI reference model (1 lecture) (reading: pp. 34-52)
  - Overview of TCP/IP (1 lecture) (reading: pp. 34-62)
  - Error detection and correction (1 lecture) (reading: 166-180)
  - Multiplexing, SONET and WDM (1 lecture) (reading: 207-234)
  - ARQ Protocols (2 lectures) (reading: 291-315)
  - Data link control protocols: HDLC, PPP (1 lecture) (reading: 324-340)
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  - Statistical multiplexing (1 lecture) (reading: 340-352)
  - Medium access control protocols (2 lectures) (reading: 370-421)
  - Local area networks and wireless LANs (2 lectures) (reading: 421-479) **(Labs 1,2,3)**
  - Datagram and virtual circuit networks (1 lecture) (reading: 490-510)
  - Routing and shortest path algorithms (1 lecture) (reading: 515-534)
  - Traffic management, Quality-of-Service and congestion control (2 lectures) (reading: 539-561) **(Lab 9)**
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- Internet protocol (2 lectures) (reading: 572-601)
  - TCP and UDP (2 lectures) (reading: 320-324, 601-620) (Lab 8)
  - Internet routing: RIP, OSPF and BGP (2 lectures) (reading: 620-640) (Labs 6,7)
  - ATM (1 lecture) (reference material: 534-539, 660-698) (Lab 5)
  - Integrated services, Differentiated services and MPLS (1 lecture) (reading: 705-740) (Lab 10)
- **Lecture format:** Lectures will be given using ppt slides.
  - **Problem sets:** There will be 6-8 problem sets. The assignments will count 10% toward the course grade.
  - **Laboratory exercises:** There will be 9 laboratory exercise sets from the Aboelela book. They use OPNET IT Guru software. The lab exercises will count 10% toward the course grade.
  - **Examinations**
    - **Midterm examinations:** There will be two midterm examinations in class during the semester. Each exam will count 25% toward the course grade.
    - **Final examination:** It will be cumulative but weighted toward the last third of the course and count 30% for the course grade.