

Course Information

Course overview

CS 414 covers design and engineering issues associated with operating systems and other software that manages computers. Our focus will be on techniques and abstractions with broad applicability, although we will also refer to case studies where appropriate.

This outline and other course information can be found on the course website:

<http://www.cs.cornell.edu/Courses/cs414/2002SU>

Prerequisites

Material in CS 314 (Introduction to Digital Systems and Computer Organization).

Course Material and Text

Main Text

- Silberschatz, Galvin, and Gagne, Operating System Concepts, 6th edition. John Wiley and Sons, 2002. ISBN 0471417432. 3-4 copies are on reserve in the Engineering Library, but we recommend you buy your own copy as well.

Additional References

- Tanenbaum, Operating Systems: Design and Implementation. 2nd edition. Prentice Hall, 1997. ISBN 0136386776. 1 copy is on reserve in the library.
- Kernighan and Ritchie, The C Programming Language, 2nd edition. Prentice Hall, 1988. ISBN 0131103628. 3 copies are on reserve in the library.

Time

Monday-Friday, 10:00-11:15 AM, Upson 211, 22 May – 3 July.

Instructors:

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5138 Upson Hall
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Office hours: TBA

Course Content

Readings: You will have a considerable amount of reading to do in this course. You are expected to read the relevant material *before* you come to class – this ensures lively class discussion of concepts. The surest way of getting the most out of the course is to keep up with the assigned readings. The course contents will roughly follow the textbook outline.

Written Homeworks: One per week. Due every Friday. [20%]

Programming: Three programming assignments. We will use a subset of the Minithreads project used in the regular CS414 course. You will be expected to do the programming assignments in groups of 2-3. Due on Mondays. [30%]

Exams: Quizzes during class [5%], Midterm [15%, June 12] and Final [30%, July 3]. Closed Book.

High level outline of topics

- Introduction, and a revision of relevant 314 material. [2 classes]
- Process management [3 weeks]
 - Processes and threads
 - Scheduling
 - Interprocess Communication
 - Process synchronization, deadlocks
- Memory Management [1 week]
 - Swapping, allocation, segmentation
 - Virtual memory
- File systems [1 week]
 - File system interface
 - Implementation issues
- Miscellaneous topics [1 week]
 - Protection and security
 - Disks and disk scheduling
 - Networking
 - Distributed file systems
 - Protocols for distributed coordination