CS 446/646 Operating Systems

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Description

446, 646 PRINCIPLES OF OPERATING SYSTEMS (3+0) 3 credits
Concurrent processes, interprocess communication, processor management, virtual and real memory management, deadlock, file systems, disk management, performance issues, case studies. Practical experience with UNIX. Prerequisite: CS 308 and CS 336.

Office Hours

- **Sushil J. Louis:**

  - Wednesdays: 2:30 - 4:30;
  - And by appointment (email: sushil@cs.unr.edu)

- **Ekkasit Tiamkaew (SEM 252)**

  - Tuesdays 1:30 - 4:30 p.m.
  - And by appointment (email: ekkasit@cs.unr.edu)

  Questions about assignments and grading should first be addressed to Ekkasit. If they are not resolvable, then I will be glad to help resolve the problem.

TextBook

- **Required:** *Modern Operating Systems (2nd Edition)* by Andrew S. Tanenbaum. Prentice Hall.

- **Required:** *Unix System Programming (2nd Edition)* by Keith Haviland, Dina Gray, Ben Salama. Addison Wesley.

- **Recommended:** *Operating System Concepts (6th Edition)* by Abraham Silberschatz, Peter Baer Galvin, Greg Gagne. Wiley.

- **Recommended:** *Advanced Programming in the Unix Environment* by Stevens. Addison Wesley. Hall.

Preliminary Syllabus

1. Introduction

   (a) What is an OS
   (b) History
   (c) Different Viewpoints on OSs

2. OS Architectures

   (a) Services
   (b) System Calls
   (c) Virtual Machines

3. Processes

   (a) Scheduling
   (b) Interprocess communications
   (c) Threads
   (d) Synchronization
   (e) Deadlocks

4. Memory Management

   (a) Swapping
   (b) Paging
   (c) Segmentation
   (d) Segmented Paging
   (e) Virtual Memory
   (f) Page replacement

5. File Systems (assignment)

   (a) Files
   (b) Access Methods
   (c) Directory Structure

    (d) File Systems Implementation

    (e) Allocation methods

    (f) Recovery

6. I/O systems

    (a) Disks, RAID

    (b) Disk scheduling

7. Distributed Systems

    (a) Overview

    (b) RMI, Corba

Homework and Exams

There will be a number of programming assignments. **No late assignments will be accepted**. There will be two exams and a final and grades will be divided as shown in the table below. Tentatively, I have scheduled the two exams for the following dates: Exam1 on Monday February 23, 2004. and Exam2 on Monday April 5. 2004. These dates may move a little and you may suggest other dates.

Exams	$15 + 15 + 20 = 50\%$
Assignments	50%

    Assignments will be posted on the class web page. **Make sure that you have a CS department computer account. Your CS account address will be your official email address and I will use it to contact you.** If you do not have a CS department account, go the CS department office and fill out the account request form. If you do not know how to forward your email, **ask**. As an aside - this is a good strategy for learning: If you do not know how to X, ask. Ask me, our grader, your friends, the person sitting next to you, ... By the same token, take pity on and help out people who ask you. Learning is a cooperative experience.

    Your assignments must run on the CS department's Linux workstations in SEM252. Logging in from outside the university is only permitted on banyan.cs.unr.edu. Banyan is only to be used for email.**Do not develop or run code on banyan.** Log in (using ssh) to one of lab1.cs.unr.edu through lab12.cs.unr.edu to do your work. If you have linux installed you should be able to do your work from home as if you were sitting at the workstation.

Cheating

Cheating is not permitted and will result immediately in a grade of "F" and/or commencement of administrative proceeedings. Please read the section on **Academic Standards** on page 62 of the University Catalog. That section defines cheating and specifies the consequences.

Communications

If I need to communicate with the class as group I'll post a message on our web page (http://www.cs.unr.edu/~sushil/, Follow the OS link under teaching). **You are required to check the class web page and your email every day. Please do so.** I'd suggest you bookmark the page.

    I strongly encourage you to talk to me about the class (or anything else). A good understanding of Operating Systems is essential and forms the foundation for your computer science education and research - I want to help you gain this understanding. To be efficient, you should have read the relevant portions of the text, manual pages, or other sources before coming to see me. Setting up an appointment (through email) will also save time.

Special Needs

If you have special needs let me know how I can best accomodate them. I will gladly do all I can to accomodate your needs.