



CpS 360: Operating Systems

Spring Semester 2021-2022

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Office Hours: MTWF 10:00-10:50am
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Course Information

The study of operating system techniques, including interrupt systems and memory, processor, and device management. Three hours. *Prerequisite: CpS 250. Corequisite: CpS 210.*

Overview: This course is designed to provide the student with a more complete understanding of operating systems. Topics to be covered include resource management (processes, memory, disk storage, and I/O devices), interprocess communication, process scheduling. Understanding this material will help you to be a more effective programmer, because you will gain an understanding of what is going on "under the hood" that will help you to track down (and avoid) performance problems.

Since studying the internals of modern operating systems like Windows and Linux is not practical for an undergraduate course due to their complexity and size, we will study *xv6*, a re-implementation of an early version of Unix in modern C that runs on Intel processors. There are two types of programming projects. Some projects involve writing programs that utilize the services of an operating system. Other projects will involve enhancing the OS itself.

To prepare for the tests, I recommend that you review the homework assignments at the end of each chapter, since the tests will contain problems similar to those assignments. The homework is strictly optional.

The class participation grade is based on your ability to answer questions in class over the assigned reading material. You are expected to read and digest carefully the assigned reading material before coming to class each day. I encourage you to take notes over your reading to help you prepare for the lecture.

Course Resources

Textbook: Arpaci-Dusseau, *Operating Systems: Three Easy Pieces*. Freely available at ostep.org.

Announcements: Students are expected to use the Microsoft Teams CpS 360 team to receive course announcements and to engage in the online experiences of this course.

Website: The course website contains links to assignments and required readings: <https://cs.bju.edu/cps360>

Grading

Grading:			
Qty	Item	Points	Total
6	Projects	75-125	600
3	Tests	100	300
	Class Participation	100	100
Total Points:		1000	

Scale:	
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	<60%

Course Policies

Assignments can receive full credit only if submitted by 11:59 p.m. on the day due. A 25% penalty will be applied if the assignment is not turned in on time. No credit is possible after one week. I waive one late penalty for students who are punctual in their class attendance. If you anticipate trouble on an assignment, see me as soon as possible for assistance.

Assignments may be submitted late only by approval of the instructor. I will allow this only for students who formally request permission to submit the program late. The request must be made by email, and should report the number of hours invested and include a description of problems encountered. Your current program effort should be uploaded to the submission system. The request must be submitted by the original assignment deadline. Requests indicating little effort invested will be denied.

Electronic devices may not be used during class except by special arrangement with the instructor.

Gum chewing is unprofessional and not permitted in class. Compliance with student handbook policies is expected during class.

University Policies

Attendance Policy

You are expected to attend class and be on time per the standard University attendance policy: <https://home.bju.edu/bju-policies/>. If you come late or leave early, I will record a partial attendance mark if you missed at most 15 minutes of class. If you miss more than 15 minutes of class, you will be marked absent. If you exceed the 3 allowed absences for this class, you may be withdrawn from class.

For planned absences, notify me a week ahead of time by e-mail. Written assignments and scheduled tests should be completed before your planned absence; please contact me to make arrangements for doing so. It is your responsibility to check in advance of a planned absence to verify what is due.

For absences due to illness or emergency, contact me by the end of the day of your absence to indicate the reason for your absence and to arrange for making up any graded work without penalty. In these situations, you will be able to make arrangements for making up tests without penalty for the first occurrence. Each subsequent time a test is missed because of incapacitating illness or emergency, an additional 10 percent grade penalty for that test will be incurred.

Accommodations for Students with Disabilities

If you have a documented learning disability or if you are impaired in some way (auditory, visual, cognitive, neurological, or physical), please let the instructor know this within the first week of the course so that any necessary adjustments can be made before you get behind.

Academic Honesty and Integrity Policy

See the Computer Science Department's Academic Integrity Policy:

<https://cs.bju.edu/academics/policies/academic-integrity-policy/>

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Curriculum Information

Context

This course supports the following objectives of the Computer Science program:

CS 6. Demonstrate an ability to acquire new knowledge in the computing discipline

Objective	Content	Assessment
Explain the objectives and functions of modern operating systems.		
Identify potential threats to operating systems and security features designed to mitigate them.		
Describe how computing resources are used by applications and managed by system software.		
Summarize the range of mechanisms that can be employed at the operating system level to realize concurrent systems and describe the benefits of each.		
Demonstrate the potential run-time problems arising from the concurrent operation of many separate tasks, and describe ways to prevent these problems.		