

Advanced Operating Systems

Fall 2005
CS 63201 / 73201

Instructor

Dr. Robert A. Walker
walker@cs.kent.edu
<http://www.cs.kent.edu/~walker>

MSB 233a, (330) 672-9055
Office hours = most afternoons 2-3pm, or by appt.

Teaching Assistant

to be determined (probably none)...

Course Prerequisites

The 2005-06 Graduate Schools Catalog *incorrectly* lists the prerequisite for this course as CS 4/53201 Operating Systems; this should say CS 33211 Operating Systems. Equivalent courses taken elsewhere are also acceptable.

Course Overview

The goal of this course is to provide an introduction to advanced concepts in operating system design, distributed systems in particular. The course examines communication methods, mutual exclusion, deadlock, and file systems as modified for a distributed system. Other topics will be examined if time permits.

Note that this is course studies distributed operating systems, not distributed computing or algorithms. Students interested in parallel and distributed computing (computer architecture and programming) should take **CS 6/73301 Parallel and Distributed Computing**, offered most Fall semesters. Students interested in parallel and distributed algorithms should take **CS 6/76105 Parallel and Distributed Algorithms**, offered most Spring semesters.

Textbook

The required textbook for this course is:

- *Advanced Concepts in Operating Systems*, Singhal and Shivaratri, McGraw-Hill, 1994.

Students should purchase a copy of this textbook, and keep up-to-date in reading the material assigned at each lecture. Saving some money by ignoring the textbook and concentrating solely on my lecture notes would not be a wise idea.

Other reasonable textbooks that you might want to refer to, if you have access to them, are:

- *Distributed Operating Systems*, Sinha, IEEE Computer Society Press, 1997.
- *Introduction to Distributed Algorithms*, Tell, Cambridge Press, 1994.
- *Distributed Operating Systems*, Tanenbaum, Prentice Hall, 1995.

Class Web Page

The web page for this class is <http://www.cs.kent.edu/~walker/classes/aos.f05> (a link to this page is available on my home page). The web page will contain links to the current class syllabus and schedule, lecture notes, homework assignments and solutions, exams and solutions, etc. You might want to check the web page on a regular basis, in particular when a homework assignment is outstanding or an exam is eminent.

Lectures

Students are expected to attend each lecture. I will not take roll, and I understand that it may occasionally be necessary to miss a class, but in general I expect you to attend each lecture and to be in the classroom when I start my lecture. If too many students start skipping class, or coming to class late, I reserve the right to give a “pop quiz” at the beginning of class that will count as a homework assignment in determining your course grade.

At each class, I will hand out one sheet of paper containing reduced copies of *at most eight* of my slides for that lecture. If you would like to have reduced copies of *all* of my slides for that lecture, the full version of the lecture notes will be on the class web page before the lecture, and you can print them out. Note that you are not required to either look at or print out these notes; they are provided solely for your convenience should you want them. However, you should ***not*** consider skimming these notes to be an adequate substitute for attending the lecture, as they will contain only the text of my slides, not the comments that I will make in class.

My lecture notes will be drawn from a variety of sources. The required textbook will be a primary reference, but I will occasionally bring in material from other textbooks and from notes by other professors.

Students “Sitting In”

Students who want to unofficially “sit in” on the course for any reason should contact me as soon as possible. In general, I allow sit-ins if there is space in the room, but I will not grade any assignments or exams for anyone other than officially-enrolled students.

Homework Assignments

There will be 3-4 homework assignments during the semester. The homework assignments will be pencil-and-paper based, rather than programming.

For homework assignments, ***no*** late homeworks will be accepted, unless you make *prior* arrangements with me, or have a *documented* illness (in which case I expect you to contact me as soon as possible). In general, you will have adequate time to complete each assignment. However, you should begin work on each assignment early so that you will have plenty of time to “sleep on” the difficult parts. Waiting until two days before the due date to start an assignment is a bad idea.

Exams

There will be two exams (held during class) and a final exam (held during finals week). All exams are closed book and closed notes, and must be individual work. It is expected that you take each exam at the scheduled time, unless you make *prior* arrangements with me, or have a *documented* illness (in which case I expect you to contact me as soon as possible).

Academic Integrity

Student-teacher relationships are built on trust. Students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments which students turn in are their own. Acts which violate this trust undermine the educational process. In this course, the penalty for **any** act of academic dishonesty is a final course grade of F.

Cooperation on Homework Assignments

For both homework assignments, I strongly believe that discussion with your peers is an excellent way to learn. If you don't understand something, discussing it with someone who does can be far more productive than beating your head against the wall.

Having advocated discussion, then, I must be about clear what is allowed, and what is not. In general, students are allowed to cooperate as follows: you are allowed to discuss with other students *the assignment*, and *general methods for solving the assignment*. However, you are **not allowed** to work with someone else to actually *solve* the assignment, and you are certainly **not allowed** to *copy* anyone else's solution. You are also **not allowed** to *copy* material from the book, the Internet or anywhere else without acknowledgement. Doing any of these things will be considered cheating, and will be grounds for failing the course.

Note that there is a fine line between discussion and cheating. If you are unsure what is allowed and what isn't, feel free to discuss the distinction with me, but if something feels uncomfortable, it's probably not allowed.

Grades

Your final course grade will be broken down as follows:

- Homework assignments (3-4) 50%
- Exams (2) 30%
- Final exam 20%

The final course grade will be determined with A = 90–100, B = 80–99.99, etc. There will be no curve at the end of the course, although individual exams, homeworks, etc. may occasionally (although rarely) be curved. Thus you should always be able to determine how well you are doing in the course.

Instructor Absences

Over the course of the semester, it may occasionally be necessary for me to miss a class, usually with plenty of advance notice. I realize that it may be frustrating to hear that your instructor is going out of town, instead of always being in the classroom to teach the class that you are paying him to teach.

However, I have two answers to those frustrations. First, you are choosing to attend classes at Kent State University — a research-oriented university with a flourishing graduate program — instead of a liberal arts college or community college. Professors at research-oriented universities are generally expected to attend conferences and professional meetings on a regular basis as a way of staying current in their fields, and by staying current, presumably bring knowledge that is more up-to-date than most textbooks into the classroom, which benefits you as a student. Second, by attending those meetings, I make other professionals aware of Kent State, which increases your visibility and the value of your degree.

Having said all this, I will make every effort to minimize these absences, or to arrange for my class to be covered during my absence in such a way to avoid disrupting the flow of the class. When this is not possible, it may occasionally be necessary for me to cancel a class, or to schedule a makeup class at some other time.

Students With Disabilities

University policy 3342-3-18 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Disability Services (contact 330-672-3391 or visit <http://www.kent.edu/sds> for more information on registration procedures)