Class meeting time

MWF 10-10:50am, Dane Smith Hall 132

Labs: W 12-12:50pm or Th 2-2:50pm, Engineering and Computer Science Computer Pod 109 (Los Alamos ITV students will attend the Wednesday lab remotely).

Attendance

For lectures, regular attendance in person (either in DSH 132 or in one of the remote ITV classrooms) is expected. The lectures are available live and via recorded video, but if you need to use these options (e.g., due to an emergency at work) it’s still considered an absence for grading purposes, in particular for pop quizzes. If you miss two lectures in a row and I don’t hear from you, I reserve the right to use LoboWeb’s instructor drop feature to drop you from the course.

Lab attendance is required and is explicitly part of your lab grade, as outlined below.

Office hours and contact info

My office is FEC 335. My number is 505-277-0380. My gmail account, jedcrandall@gmail.com is much more reliable than my CS account e-mail, but either is fine.

Office hours: M 3-4pm and Th 3-5pm, or by appointment

If I’m in my office at any time and the door is open or cracked, feel free to knock and drop in.

*It is always okay to email me directly about anything, this is a relatively small class so don’t ever hesitate to email me.*
Teaching assistant

Jeff Knockel, jeff250@unm.edu (email your lab assignments for turnin to the gmail account, though).

Jeff’s office is FEC 301A, office hours Tue 11am-12noon, W 1-3pm, or by appointment.

The TA’s primary responsibility is helping you with the labs (and grading the labs), so make sure to utilize him. No student can be successful in CS 341 without getting lots of help on the labs. Because of the nature of the labs (assembly language, system-level details, etc.) it is not expected that you can listen to the lectures, get the assignment, and then complete it without help – you will probably need to spend a lot of time with Jeff or I getting help and debugging your programs so get in the habit of utilizing office hours early in the semester.

Final

Friday, 18 December 7:30am to 9:30am. This is non-negotiable. Don’t make travel plans before this.

Prerequisites

CS 241L and ECE 238L, but if you know basic digital logic and some C, you should be fine. If not, see me early in the semester and I’ll give you some reading.

Required text book

Patterson and Hennessy, Computer Organization and design, 4th edition. 4th edition is required (older editions are not okay), but the CD that comes with the book is not required and Andree taught out of this edition in the spring so you might be able to pick up a used copy.

Mailing list

cs341l@cs.unm.edu

It is required that you join this mailing list, and you are responsible for reading the messages I post there. Instructions for joining the mailing list are on the course web page.
Course web page

http://www.cs.unm.edu/~crandall/341lfall2009/

Tests

Test 1: Friday, 18 September, during class  
Test 2: Friday, 9 October, during class  
Test 3: Friday, 6 November, during class  
Test 4: Friday, 11 December, during class  
Final: Friday, 18 December at 7:30am

Los Alamos students will take the tests in Los Alamos, Sandia must take the tests with the rest of the class on the Albuquerque campus.

If you miss a test with prior permission or if there’s an emergency then you can take the test at a later date but your score will be cut in half and you’ll need to try to make up the other half of the points by writing an essay where I decide the length and topic. The essay can’t possibly help your score on the test, which will be capped at the score you get on the actual test. Because I decide the length and topic of the essay, you’d do best not to miss tests.

Labs

The policies and grades for the labs will be handed out as a separate syllabus.

Grading

Your grade for the course will be based 50% on the lectures (tests, homeworks, pop quizzes, etc.) and 50% on the labs.

The lecture part will be broken down as follows (using a simple weighted average): 30% of the lecture grade is the final, 12.5% for each of the four tests totaling 50%, and 20% for homeworks and pop quizzes.

I will curve all of the tests and write your raw score in red and your adjusted score in blue. The blue score is the one that goes in the grade book.

Out of 100, 90 up is an A, 87 to 90 is an A-, 85 to 87 is a B+, 80 to 85 is a B, 75 to 80 is a C+, 70 to 75 is a C, 65 to 70 is a C-, 60-65 is a D, and below 60 is an F.
I reserve the right to curve either the final lab grades or the final overall grades up (never down) if needed.

