CS 485/ECE 440/CS 585 Computer Networks, Fall 2011

Instructor: Jed Crandall, jedcrandall@gmail.com

Never hesitate to email me directly about anything. If you're emailing me something about your group assignment, always cc the members of your group unless there’s some reason for privacy.

Office and office hours: FEC 335, Tuesdays and Thursdays from 9:30am to 10:30am, and Wednesdays from 2pm to 3pm.

Prerequisites: None formally, having taken CS 341 (Computer Organization and Design) before this class is recommended but not strictly necessary. We won't use any assembly or computer architecture material in this class, but when I discuss systems issues such as context switches or kernel vs. user space I will generally be assuming that all students understand these things as they would coming out of CS 341 and entering CS 481.

TA: The TA is Xu Zhang, he will attend class regularly. He will mostly help out with system administration-type duties, but I might put you in touch with him for help with projects for things like statistics and evaluation methodologies.

Mailing lists: There are two mailing lists, one required and one optional. See the course website for details.

Course website: http://www.cs.unm.edu/~crandall/netsfall11/
I'll post lots of important stuff here, like the lab assignments, links to the mailing lists and Google calendar, grades, etc.

Required text: Computer Networks: A Systems Approach by Peterson and Davie. I'll assume the 4th edition for reading assignments and tests. With this in mind, you can use the 3rd edition or 5th edition (which both look to be similar to the 4th edition, but the judgment is yours) at your own risk.

Class meeting time and place: Tue/Thur 8:00am to 9:15am, in Mechanical Engineering 310 for the first week of classes and then TBA after that (hopefully we'll be in the new classroom in the basement of the Centennial Engineering Center). Attendance is required, and I will be taking roll all semester.

Grading: The final grade will be calculated as 50% labs, 30% attendance, 10% midterm, and 10% final. The points for each will be added up and divided into the total possible before weighting, so a 100-point lab does not necessarily contribute the same amount to your grade as a 100 point final. I reserve the right to curve the overall grades at the end of the semester (up, never down) if I don't feel that they reflect the amount of effort students put into the class. The overall grade will be out of 100, weighted as described above. For letter grade purposes, below 60 is an F, 60 and up is a D, 65 and up is a C-, 70 and up is a C, 75 and up is a C+, 80 and up is a B-, 82 and up is a B, 85 and up is a B+, 87 and up is an A-, and 90 and up is an A. I only give A+'s in extreme circumstances.

Note: The grading standards on the midterm and final are different for undergraduates (ECE 440 and CS 485) and graduates (CS 585). It's likely that there will be separate tests for undergrad vs. grad.

Labs: There will be 2 labs, each with a 50 point proposal, a 100 point writeup, and a 50 point personal statement for a total of 200 points for each lab. You will be using tools such as Wireshark and virtual machines. Programming is encouraged, C, Perl, and Python are recommended. You may use other
scripting languages (e.g., Ruby), but keep in mind that I won't be able to help you as well in languages I don't know as I can in languages I do. Silly fairy tail languages such as LOLCODE or Java are strongly discouraged and will not be supported in the lab environment. Be sure to start early on the lab assignments and get the help you need to get them done.

Late assignments will be accepted only in special circumstances (medical, etc.).

**Attendance and reading assignments:** I will be taking attendance every day of the semester. Your grade for attendance will be the fraction of regularly scheduled lecture periods for which you are present. I may mark you as not present, without immediately notifying you, for any of the following reasons:

- If you don't show up to class that day.
- If you're more than five minutes late.
- If you're using any computer (even a personal computer) for things not related to this class (e-mail, Facebook, etc.).

I'll drop up to two “not present” days at the end of the semester. Things like medical emergencies, attending conferences, etc., may be considered excused absences (i.e., not count against your grade) if you contact me about them in a timely manner.

**Midterm:** The midterm will be on Tuesday, 11 October in class at the regular time. It may be curved.

**Final:** The final will be at 7:30am on Thursday, 15 December. It may be curved.

**UNM statement of compliance with ADA:** “Qualified students with disabilities needing appropriate academic adjustments should contact the professor as soon as possible to ensure your needs are met in a timely manner. Students must inform the professor of the disability early in the class so appropriate accommodations can be met. Handouts are available in alternative accessible formats upon request.”

