

CSCI 4320 (Principles of Operating Systems), Fall 2007

Syllabus

1 Course description

This course introduces the fundamentals of operating systems design and implementation, following the guidelines established by the Association for Computing Machinery (most recently described in Computing Curricula 2001¹).

Course topics

- Role and purpose of operating systems.
- History of operating systems.
- Processes and process management, including a discussion of concurrency and related issues.
- Memory management.
- Input/output and device management.
- File systems.

2 Basic information

Class meeting times and location

- MWF 12:30pm – 1:20pm, HAS 340

Prerequisites

- CSCI 2321

Instructor contact information

- Dr. Berna Massingill
- Office: HAS 201L
- Office phone: (210) 999-8138
- E-mail: bmassing@cs.trinity.edu

Office hours

Scheduled office hours for this semester are as follows.

- Monday 1:30pm – 2:30pm (HAS 201L), 2:30pm – 4:30pm (HAS 340)
- Tuesday 2pm – 4pm (HAS 201L)
- Wednesday 1:30pm – 2:30pm (HAS 201L), 2:30pm – 4:30pm (HAS 340)
- Thursday 2pm – 4pm (HAS 201L)

¹http://acm.org/education/curric_vols/cc2001.pdf

These times are subject to change; a current schedule will be available on my Web page and outside my office door.

If I'm not at the designated location, I should be somewhere in the building (perhaps in one of the labs helping another student), and there will often be a note on my door saying where to find me.

Notice that some office hours are held in HAS 340: These are "open lab" times, during which I'll be in one of the department's labs, prepared to answer questions. The intent is that students can use these times to work on assignments with someone available to help with any questions or problems.

In addition to scheduled office hours, you're welcome to drop by and see if I'm in my office and free to talk, or you can make an appointment by calling me or sending me e-mail.

E-mail is almost always a good way to reach me; I normally check it fairly often and reply promptly.

3 Course materials

Textbook

- Andrew S. Tanenbaum. *Modern Operating Systems*. Prentice Hall, second edition, 2001.

Web page

Most course-related information (this syllabus, homework and reading assignments, etc.) will be made available via the Web. The course Web page is a starting point for Web-accessible course material; you can find it linked from my home page (<http://www.cs.trinity.edu/~bmassing>) or directly at http://www.cs.trinity.edu/~bmassing/Classes/CS4320_2007fall/HTML.

Other references

There are many books on operating systems and related topics. Here are a few that may be of interest.

- M. Beck, H. Boehme, M. Dziadzka, and U. Kunitz. *Linux Kernel Internals*. Addison Wesley Longman, second edition, 1998.
- K. M. Chandy and J. Misra. *Parallel Program Design: A Foundation*. Addison Wesley, 1989. A nice mathematical/formal treatment of concurrent algorithms (tangentially relevant to this course).
- A. M. Lister and R. D. Eager. *Fundamentals of Operating Systems*. Springer Verlag, fifth edition, 1993. Long out of print, but an excellent short book emphasizing basic concepts.
- M. K. McKusick, K. Bostic, M. J. Karels, and J. S. Quarterman. *The Design and Implementation of the 4.4BSD Operating System*. Addison Wesley, 1996.
- A. Silberschatz, P. B. Galvin, and G. Gagne. *Operating System Concepts*. John Wiley & Sons, Inc., seventh edition, 2004. Popular textbook, with more detail than Tanenbaum but more difficult to read.
- A. S. Tanenbaum and A. S. Woodhull. *Operating Systems: Design and Implementation*. Prentice Hall, third edition, 2006. A more implementation-oriented treatment, using Tanenbaum's MINIX operating system.

4 Course requirements

Grading

Grades in this course will be determined by the results of two major exams (a midterm and a final), several homework assignments, and class participation, weighted as follows.

Component	Maximum points
Midterm exam	100
Final exam	200
Homework	about 300
Class participation	20

Numeric grades will be calculated as a simple percentage, by dividing total points earned on the above components by total points possible. These numeric grades will then be converted to letter grades based on a curve, but in no case will the resulting letter grades be worse than students would receive based on the following scheme.

Numeric grade	Letter grade
90 – 100	A-/A
80 – 89	B-/B/B+
70 – 79	C-/C/C+
60 – 69	D/D+
0 – 59	F

Exams

Exams are comprehensive but will emphasize the most recent material. They are scheduled as follows; please plan accordingly (i.e., avoid scheduling anything else for these times).

- Midterm: October 10, in class.
- Final exam: December 11, 2 pm.

Homework assignments

Several homework assignments will be required for successful completion of this course. Some will require programming; others will not. Detailed requirements will be provided as part of each assignment; due dates will be announced via the course Web page.

Attendance

Regular class attendance is strongly encouraged; class participation grades will be based in part on attendance.

E-mail

Course-related announcements will sometimes be made by sending e-mail to the Trinity e-mail addresses of all registered students. Students are strongly encouraged to read mail sent to their Trinity addresses frequently.

Late and missed work

Exams can be made up only in cases of documented conflict with a university-sponsored activity, documented medical emergency, or conflict with a religious holiday.

Unless otherwise stated for a particular assignment, homework will be accepted up to one class period late, *but no more*, at a penalty of 10 percent off per working day. This penalty may be waived or additional time allowed *at the instructor's discretion* in cases of illness or conflict with a university-sponsored activity or religious holiday.

If you have unusual circumstances (as we all sometimes do), please discuss these with me as far in advance as possible.

Academic integrity at Trinity

All students are covered by a policy that prohibits dishonesty in academic work. The Academic Integrity Policy (AIP)² covers all students who entered Trinity before the fall of 2004. The Academic Honor Code³ covers all those who entered the fall of 2004 or later.

The Integrity Policy and the Code share many features: Each asserts that the academic community is based on honesty and trust; each contains the same violations; each provides for a procedure to determine if a violation has occurred and what the punishment will be; each provides for an appeal process.

The main difference is that the faculty implements the AIP while the Code is implemented by the Academic Honor Council. Under the Integrity Policy, the faculty member determines whether a violation has occurred as well as the punishment for the violation (if any) within certain guidelines. Under the Code, a faculty member will (or a student may) report an alleged violation to the Academic Honor Council. It is the task of the Council to investigate, adjudicate, and assign a punishment within certain guidelines if a violation has been verified.

Students who are under the Honor Code are required to pledge all written work that is submitted for a grade: "On my honor, I have neither given nor received any unauthorized assistance on this work" and their signature. The pledge may be abbreviated "pledged" with a signature.

Collaboration and academic integrity in this course

Unless otherwise specified, all work submitted for a grade (homework assignments and exams) must represent the student's own individual effort. For students covered by the Academic Honor Code, unless otherwise stated all submitted work will be considered pledged work.

Discussion of homework assignments among students is encouraged, but not to the point where detailed answers are being written collectively. Graded papers and sample solutions from previous years (exams and homeworks) are off limits. Answers that are identical beyond coincidence (either to another student's work or to a sample solution from a previous year) will be considered to be in violation of the AIP or Honor Code, whichever applies, and *will result in appropriate action*. You are responsible for the security of your work, both electronic and hard copy.

²http://www.trinity.edu/departments/academic_affairs/hb/instrpol/acadintg.htm\#TOP

³http://www.trinity.edu/departments/academic_affairs/honor_code/