

# CS4500/5500 Operating Systems

Spring 2014, Credit Hrs: 3, CS Dept/College of EAS

Instructor: Dr. Jia Rao  
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Time: M/W 1:40pm-2:55pm  
Classroom: Columbine Hall 116  
Office Hours: T/Th 3:00pm-4:00pm  
or by appointment

[http://www.cs.uccs.edu/~jrao/CS4500\\_5500/spring2014/index.html](http://www.cs.uccs.edu/~jrao/CS4500_5500/spring2014/index.html)

## Course Description

An operating system is the most important software in a computer system. It manages computer hardware resources and provides common services for computer programs. This course examines the basic operating system concepts and design principles. In this course, We will discuss the performance and engineering trade-offs in the design and implementation of operating system mechanisms. Topics include:

- Processes and threads
- Concurrency and synchronization
- Multi-thread programming
- Processor scheduling
- Memory management
- I/O and file systems
- Server virtualization

## Prerequisites

- CS2060, CS2080, and CS4200/5200
- Knowledge of UNIX/Linux systems, high-level language C, and computer organization and architecture
- If you want to take the class without the prerequisite, you have to get the permission from the instructor. If approved, it is your responsibility to make up for the required background

## Text and Reference Books

The material presented in this course will be complemented by the following required textbook:

Andrew S. Tanenbaum, *Modern Operating Systems*, 3rd edition, 2008, Prentice Hall

The following reference book on Linux may help you understand how the concepts and design principles are implemented in a real OS:

Bovet and Cesati, *Understanding the Linux Kernel*, 3rd edition, 2005, O'Reilly

## Homework Assignments

There will be 2 homework assignments focusing on basic concepts, algorithms, and design principles. Submissions should follow:

- Homework assignments are to be completed individually, no teamwork is allowed
- Submit homework assignments in class on the due day
- Submit only hard copies (printed copies are preferred). No email submission, keep your own record.

## Project Assignments

There will be 4 team project assignments based on Linux kernel programming and multi-thread programming. The project policies are:

- Project assignments are to be completed in teams. 2-person teams are required, though 1-person or 3-person teams are possible. If you want to work on your own or to form a 3-person team, you need instructor's permission. No bonus will be granted for working on your own (i.e., 1-person team)
- Projects may have different turn-in requirements, which will be announced when released
- Projects assignments should be submitted via email. Make sure to include "CS4500/5500\_Spring2014\_ProjectX" in the title of your email, where X is the project number. Submit to [jrao@uccs.edu](mailto:jrao@uccs.edu)
- In class demo of project results are required for some project(s)

## Exams

Both the midterm and final are close-book and close-note exams. However, you are allowed to carry one letter-size double-sided hand-written cheat sheet. The exam schedule is:

- Midterm exam: in class, Wednesday, March 19, 2014
- Final exam: 01:40PM - 04:10PM Monday, May 12, 2014

**NO MAKE-UP EXAMS.** Please make arrangements to meet the schedule.

## Grading

### Grading scale

- A: [90, 100], A-: [87, 89]
- B+: [84, 86], B: [80, 83]
- C+: [75, 79], C: [70, 74]
- D+: [65, 69], D: [60, 64]
- E/F: below 60

### Distribution of Points

- In-class discussion and attendance: 5%
- Homework assignments: 10%
- Projects: 35%
- Midterm exam: 18%
- Final exam: 32%

## Course Policy

- The last day to withdraw is **FRIDAY, April 4 5:00 PM**
- If you have a disability for which you are requesting an accommodation, you are encouraged to contact the Disability Services Office within the first week of classes. The Disability Services Office is located in Main Hall #105 (Phone number is 255-3354)
- Students are expected to attend all lectures. However, each student is allowed one absence. For each extra absence, the attendance percentage is reduced proportionally
- Late submission of homework and project assignments will incur a 25% penalty on grading for each day after the deadline
- Under extreme non-academic circumstances, such as illness, exceptions can be made in above attendance, submission, and exam policies. You have to provide sufficient and convincing proof, e.g., documents from the doctors
- Adherence to the University's Code of Ethics will be strictly monitored and enforced. This will be applicable to assignments, projects, and exams
- Academic Integrity violations, such as plagiarism, cheating on an exam etc., will result in a series of actions and penalties, including failing the class
- Any work submitted for a grade must include the following statement and be signed and dated. If this is missing or not signed and dated, the work will be returned ungraded.

**I have neither given nor received unauthorized assistance on this work**

**Signed:**

**Date:**