

**San José State University**  
**Department of Computer Science**  
**CS149, Operating Systems, Section 3, Fall, 2018**

**Course and Contact Information**

Instructor:	Fabio Di Troia
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Office Hours:	MW 12:00 – 13:00
Class Days/Time:	TT 13:30
Classroom:	MH422
Prerequisites:	CS 146 or SE 146 (with a grade of "C-" or better). Computer Science, Applied and Computational Math or Software Engineering Majors only; or Instructor Consent

**Course Format**

**Faculty Web Page and MYSJSU Messaging**

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on [Canvas Learning Management System course login website](http://sjsu.instructure.com) at <http://sjsu.instructure.com>. You are responsible for regularly checking with the messaging system through [MySJSU](http://my.sjsu.edu) at <http://my.sjsu.edu> (or other communication system as indicated by the instructor) to learn of any updates.

**Course Description**

Contiguous and non-contiguous memory management; processor scheduling and interrupts; concurrent, mutually exclusive, synchronized and deadlocked processes; files. Substantial programming project required.

**Course Learning Outcomes (CLO)**

- After completing this course, students would achieve the following:
- Understand the role that the operating system software plays in the management of the various hardware subsystems of the computer system
- Understand locality of memory reference and how it is used to perform effective memory hierarchy management
- Understand the various mapping, replacement, and dynamic allocation algorithms for cache and virtual memory management
- Understand the alternative CPU scheduling schemes, their tradeoffs, and their applications to other queue processing situations
- Understand the difficult tradeoffs faced when attempting to deal with the resource deadlock problem and

distinguish between the different deadlock prevention and avoidance schemes

- Understand software race conditions, their origin and the problems they can cause, along with knowing how to apply semaphores in software design to solve the race condition problem
- Understand the various issues associated with the operating system's role in performing I/O and file management.

## **Required Texts/Readings (Required)**

### **Textbook**

Modern Operating Systems by Andrew Tanenbaum and Herbert Bos, 4th Edition. ISBN-13: 978-0-13-359162-0

Operating System Concepts, Binder Ready Version 9th Edition by Abraham Silberschatz (Author), Peter B. Galvin (Author), Greg Gagne (Author). ISBN-13: 978-1118129388

### **Other Readings**

None

### **Other technology requirements / equipment / material**

None

## **Course Requirements and Assignments (Required)**

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12-3](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

Homework, Midterm and Final exam are expected for this class. Homework is due on Canvas by class starting time on the due date. Each assigned problem requires a solution and an explanation (or work) detailing how you arrived at your solution. Cite any outside sources used to solve a problem. When grading an assignment, I may ask for additional information.

NOTE that [University policy F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

## **Final Examination or Evaluation**

The final examination consists in the submitting of a final project

## **Grading Information**

- Homework, 25%
- Midterm, 25%
- Project, 25%
- Final, 25%

Note that "All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades." See [University Policy F13-1](http://www.sjsu.edu/senate/docs/F13-1.pdf) at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

### Determination of Grades

Semester grade will be computed as a weighted average of the scores obtained in each of the three categories listed above.

No make-up tests or quizzes will be given and no late homework (or other work) will be accepted. Also, in-class work must be completed in the section that you are enrolled in.

Nominal Grading Scale:

Percentage	Grade
92 and above	A
90 – 91	A-
88 – 89	B+
82 – 87	B
80 – 81	B-
78 – 79	C+
72 – 77	C
70 – 71	C-
68 – 69	D+
62 – 67	D
60 - 61	D-
59 and below	F

### Classroom Protocol

- **Cheating** will not be tolerated.
- Student must be respectful of the instructor and other students. For example, No disruptive or annoying talking.
- Turn off cell phones
- Class begins on time
- Valid picture ID required at all times

### University Policies (Required)

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>. Make sure to review these policies and resources.

# CS149 / Operating Systems, Fall 2018, Course Schedule

*The schedule is subject to change with fair notice communicated via Canvas course page*

## Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	8/21	Introduction
1	8/23	Introduction
2	8/28	OS Structure
2	8/30	Processes and Files Management
3	9/4	Access Protection
3	9/6	Multithreaded Programming
4	9/11	Threads and Mutual Exclusion
4	9/13	Threads and Mutual Exclusion
5	9/18	Content Switching
5	9/20	Input/Output and Dynamic Storage Allocation
6	9/25	Linking and Loading
6	9/27	Operating System Design
7	10/2	Wrap-up
7	10/4	<b>MIDTERM</b>
8	10/9	Virtual Machines
8	10/11	Microkernels
9	10/16	Processor Management
9	10/18	Interrupts
10	10/25	Interrupts
10	10/30	Scheduling
11	11/1	File Systems
11	11/6	File Systems
12	11/8	Memory Management
12	11/13	Memory Management
13	11/15	Security
13	11/20	Security

<b>Week</b>	<b>Date</b>	<b>Topics, Readings, Assignments, Deadlines</b>
14	11/22	Security
14	11/27	Networking and Network Protocols
15	11/29	Networking and Network Protocols
15	12/4	TBD
16	12/6	Wrap-up
Final Exam	12/13	Time: 1215-1430