

**CPE 648 Advanced Computer Networks**  
**MW 12:45-2:05 pm, spring 2011, EB 122**  
(Subject to change)

**Course Objectives:**

This course covers advanced principles and concepts of general-purpose computer networks, with a special emphasis to internetworking and the Internet. Transport and network level protocols emphasis. High-speed networking, performance modeling and estimation, congestion and traffic management, Internet routing, and QoS support will be covered.

**Required Textbook:**

High-Speed Networks and Internets: Performance and Quality of Service, 2nd Edition, by William Stallings, Prentice Hall, 2002, ISBN 0-13-032221-0

Power Point slides: [ftp://ftp.prenhall.com/pub/esm/computer\\_science.s-041/stallings/Slides/HsNet2e\\_PPT-Slides/](ftp://ftp.prenhall.com/pub/esm/computer_science.s-041/stallings/Slides/HsNet2e_PPT-Slides/)

**Other References:**

Computer Networks: A System Approach, 4<sup>th</sup> Edition, L. Peterson and B. Davie, Morgan Kaufman Publishers, Inc., 2007

**Course Prerequisites:**

- CPE 548 Introduction to Computer Networks

**Instructor:**

Dr. Seong-Moo (Sam) Yoo

**Office:** EB 217-D, **Phone:** (256) 824-6858, **Email:** [yoos@eng.uah.edu](mailto:yoos@eng.uah.edu) (I prefer Angel email)

**Office Hours:** MW 2:15 - 3:30 pm., and by appointment

**Course Web Page:**

- Angel course management software will be used to assist in course administration. Students may access Angel via the URL listed below.

<http://angel.uah.edu>

- Each student is responsible for checking the course Angel page for assignment updates and due dates, and other course related announcements.

**Course Grade Computation:**

Homework	25%
Midterm Exam	25%
Final Exam (comprehensive)	35%

Project	15%
Total	100%

**Attendance Policy:**

- Regular class attendance is mandatory.

**Academic Honesty:**

- Collaboration on tests/exam and homework will not be permitted and will be considered cheating.
- Students who cheat will receive **no credit (0)** for that test/exam or homework and be reported to the University Judicial Officer.

**Exam Policies:**

- Exam questions may be drawn from information presented during the class lectures, topics covered by homework, or material from the assigned textbook readings.
- All written exams are closed book / closed notes.
- Calculators are permitted in Exams. Other portable computing / data storage devices are not permitted.
- Distance-learning (DL) students can choose to take exams together with in-class students, or they have the option to choose other time slots as specified by the DL Office.

**Makeup Exam Policies:**

- Midterm Exam: March 2, 2011 (Wed). Midterm makeup exam must be made up within one week of the missed exam at a time convenient to the instructor. Instructor will not permit makeup exams after the one-week deadline. The student is responsible for arranging a time for the makeup exam; otherwise, you will receive no credit (0).
- **No makeup exams will be given for the Final Exam – UAH Policy**

**Noise Policy:**

- If your Cell Phone, Pager, or PDA rings during an exam, the instructor will take your exam and will grade it as it is. You will not be allowed to complete your exam, and you will not be allowed to take a makeup exam.
- If your Cell Phone, Pager, or PDA rings during lecture, the instructor may elect to leave the room. In this case, students will be responsible for learning on their own the material that would have been presented during that lecture.

**Homework Assignment Policies:**

- Homework should be submitted in time. No late homework is accepted. It is due at the beginning of classes.

- Distance-learning (DL) students have separate due dates.

**Final Exam:**

**Date & Time:** Monday, May 2, 11:30 am – 2:00 pm

**Location:** EB 122

**Content:** The final exam will be comprehensive!!

**Disclaimer:**

The instructor reserves the right to amend this syllabus as needed.

Any updates to the syllabus will be posted on the course Angel page.

**Course Outline:**

1. Introduction
2. High-Speed networks
  - Packet-switching networks
3. Performance modeling and estimation
  - Probability and stochastic processes
  - Queuing analysis
4. Congestion and traffic management
  - Congestion control in data networks and Internets
  - Link-level flow and error control
  - TCP traffic control
5. Internet Routing
  - Overview of graph theory
  - Interior routing protocols
  - Exterior routing protocols and multicast
6. Quality of Service in IP networks
  - Integrated and differentiated services
  - Reservation and multi-protocol label switching
7. Selected topics
  - IPv6 addressing schemes
  - Mobile IP