# CSc 510 Advanced Operating Systems

Section 501 **Spring 2012**

**Meeting Time & Place:** 6-8:50 TH in OM 280

**Instructor:** Daniel Spiegel
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Office Hours: 3- 6 M, 12:15-1:00 T, 4:30-6 TH, and by appointment

**Prerequisites:** CSc 343 and a QPA of 2.90, or unconditional admission to the Graduate program in CS, or permission of the instructor.

**Text:** *Operating Systems: Internals and Design Principles (6th Edition)* William Stallings, Prentice Hall, 2008. ISBN 9780136006329

**Exams:** There will be 1 midterm(s) and a final exam during final exam week. You must get a passing (60%+) grade on exams, collectively, to pass this course.

**Attendance:** Optional. You are responsible for material covered in class and the corresponding material in the text. If you do not attend class, the material is assumed to be understood.

**Make-ups:** You will not be permitted to make up an exam without a documentable excuse for your absence. In all cases, for an absence to be excused, the instructor **must** be informed beforehand, if possible.

**Programs:** Programming assignments will be issued in class and submitted electronically, using the turnin script (see URL: http://faculty.kutztown.edu/spiegel/turnin.htm). If there are web-based assignments, they will also be deployed online. You must earn at least 60% of the possible points on *all* programs, collectively, to pass this course. **No late submissions permitted.**

Your programs are to written in a manner consistent with a CS graduate student. They MUST be fully documented and easily readable. They must also be modular to the greatest extent possible, with each module handling a single task only and your main routine should be little more than a series of invocations. Consistency in style within a program is a must. There will be substantial penalties for poor coding/style practices.

**Grading:** Grading is on a straight 90 80 70 60 scale. Individual exams may be curved, only if necessary. +/- grading will be used according to the table at right. Weights of grades are:

Programs: 55% Participation/Forum: 7.5%
Midterm(s): 17.5% FinalExam: 20%

| Grade | Scale |
|---|---|
| A- | (90,93) |
| B+ | [87,90) |
| B- | (80,83) |
| C+ | [77,80) |

**Academic Dishonesty:**

*General Statement:* I am against it. Violators get the maximum allowable penalty for any infraction.

*Programs:* Your programs are to be, in the large, your own work. If you use any code that you did not write, omitting credit to the author constitutes academic dishonesty. Using the code of a classmate, or providing your code to a classmate(s) is most definitely academic dishonesty. Feel free to discuss and exchange ideas with your peers, but do your own work.

**Classroom Etiquette:**

Consideration for your classmates, instructor, and the class is expected. Please come to class on time and prepared to learn. No sleeping or noisy eating. If you can't whisper quietly, please don't carry on private conversations. Coming and going during class should only occur in unavoidable situations. And, last but not least, **your cell phone is to be neither seen nor heard.**

**Tentative Class Schedule:**

The following is a **tentative** class schedule. It is subject (and almost *certain*) to change. Note that some topics may extend past one week. At the end of each chapter are sections that summarize key points and new terminology, along with other sections. You are expected to include the pertinent topics from the end of each chapter in your reading. Tests may contain items from these sections. Questions on these sections are welcomed.

# CS 510 Tentative Schedule

| *Week* | *Topics* | Reading Chapter(s) |
|---|---|---|
| 1 | Review; Hardware Overview | 1 |
| 2 | Hardware Overview, Con't<br>OS Overview | 1<br>2 |
| 3 | Processes: States, Transitions, PCB | 3 |
| 4 | Concurrency:<br>Processes & Threads, Dekker's Algorithm<br>Principles of Concurrency, Mutex | <br>4.1<br>5.1-5.2 |
| 5 | Concurrency:<br>Implementation Constructs<br>Readers/Writers Problem | <br>5.3-5.5<br>5.6 |
| 6 | Concurrency:<br>Deadlock: Avoidance, Prevention, Detection<br>Problems & Strategies<br>Mechanisms & Primitives | <br>6.1-6.4<br>6.5-6.6<br>6.7-6.10 |
| 7 | Storage Management:<br>Requirements, Partitioning, Paging and Segments | 7 |
| 8 | Storage Management:<br>Virtual Memory | <br>8 |
| 9 | Scheduling:<br>Uniprocessor | <br>9 |
| 10 | Scheduling:<br>Multiprocessor & Real-time | <br>10 |
| 11 | Distributed Processing, Client/Server, and Clusters | 15 |
| 12 | OS Security | 17 |
| 13 | Open Source OS | |
| *14* | Finish up & Review | |
| *15* | Final Exam | |

Final Exam: Thursday May 10, 2012, @ 6 PM