

COMS W4119 - Computer Networks

Course Information

Professor Dan Rubenstein

Summer 2006 (CVN)

Contact Information		
	Dan Rubenstein (Instructor)	Huang-Hsu Chen (TA)
Office	CEPSR 816	Mudd 122A
Phone	(212) 854-0050	TBD
e-mail	danr@cs.columbia.edu	hc2237@columbia.edu
Mailbox	in Mudd 1312 (EE Office)	TBD
Office Hours	By appointment only	By appointment only

Course URL: <http://www.cs.columbia.edu/~danr/4119>. Homework and solutions

Course meeting time / location: None (pre-taped)

Pre-Requisites

COMS 4118, C or Java programming, Algorithms

Description

Topics: Introduction to computer networks and the technical foundations of the Internet, including applications, protocols, local area networks, algorithms for routing and congestion control, security, elementary performance evaluation. Several programming assignments required.

Grading

Your grade consists of:

0% **Homework:** Homework that was assigned during the term will not be graded over the summer. The reason being, the solutions are already posted. It is recommended that you do the homework and compare your answers to the posted solutions.

25% **Programming Assignments:** You should write your own code. Note our ability to check the compiled code for similarities, not just for the summer, but also against code written last term.

One difference from the Spring Term. Test code will be available for you to test your programs, but you will have to run all test code yourself. During the Spring term, we also ran a testing site where you could test the code - this will not be done over the summer.

NOTE FOR SUMMER'06: programming assignment due dates are listed on the main course webpage. Follow the same instructions. These dates are already pushed back, so you should easily have already covered the necessary material. Note that during the term, there were additional delays due to the need to wait for the TAs to complete the test code. Since the same test code is being used and is immediately available, these delays no longer apply. The PAs are due when the website says they are due!

Due dates for the four programming assignments (in order PA1, PA2, PA3, PA4) are 6/20, 7/6, 7/18, 8/1

The schedule is available at <http://www.cs.columbia.edu/~danr/4119/#hw>.

30% **Mid-term:** June 16, 2006. If you cannot take the midterm on this date, please drop the course. The only exception is for a major catastrophe (illness, death in the family), or something else where you can bring me proof of the event, such as a doctor's note. I do require proof.

45% **Final:** The final exam will be scheduled during CVN's Final Exam Week (August 8-14). If you cannot make one of these dates, I need to be informed **in advance** at the start of the term. If there are no conflicts, I plan to make the exam for August 10.

Exams: I try to test your understanding of a concept, and not just straightforward regurgitation of formulae, i.e., **why** certain rules, laws, and techniques hold and are used. Hence, I try to design the midterm and final questions to test your understanding of the concepts, not your memorization skills. I realize that some memorization will undoubtedly be required, but hopefully the memorized concepts will be those that can be re-derived via your intuition. I usually take a problem covered in class and put a small "twist" on it, so that blind application of the method won't work, but if you have the kind of understanding I am looking for (e.g., the kind that the inventor of the method had), you will know how to adapt the method.

A note on effort: Your grade will mainly be a reflection of how you perform on the midterm and final. Homework grades don't have much of an effect, as long as homework is turned in. **You should do the homework so that you learn the material.** If you find yourself copying or getting solutions from someone else without putting in the effort of solving them yourself, you'll probably find yourself doing poorly on the exams. You won't get much sympathy from me if you come crying to me at the end of the term that you did well on the homework yet poorly on the midterm and final.

How much I care about helping students is directly proportional to how much you seem to care about the class (for CVN, this is how much I get contacted for clarification on a topic.)

