ICS 54 — Software Tools and Systems Programming in Unix and C

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Goals

This course is an in-depth study of principles and concepts embodied in modern Internet-connected, multiuser, multitasking operating systems (MICMMOS, :-)), including shells, filters, pipelines, programmability and scripting, extensibility, concurrent processing, and interprocess communication. Several integral tools and utilities are presented. Unix is used to provide concrete examples, focusing on the file system, processes, shells, and various tools including awk, diff, file, find, ftp, grep, make, man, nslookup, sed, sort, tar, traceroute, uniq, vi, which, zip, etc.

The course provides a solid conceptual and experiential basis for subsequent work in the programming, system administration, and effective general use of the Unix operating system. This conceptual basis for subsequent work is more generally applicable to other MICMMOS's and to later courses which study or use them.

Required Text:

- *UNIX for Programmers and Users.* Glass & Ables. (Prentice-Hall).

Classiic Texts:

- *The C Programming Language*, 2nd ed. Kernighan & Ritchie. (ANSI Edition)
- *The UNIX Programming Environment.* Kernighan & Pike
  - K&R and K&P are the the bibles for C and UNIX; indispensable references

Other useful books:

- Kelley & Pohl, *A Book on C.*
- Abrahams & Larson, *UNIX for the Impatient*–a big, big book. Excellent reference. Bad for a text.
- Kernighan & Plaugher, *The Elements of Programming Style*–a classic, generally good advice for Unix & C programming.
- Weiss, *Efficient C Programming*–some more advanced topics, much good advice
- Garfinkel, Weise, Strassmann, *UNIX Hater's Handbook.*

Grading

Assignment/test/exam	Value	out	due	Duration
#1	5%	Jan 11	Jan 18	1 week
#2	5%	Jan 18	Jan 25	1 week
#3	10%	Jan 25	Feb 8	2 weeks
#4	10%	Feb 8	Feb 24	2.3 weeks
Midterm	15%	Feb 10	in class	70 minutes
#5 (project)	15%	Feb 24	Mar 22	3.7 weeks
Exam	40%			

To pass the course you must pass both the midterm and the exam (pass = 50%).

Late Policy for assignments

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- assignments are to be turned in at the START of class
- late assignment date is judged as of moment I see it.
- excuses will be listened to.  Good ones will be accepted.
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received	penalty (out of 100%)
in class but after class starts	4%
up to 1 business day late	8%
up to 2 business days late	16%
up to 3 business days late	32%
up to 4 business days late	64%
up to 5 business days late	128%

Regrading requests

All requests for regrading must be submitted in writing with an explanation of why you think you should get more marks. Comparisons with the grades of other students in the class are allowed but in this case both assignments must be handed in for regrading. In any case, the **entire** assignment will be regraded; thus, you risk losing marks in other places where the grader may have been generous, even if your case has merit.

Academic dishonesty

Academic dishonesty will not be tolerated in any form. You may discuss ideas with your classmates (and others), but no written notes should be taken away from such discussions. All work you hand in must be your own. This course strictly adheres to all relevant University and ICS policies. It is each student's responsibility to be aware of these policies. To this end, all students are advised to (re)read the UCI Academic Senate Policy on Academic Honesty, noting in particular that any single incident of student academic dishonesty in this course is sufficient to merit a failing grade in the course with a letter of explanation being placed in the student's file. The Academic Honesty Policy for Information & Computer Science also applies to this course and deals explicitly with with course work involving computers.

If you are unsure whether certain behavior is acceptable, ask before you engage in it.

Why Unix?

- "The UNIX system can't last forever, but systems that hope to supercede it will have to incorporate many of its fundamental ideas." Kernighan & Pike, *The Unix Programming Environment* (Prentice-Hall, 1984)
- Those who do not understand Unix are condemned to reinvent it—poorly.
- Unix gives you just enough rope to hang yourself—and then a couple of more feet, just to be sure.
- Unix is the answer, but only if you phrase the question very carefully.
- Unix is user-friendly. It's just very selective about who its friends are.