

Syllabus



Introduction

This course examines fundamental principles behind the design and implementation of computer systems and addresses fundamental concepts including resource management, concurrency, protection and security. Examples drawn from a range of modern computer systems illustrate these concepts; laboratory work and assignments provide practical experience in the design, implementation, and use of computer systems.

Learning Objectives

Students who pass this course should be able to **explain**:

- What an operating system is, what it does, and how it is designed and constructed.
- Process and thread concepts, including lifecycle and concurrency models central to computer system design.
- Process scheduling, inter-process communication, process synchronization and deadlock handling.
- Memory management schemes, including paging and virtual memory.
- Basic mechanisms for protection and system security.

Students who pass this course will have **gained**:

- Experience in writing operating system code.
- Familiarity with Unix/Linux, C programming, APIs, and System Calls.
- An appreciation of the performance impact of computer system design choices, including the selection of algorithms within an operating system kernel.
- A practical understanding of a large body of production quality code written by parties unknown.

Assessment

This course will be internally assessed through the following:

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|-----------------------|-----|-------------------------------|
| • Administration | | (not graded, but mandatory) |
| • Assignments x 5 | 25% | (5% each) |
| • Lab 1 | 5% | |
| • Lab 2 | 15% | |
| • Lab 3 | 15% | |
| • Midterm Examination | 10% | |
| • Final Examination | 30% | |

Mandatory Course Requirements

You must pass every component (administration, assignments, labs, and examinations) to pass the course.

For example, doing well on the assignments and examinations but submitting poor (or no) lab solutions will see you fail the class. Similarly, doing well on the labs and assignments but failing the final will result in you failing the class.

Late Submission Policy

No late submissions allowed.

It is your responsibility to submit your work on time.

If exceptional circumstances arise **before** the due date and time, notify me as soon as you become aware of the issue and it will be taken into consideration.

Extension requests received after the submission deadline will be ignored.

Workload

In order to maintain satisfactory progress, you should plan to spend an average of 10 hours per week on this class. A plausible and approximate breakdown for this time would be:

- Lectures: 3 hours
- Labs: 3 hours
- Assignments: 2 hours
- Independent study: 2 hours

Grading Bands

Grade	Range	Characterisation
A+	95-100	Outstanding
A	88-94	Excellent
A-	81-87	Excellent in most respects
B+	75-80	Very good
B	70-74	Good
B-	65-69	Good overall, but some weaknesses
C+	60-64	Satisfactory to good
C	55-59	Satisfactory
* C-	50-54	Adequate evidence of learning
* D	45-49	Some evidence of learning
F	0-44	Below the required standard; fail

* Pass, but cannot be used to satisfy a major requirement or a general education requirement, and cannot satisfy a prerequisite for another course.

For more information, see the registrar's site:

<https://registrar.ucsc.edu/navigator/section4/performance/letter-grades.html>