Reading / Texts

- **Required:** James F. Kurose and Keith W. Ross, *Computer Networking: A Top-Down Approach Featuring the Internet*, 3rd ed. Addison-Wesley, 2005, ISBN 0-321-22735-2
- **Optional:** Dimitri Bertsekas and Robert Gallager *Data Networks (2nd ed.)*, Prentice Hall, 1992. ISBN 0-13-200916-1. Significant mathematical treatment (graduate 6000 level - practical stuff a bit out of date).
- **Optional:** Andrew S. Tanenbaum, *Computer Networks* (4th ed.), Prentice Hall, 2003. ISBN 0-13-066102-3. A lot like Kurose/Ross
- **Optional:** Alberto Leon-Garcia and Indra Widjaja, *Communication Networks: Fundamental Concepts and Key Architectures*, 2nd ed., McGraw-Hill, 2004. ISBN 0-07-246352X. A bit more mathematical than Kurose-Ross, but less than B&G.

Computing Accounts

You need access to a computer with Berkeley Sockets or the Java equivalent

Cheating

In short: don't do it. Be warned now - I take cheating very seriously. If you are caught cheating on the midterm or final, you will fail the class and I will likely take additional action which can result in your suspension or expulsion from Columbia. It's not worth putting yourself in this position.

You must use common sense about when to collaborate / use notes / calculators, etc. If you are unsure of a policy, you should ask me or the TAs first *before* doing something you (and I) might consider unethical. Both I and the TAs will be putting a lot of time into teaching you this course. Our goal is to teach you the material. Grades on homeworks, midterms, and finals are not only a means to evaluate you, but also a means to force you to learn the course material.

If you do your own work but facilitate someone else's cheating, you run a risk of getting in trouble as well. This is because you run the risk of having me determine who copied from whom. If you feel that someone is pressuring you to help them in a way that makes you uncomfortable, come talk to me / send me e-mail. You should feel free (and actually I would encourage you) to

- Discuss homework problems / give hints / work together through a part of a problem that you are stuck on
- Study for the midterm / final together

Student Feedback

I'm always looking for ways to improve the course. If you have any comments or criticism about the course, or find any mistakes or misleading facts / comments in the lecture, please feel free to contact me. This includes comments on the material being covered, teaching style, pace of the class, workload, etc. I will try and accommodate, but I can't make any promises...

Things to know about Professor Rubenstein

- I write on the board (i.e., I don't use slides, I don't provide handouts, etc.) so if you want to know what is going on in class, come to class, or get a friend to take notes.
- I use the book as a rough guide, but I don't follow it verbatim. I will leave out lots of material that is covered in the book, and will interject material that I think is relevant (i.e., a more theoretical/mathematical treatment than what is provided in the book). Some students complained that I hardly followed the book. I don't think the book is essential for the course, so you don't have to buy it.
- responds to e-mail in batches. I get between 50-100 e-mails a day that require a response. I read everything as it comes in (Unless traveling, I check e-mail several times during the day, before I go to bed, when I wake up, etc.) but if an e-mail takes more than a minute to craft a response, I usually wait to answer it. Roughly once or twice a week, I do a sweep of my inbox and respond to e-mails in a batch. So if you have questions on the homework and cannot come to office hours, my advice is to not wait until the last minute if you want me to answer questions via e-mail.
- Some Outside Thoughts (from Columbia Underground Listing of Professor Ability (CULPA) at www.culpa.info)
For ELEN E4710: Intro to Networking Theory (from someone who isn't my biggest fan):

"My worst academic experience. Pay 200% attention during lectures if you are taking his class since nothing he teaches in lectures will be found in the textbooks. Never buy the textbook he assigned since I have never used it once. Professor Rubenstein seems to be a very smart person and he gets annoyed with questions. Don't take his class if you have problems getting up. He always has 9:00am classes, hws are due at the beginning of the class and LATE assignments are never accepted, even if you arrive 30 seconds after the lecture has started. Homeworks are very very difficult, so are exams. you are doing really well if you get above 70% in HWs. Midterms and final scores usually averaged around ~ 40%.

Workload: Around 7 - 8 assignments. Due dates usually get postponed since he never finishes the materials on time."

A lot of this was true for 4710: I didn't follow a book at all (I didn't think any book was at the right math level) but expect to be closer to the book here. I don't agree that I don't like questions.