What Did You Learn This Semester?

■ Main goal was to understand the *internal operation* of a modern operating system

■ Overview
  ● Operating systems history
  ● Computer systems structure
  ● Operating systems structure

■ Processes
  ● Concept of a "process"
  ● Process states
  ● Process data structures
  ● CPU scheduling (introduction)
  ● Inter-process communication
  ● Threads
  ● Processes / threads in Nachos

What Did You Learn This Semester? (cont.)

■ Process coordination
  ● Mutual exclusion
  ● Methods for programmer ("too much milk", algorithm 1, Eskimos, etc.)
  ● Semaphores
  ● Implementing semaphores
  ● Locks and condition variables

■ Classical problems
  ● Dining philosophers

■ CPU scheduling
  ● Non-preemptive scheduling
  ● Preemptive scheduling
  ● Complex scheduling

What Did You Learn This Semester? (cont.)

■ Deadlock
  ● Deadlock detection
    ■ Single resource instances
    ■ Multiple resource instances
    ■ Deadlock recovery
  ● Deadlock avoidance
  ● Deadlock prevention

■ Memory management
  ● Static & dynamic memory allocation
  ● Dynamic memory relocation
    ■ Virtual vs. physical address
    ■ Partitioning & compaction
    ■ Segmentation
    ■ Paging
  ● Swapping
  ● Demand paging & page replacement

What Did You Learn This Semester? (cont.)

■ File system
  ● Data structures and implementation
  ● Performance tradeoffs
  ● Disk block allocation
  ● Disk head scheduling

■ Networking

■ Distributed systems
  ● Distributed file systems
  ● Parallel vs. distributed systems

■ Some example operating systems:
  ● Linux
  ● Windows NT/2000

What Comes Next?

■ You're now ready for:

- CS 43203 Systems Programming

- CS 45201 Computer Communication Networks

- CS 45231 Internet Engineering

■ More in the graduate program:

- CS 63201 Advanced Operating Systems

- Other networking courses

- CS 63995 ST: Parallel & Distrib. Comput.

What Did You Learn This Semester? (cont.)

■ From class syllabus:

The goal of this course is to provide an introduction to the internal operation of modern operating systems. In particular, the course will cover processes and threads, mutual exclusion, CPU scheduling, deadlock, memory management, and file systems. If time permits, we may briefly examine networking and distributed computing, and perhaps other topics. Students will use the Nachos instructional operating system for several programming projects.

Final Exam

■ The final exam will be held:

- Monday, December 10 from 10:15am – 12:30pm in the usual classroom (MSB 121)

■ The final exam is comprehensive

- It will be approximately twice the length of the regular in-class exams

- It comprises 25% of your course grade

■ Course grades are determined as:

A = 90 – 100   D = 60 – 69.99

B = 80 – 89.99   F = <60

C = 70 – 79.99

- I do not "curve" final course grades

Course Evaluations

■ Use a #2 pencil to fill out the form

- Write "11909" (the course call number) in the ***top left corner*** of the form

- Fill out all the questions on the front ***and*** back of the form

- Student monitor will return the forms to the MCS office; I won't see the results until ***after*** I hand in the course grades

■ In the comment area:

- Tell me what you *like* about the course (so that I'll keep doing it)

- Tell me what you *do not like* about the course (so that I can consider changing it)

■ Take these these evaluations very seriously — we (the faculty) certainly do!