

Syllabus for CS 111 – Operating System Principles Summer 2013

The summer session is eight weeks long. There is no finals week. There will be 16 meetings of the class, plus eight recitation sections. The midterm exam will be held during the recitation section of the fourth week of classes. The final exam will be held during the last recitation section.

CS 111 is always a challenging class that has the reputation of being the hardest course in the UCLA CS major. Since the summer session is compressed to eight weeks, instead of ten, the pace will be faster than usual, making the class even more challenging. It is vital that you do not fall behind on your work in this class. Keep up with the readings, attend all the lectures, and get early starts on all the projects.

The textbook for the course is “Principles of Computer System Design,” by Jerome H. Saltzer and M. Frans Kaashoek. Unless otherwise noted, all reading assignments are from that book. Several chapters of the book are available only on-line. For assignments from those chapters, I will include a link to the web site on the class web page, which is at http://www.lasr.cs.ucla.edu/classes/cs111_summer2013.

There are several lab assignments associated with this course. The syllabus shows their due dates. In most, but not all, cases, there will be one assignment due each week, to be turned in by the end of the day on Tuesday of that week. Carefully note, however, that there are some assignments due at other times.

Week 1

June 25 Lecture 1: Introduction to the course and operating systems

Reading assignment: Chapter 1 (pages 1-40)

June 27 Lecture 2: Hardware, modularity, and virtualization

Reading assignment: Chapter 2, Section 2.1 (pages 43-60), Chapter 4, Section 4.1-4.1.2 (pages 147-162), Chapter 5, Section 5.1 (pages 199-210), Section 5.3-5.3.4 (pages 230-237)

June 28 Recitation section

Week 2

July 2 Lecture 3: Processes

Reading assignment: Chapter 5, Section 5.5 (pages 255-272)

ASSIGNMENT DUE: Lab 1A

July 4 Holiday, no class

July 5 Recitation section

Week 3

July 9 Lecture 4: Scheduling

Reading assignment: Chapter 6, Section 6.3 (pages 347-362)

ASSIGNMENT DUE: Weensie OS 1

July 11 Lecture 5: Process communications, synchronization, and concurrency

Reading assignment: Chapter 5, Section 5.2 (pages 210-230), Chapter 4, Section 4.2 (pages 167-173), Chapter 9, Section 9.1-9.1.7 (pages 9-1 through 9-20). Note: This is one of the chapters that is only available on line.

July 12 Recitation section

Week 4

July 16 Lecture 6: Concurrency solutions and deadlock

Reading assignment: Chapter 5, Section 5.2.5 (pages 221-222), Chapter 5, Section 5.6 (pages 273-284)

ASSIGNMENT DUE: Lab 1B

July 18 Lecture 7: Memory management

Reading assignment: Chapter 6, Sections 6.2-6.2.1 (pages 321-323), *Dynamic Storage Allocation: A Survey and Critical Review*, by Paul Wilson, Mark Johnstone, Michael Neely, and David Boles. This is a very long paper. You are only required to read the following sections of it: Sections 1.1-1.3, sections 2-2.1 (pages 6-13), section 2.3 (only pages 21 and 22), section 2.4 (pages 24-28, up to the subsection titled “Profiles of some real programs”), and sections 3.3 and 3.4 (pages 42-45).

July 19 Midterm exam

Week 5

July 23 Lecture 8: Paging and virtual memory

Reading assignment: Chapter 5, Section 5.4 (pages 242-255), Chapter 6, section 6.2.2-6.2.9 (pages 323-347).

ASSIGNMENT DUE: Lab 1C

July 25 Lecture 9: File systems: Introduction

Reading assignment: Chapter 6, section 6.1 (pages 300-321), section 6.3.4 (pages 360-362)

July 26 Recitation section

Week 6

July 30 Lecture 10: File systems: Naming and reliability

Reading assignment: Chapter 2, section 2.5, Chapter 8, Sections 8.1.1, 8.2.1, and 8.5.4. Chapter 8 is an on-line chapter.

ASSIGNMENT DUE: Lab 2

August 1 Lecture 11: Networking for operating systems

Reading assignment: Chapter 7, section 7.1.

August 2 Recitation section

Week 7

August 6 Lecture 12: Networked and distributed file systems

Reading assignment: Chapter 3, section 3.2, pages 132-138. Chapter 4, section 4.5, pages 184-195. "A Survey of Distributed File Systems," M. Satyanarayanan, *Annual Review of Computer Science*, 1990. You only need to read sections 1, 2, 3.1, and 3.3. (A link will be provided on the class web site.)

ASSIGNMENT DUE: Weensie OS 2

August 8 Lecture 13: Distributed computing

Reading assignment: "Fallacies of Distributed Computing Explained," Amon Rotem-Gai-Oz. "What Cloud Computing Really Means," Eric Knorr, Galen Gruman, Infoworld. Notes on distributed operating systems, Peter Reiher. All are available on-line, and links to them will be provided on the class web page.

August 9 Recitation section

ASSIGNMENT DUE: Lab 3

Week 8

August 13 Lecture 14: Operating system security

Reading assignment: Chapter 11, Overview and section 11.1, pages 11-4 to 11-28. This chapter is available only on-line. A link will be provided on the class web page.

August 15 Lecture 15: Operating system security: cryptography, authentication, and protecting system resources

Reading assignment: Chapter 11, section 11.2 (pages 11-28 to 11-34), section 11.4 (pages 11-49 to 11-53), and section 11.6.3 (pages 11-76 to 11-80). “Trusted Platform Module (TPM) Summary, available on-line. A link will be provided on the class web page.

August 16 Final exam

August 17 (NOTE: THIS IS THE SATURDAY AFTER CLASS ENDS)

ASSIGNMENT DUE: Lab 4