**Cheating and collaboration, personal statements:**

You and your group members are expected to do your own lab setups, collect your own data, and write your own lab writeups. Sharing of source code, configuration files, etc., is encouraged. This is not a programming class, so feel free to grab source code from any place you can find it. Everything you write in the English language, and all ideas that you present as your own in the experimental setup and discussion, however, needs to be original material by you. If you copy and paste any material (English text, figures, etc.) from any source you must clearly delineate it and attribute it properly to its source. Representing the work and materials of others as your own will not be tolerated in this class.

Each lab assignment will have specific instructions about what is acceptable in terms of cheating and collaboration. Be sure to read it, and if you don't understand it ask me questions.

Each test will state at the top what materials you’re allowed to use (book, notes, etc.). Not noticing, for example, that the top of the test says that it’s not open notes is not an excuse. Anything not specified as open is closed. In other words if the test instructions don’t say “open-iPod” you should assume that the test is closed-iPod, and if the test instructions don’t say “open-cheat-sheet-on-the-inside-of-your-water-bottle-label”, assume that the test is closed-cheat-sheet-on-the-inside-of-your-water-bottle-label.

All university policies regarding these matters will be strictly enforced. Typically I’ll give the cheating parties a 0 on the assignment, but I may pursue further action in some cases.

Both lab assignments will be group efforts. I expect everybody to contribute, if some group members do all the work and others slack off, I consider that a fault of each and every member of the group individually. Doing all the work yourself is not an alternative to showing leadership. Every group
member will attach a personal statement to the final submitted lab writeup stating their contributions. All members of the group must be given a chance to see the personal statements of the other group members before submitting. If another group member claims a contribution that they didn't actually make, your two options are (1) ask them to change their personal statement, or (2) tell me about it privately. Personal statements should answer the following questions:

1. What tangible contributions did you make (source code, writing, implementation, experimental testing, etc.)? “Tangible” means that if I ask you to show it to me you can show it to me.

2. What ideas did you contribute to the experimental design?

3. In what instances did you show leadership for the group (motivating people to work, helping them learn something, organizing meetings, etc.)?

If your personal statement is misleading in any way, that can be considered cheating, so make sure your personal statement is truthful. I reserve the right to call any student into my office and ask them questions about their personal statement and technical questions about the lab itself before giving a grade for the personal statement.

My expectations of you as students

- **Be studious:** I'm fairly old-fashioned, I expect students to come to class, to come on time, to stay on task, to take the time to make sure they understand things well, etc.

- **Take responsibility for your own learning:** you're either registered for a 400-level class or for a graduate class, at a major research institution. If you find that coming to the regularly scheduled class time is a waste of time, then you're not taking responsibility for your own learning. Don't expect me to spoon-feed you information that is already well-known, you don't want to pay ~$750 in tuition for me to tell you what's in the ~$60 book that you could read yourself if you wanted to. My job is to teach you how to learn things that nobody knows yet, which is why we'll focus on experimental methodology a lot in this class. A good philosophical approach for you to take in this class is to “teach the teacher.”

- **Do only excellent work:** anything worth doing is worth doing well. In terms of your grade, you'll be much better off doing solid experiments that are very simple than to try to do complicated experiments with flawed methodologies. You'll also be better off giving me 5 pages that are well-written and compelling than 15 pages of nonsense. Keep it simple and make sure everything you do is excellent.

- **Show leadership and be a mentor:** don't think that this class is only about computer networks. If someone in your group is not as strong as you are in networking or programming, help them learn and motivate them to get things done instead of doing everything yourself.

Material to be covered:

We'll try to stick to the very basics of networking: TCP/IP, UDP, sockets, and some very basic issues in traffic engineering. We'll be applying this knowledge to try to learn new things that aren't in the book and that nobody knows yet. Specifically, for the first project we'll be looking at TCP issues that affect the performance of the Tor network which will require some domain knowledge about Tor. If you have a specific interest you'd like us to talk about in class, you don't understand the background material as well as you'd like to, or you have any other suggestions for lectures or class discussions please let me know.