CS 4477 Operating Systems
Spring 2013, 3 Credits


Prerequisite: CS 2299.

Lectures: Mon/Wed/Fri 1:00pm – 1:50pm, LIBR 7/CHE 311

Catalog Description: Process description and control, threads, concurrency, memory management scheduling, I/O and files, distributed systems, security, and networking.

Instructor: Dr. Steve C. Chiu, Associate Professor of Electrical Engineering, email: chiustev@isu.edu
Office and Office Hours: LEL 210, Tuesday 10:30am – 12:30pm, or by appointment.

Grading Policy: Course grades will be based on the following distribution: 1 mid-term exam (20%), 6 assignments (30%), 1 final exam (35%), and 1 report (15%). Assignments are group-based and require compile and execution demonstrations. The report is group-based and requires a presentation.

Late Policy: If an assignment cannot be submitted by the deadline, you must contact the instructor before the deadline to arrange a late submission. Otherwise, it will not be accepted. A late submission will entail a penalty of 10% of the maximum points per delayed day. For example, a submission that is 2 days late and would have received 80 points out of 100 will receive $80 - 100 \times 10\% \times 2 = 60$ points.

Planned Class Schedule and Topics Covered:

<table>
<thead>
<tr>
<th>Month</th>
<th>Topic</th>
<th>Chapters</th>
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<tbody>
<tr>
<td>January</td>
<td>Basic OS Concepts, Processes and Threads</td>
<td>1, 2</td>
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<tr>
<td>February</td>
<td>System Performance, Modeling and Multiprogramming</td>
<td>3, 4</td>
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<tr>
<td>March</td>
<td>Scheduling, Synchronization and Deadlocks</td>
<td>5, 6, 7</td>
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<td>April</td>
<td>File Management and I/O System</td>
<td>8, 9</td>
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<tr>
<td>May</td>
<td>Memory Organization and Virtual Machines</td>
<td>10, 13</td>
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If time permits, select topics in security, networking and distributed systems will be covered.

Midterm Exam: mid of March
Final Exam: during Finals Week

Course Learning Objectives:

1. Students have knowledge about the fundamentals of modern operating systems
2. Students have knowledge about the programming of modern operating systems

ABET Student Outcomes – these are specific learning skills that the students attain at the end of the course and that reflect the broader course objectives:

C. An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs
D. An ability to function effectively on teams to accomplish a common goal
I. An ability to use current techniques, skills, and tools necessary for computing practice
J. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices

K. An ability to apply design and development principles in the construction of software systems of varying complexity

How to do well in this class:

It will be necessary to memorize certain essential principles to practice with them. But memorization alone will not ensure a good grade. You need to understand the concepts that we discuss in this class and be able to apply them. You will not be able to successfully prepare for the exams the night prior to the exam, nor will you be able to complete an assignment the day before it is due.

Come to class, pay attention, ask questions, then review the material after each class, and work hard on the assignments. You will have copies of my class slides so that you can pay close attention during class and not have to worry about taking notes. A couple of days before the exams, go over the materials and summarize them, then spend time on your summary.

If you missed or will miss an exam, you must provide documentation justifying that absence, or you will receive a grade of zero on the exam. In case of illness, you must provide written documentation from your physician. In case of personal problems, you must provide a statement from a responsible independent source justifying your absence. No other flexibility will be provided.

Ethics and Code of Conduct:

Engineers have an immense responsibility for public safety. Our civilization is built in large part upon the technology created by engineers. The technology must be safe and effective. Generations of engineers have earned the respect of the public through their ethical and professional behavior. A cornerstone of that ethical behavior is the voluntary admission of ignorance. An engineer does not misrepresent his capabilities; he does not claim to be able to design something unless he is truly able to do so. Misrepresentation of ability endangers the public.

As engineering students you are held to the same high standard of ethical behavior as professional engineers. The very idea of cheating is anathema to engineers. This policy on academic dishonesty is a consequence of the engineering profession's responsibility for public safety.
Academic Integrity

Academic integrity is a fundamental expectation of all students in this course. Cheating, plagiarism, and other forms of academic misconduct will not be allowed in this course. Below is a list of commonly seen misconducts. Please note that this is not a complete list. It is your responsibility to be familiar with the student code of conduct, and conduct yourself according to the standards.

- Copy answers from another student's examination sheet, assignment, or project report.
- Copy answers from solutions provided to students who took the course previously.
- Copy answers from other sources or discussions that you did not participate in.
- Make use of notes during a closed book or closed notebook examination.
- Make use of electronic devices not allowed in an exam.
- Allow another student to take an exam in your place.
- Represent the work of another individual as your own.
- Assist another student to violate academic integrity.