CS 428: Computer Networks and Data Communication

Coordinates: AAG23, TR 2:40–4:15
Instructor: Dr. Nael Abu-Ghazaleh
Office: EB - T20; phone: 777–4748
Email: nael@cs.binghamton.edu
Office Hrs: 2:30–4:00 MW or by appointment
Please Let me know if you cannot make office hours.

TA: Mr. Weishuai Yang
Email: wyang@cs.binghamton.edu
Office hours: TBA

Textbook:
- Internetworking with TCP/IP vol. 3, Comer and Stevens, Prentice Hall (Excellent reference for sockets programming; other sources are fine instead)

Description: Introduction to computer networks with an emphasis on the Internet. Understanding of fundamental principles, design issues and tradeoffs in networks and network protocols with examples from the Internet. The course will also cover emerging models, protocols and applications.

Outline: A tentative/likely set of topics:
- Introduction and Motivation (1 lecture)
- Socket programming (1 lecture)
- Physical Layer and Data Communication (1 lectures)
- Data Link Layer and Medium Access Control (3 lectures)
- Scalable Networks: packet switching and bridges (2 lectures)
- Internetworking: IP, Routing (4 lectures)
- Multicast (1 lectures)
- End-to-End (Transport) protocols (3 lectures)
- Congestion Control and Quality of Service (2 lectures)
- Naming (1 lecture)
- Peer-to-peer networks
- Applications/Application Layer protocols (2 lecture)
- Network Security (2 lectures)
- Advanced Topics: Mobile Networks, ATM, Router Design, Active Networks, Agents, High Performance Networks, Modeling and Simulation of networks (Time Permitting)
- Summary and Wrap-up (1 lecture);
Policies:

- The class homepage is at http://www.cs.binghamton.edu/~nael/cs428/
  This page will also have class related announcements and links to resources including
  class notes (see below).

- Copies of class slides will be posted to the class webpage. I usually prepare the slides
  the day of the lecture, so I cannot promise they will be ready too long before class.

- Academic dishonesty (cheating, plagiarizing, copying, etc..) will not be tolerated
  and will be dealt with according to college and university policies: F in the copied
  work at a minimum; F in the course and a note on the student’s record for major or
  repeated cases.

- Problems (mostly from the book) will be assigned from time to time (4 or 5 total)
  and are generally due one week from the date they are assigned. The worst of the
  homeworks will not count towards your grade.

- There will be 3 programming assignments. You have a one time 3 day extension that
  you can ask for any of the assignments without penalty. Late assignments (without
  extension) are penalized 10% each late day. Please try not to take your extension on
  the last assignment.

- There will be two midterms (dates announced in class). The better of your midterms
  will count for 1.5 times the credit of the other.

- The final exam is comprehensive and will be conducted early in finals week. You
  can get out of the final if you do extra project components.

- This is a tough class; you can count on exams and assignments that will challenge
  you. Keys to a good grade:
  - come to class;
  - keep up with the reading;
  - Start projects and homeworks early. There is a correlation between how early
    you start and your performance!
  - Ask for help as soon as you dont understand anything (come to office hours, I
    am willing to schedule time outside of office hours if you need more help). Ask
    questions, and participate in discussions.

Grading:

- Class participation (5%) – it really makes a difference in your grade (and more im-
  portantly, how much you get out of this class)

- Homeworks (25%)

- Programming Assignments (25%)

- Midterms (25%)

- Final exam (20%)

Good luck!