Homeworks and pop quizzes will typically be graded out of 10 points and then averaged at the end but some homeworks will be worth more than 10 points.

Students that are registered pass/fail should contact me early in the semester to discuss expectations and grading.

**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**

Note that the labs will have a separate syllabus, the following applies to the lecture part of the course.

Unless specified otherwise at the top of the assignment, all assignments are individual efforts. Do not look at the code/solutions of others nor share your own code/solutions with them. You can discuss assignments at a high level only. Any cheating will result in an automatic 0 on the assignment and possibly in further action pursuant with university policy.


Pop quizzes will typically be written on your own paper so bring blank paper to class. Treat them as tests with regards to the cheating policy. Also, the pop quiz must be turned in to me (or to the proctor for ITV students) before you leave class. Students who miss class or are more than 10 minutes late and still try to turn in pop quizzes without informing me of this will be considered to be cheating.

**Pop quizzes and homework**

In addition to a few homeworks, there will be at least several pop quizzes at the beginning of class. They’ll be ad-hoc questions written on the board or given orally, and
your answers will be written on blank pieces of paper. These will happen at the beginning of class on random dates. If I come to class and see that a few people or more are missing, that will be a good day for a pop quiz so keep in mind that your missing class and the probability that there will be a pop quiz are not independent. As per university policy I will not target specific students’ absences with pop quizzes, but beyond that constraint I reserve the right to choose any regularly scheduled lecture dates for pop quizzes that I want to.

Unless otherwise specified, homework is due at the beginning of class on the due date. As per university policy, each student gets 2 days of late homework, i.e., you can turn in one homework two days late or two homeworks one day late. After that no late homeworks will be accepted. A single minute past the due time counts as a full day for this policy, so don’t expect to use your 2 days in less than day-long increments.

**Tentative schedule**

Week of 8/24: Administrativia, basic computer organization, die cost models, beginning MIPS, read chapter 1
   Lab 1: Hello World in MIPS

Week of 8/31: MIPS, assembly language concepts, read chapter 2
   Lab 2: Floating point tomfoolery in C

Week of 9/7: Labor day on Monday, computer arithmetic, read chapter 3
   Lab 3: Loops and arrays in MIPS, part 1

Week of 9/14: More MIPS, review, test on Friday
   Lab 3: Loops and arrays in MIPS, part 2

Week of 9/21: Processor datapath, control path, basic terminology, read 4.1 through 4.5
   Lab 3: Loops and arrays in MIPS, part 3

Week of 9/28: Pipelining and pipeline hazards, read 4.6 through 4.15
   Lab 4: Recursion in MIPS, part 1

Week of 10/5: Superscalar, advanced topics, review, and test on Friday
   Lab 4: Recursion in MIPS, part 2

Week of 10/12: Caches, fall break on Thursday and Friday, read 5.1-5.3
   No lab

Week of 10/19: More caches, read 5.7-5.13
   Lab 5: Cache simulator in C, part 1
Week of 10/26: Virtual memory, operating system concepts, system calls, read 5.4-5.6
   Lab 5: Cache simulator in C, part 2

Week of 11/2: Review, test on Friday
   Lab 5: Cache simulator in C, part 3

Week of 11/9: Storage, read chapter 6
   Lab 6: Compiling C to both MIPS and x86 and seeing pointers, arrays, system calls, etc.

Week of 11/16: Multicore, consistency models, performance evaluation, read chapter 7
   Lab 7: Multithreading with pthreads and locks in C

Week of 11/23: Guest lectures, thanksgiving on Thursday and Friday
   No lab

Week of 11/30: GPUs and other computing paradigms, history
   Lab 8: Programming a GPU in CUDA

Week of 12/7: Review for final, review for test 4, test on Friday
   Optional extra credit lab: buffer overflow attack