Washington University
Department of Computer Science

CS422: Operating Systems Organization
Fall 1997

Meeting Times

Tues/Thurs 4 to 5:30pm, Cupples II room 217

Instructor

Douglas C. Schmidt
schmidt@cs.wustl.edu
503 Bryan Hall
(314) 935-4215

Grader/TA
Office Hours

Wednesday
Also available via email almost anytime

Work Involved

- **Programming Projects**

  There will be 5-6 programming projects. Projects will involve substantial programming in C++ and UNIX and will be done individually by each student. Students are assumed to be competent in C++ and familiar with the UNIX operating system. Students not familiar with these tools will have to learn them outside of class since C++ and UNIX will *not* be taught as part of this course. I will, however, teach a short seminar on C++ early in the semester during my office hours.

  To encourage you to write well-designed software, I reserve the right to change the assignment specifications at any point before the due date. Expect this to happen several times during the semester. If you have written your program in a modular fashion the changes will be trivial to implement.

  The programs will be graded using the following criteria:

  40% execution correctness
  30% program structure (*e.g.,* modularization, information hiding, etc.)
  10% insightful programming (*e.g.,* developing reusable class components, etc.)
  10% Consistent style (*e.g.,* capitalization, indenting, etc.)
  10% appropriate commenting

  There will be a mandatory **5** point deduction (out of a possible **100** points) for each day that your program is late after the deadline. Moreover, I will not accept programs that are turned in later than two days after the due date. It is *absolute* crucial to keep up with the programming assignments in the class. My experience has been that students who fall behind cannot catch up.

- **Quizzes**

  There will be a short graded quiz at the end of class each Tuesday, starting on September 2^{nd}. The quizzes will be based on material presented in class. Therefore, it is essential that you attend class in order to prepare for the quizzes and exams. There will be no "makeup" quizzes unless you ask permission from me before the quiz.

- **Exams**

  There will be one in-class exam: a final. The final will be worth 25% of your grade. Material tested on the final exam will be comprehensive.

Grading

The relative weighting of each portion of the course is presented below:

25%	Exam
40%	Programming projects
35%	Quizzes

Note that I reserve the right to change the weights during the course of the semester.

Detailed Topic Outline

Topic	**Book Section**
Introduction	1
Computer-System Structures	2
Operating-System Structures	3
Processes	4
CPU Scheduling	5
Process Synchronization	6
Deadlocks	7
Memory Management	8
Virtual Memory	9
File-System Interface	10
File-System Implementation	11
Secondary-Storage Structure	12
Protection	13
Security	14
Network Structures	15
Distributed-System Structures	16
Distributed-File Systems	17
Distributed Coordination	18

Textbooks

- **Required**

  Operating System Concepts, 4^{th} edition, Silberschatz and Galvin, Addison Wesley, 1994.

- **Recommended**

  Modern Operating Systems, Andrew Tanenbaum, Prentice Hall, 1992.

  Distributed Systems, 2^{nd} Edition, edited by Sape J. Mullender, ACM Press.

  The Design and Implementation of the 4.3 BSD UNIX Operating System, S. J. Leffler and M.K. McKusick and M.J. Karels and J.S. Quarterman, Addison-Wesley, 1989.

  The Design of the UNIX Operating System, Maurice J. Bach, Prentice Hall, 1986.

  Advanced Programming in the UNIX Environment, W. Richard Stevens, Addison-Wesley, 1991.

  UNIX Network Programming, W. Richard Stevens, Prentice Hall, 1990.

  UNIX System V Network Programming, Steve Rago, Addison-Wesley, 1993.

  Inside Windows NT, Helen Custer, Microsoft Press, 1993.

  The C++ Primer: Second Edition, Stan Lippman, Addison-Wesley, 1991.

  The C++ Programming Language: Second Edition, Bjarne Stroustrup, Addison-Wesley, 1991.

  Effective C++, Scott Meyers, Addison-Wesley, 1992.

  The C Programming Language: Second Edition, Kernighan and Ritchie, Prentice Hall, 1991.