CS446
Winter 2022

Operating Systems

Instructor: Dr. Aos Mulahuwaish

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Office Hours: Tuesday and Thursday
12:30 pm – 01:30 pm (SE 174)
Additional office hours by appointment

Textbook: Operating System Concepts, 10th Edition by Abraham Silberschatz, Peter B. Galvin, Greg Gagne

Time/Location: SE 123 TR 10:30 am - 12:20 pm

Course Description:
This course introduces the design and implementation of both traditional and distributed operating systems. Topics include processes, memory management, deadlocks, distributed systems, synchronization, distributed file systems, and case studies.

Prerequisites: CS331 and CIS357.
In addition to the above prerequisite(s), you need to know the following:

- Knowledge of C programming; please start refreshing your C knowledge from CIS357. I highly recommend you read the following book:
  The C Programming Language. 2nd Edition, by Brian Kernighan and Dennis Ritchie.
- Knowledge of data structures (for example, arrays, stacks, queues, linked lists).

Goals:
Upon completing this course, the students will know about:

- Operating-system structures.
- Process scheduling, operations on processes, and interprocess communication.
- Threads.
- CPU scheduling.
- Process synchronization.
- Deadlocks.
- Memory management: main memory and virtual memory.
- Disk structure and disk scheduling.

Important Dates

- https://www.svsu.edu/officeoftheregistrar/importantsemesterdates//

Assignments:
All assignments must be submitted through Canvas (details for each assignment to be announced when assigned) on the due date as specified. Late assignments will be accepted up to the start time of class one class period after the due date and will be marked down by 20% of the available points for that assignment. No assignment will be accepted later than one class period after the specified due date. Exceptions to the late assignment policy will be made only for emergencies; a doctor's note or similar documentation is required.

Grading Policy:
Grading for the course will be on a 100-percent scale comprised of grades for labs, assignments, and exams, as follows:

Assignments	30%
Lab Tests	15%
Midterm Exam	25%
Final Exam	30%

Letter grades are based on total possible points, as follows:

A 93 to 100%	**A-** 90 to < 93%	
B+ 87 to < 90%	**B** 83 to < 87%	**B-** 80 to < 83%
C+ 75 to < 80%	**C** 70 to < 75%	
D 60 to < 70%	**F** 0 to < 60%	

Exam grades may be curved; if a curve is used, the curved score will be indicated when exam results are returned.

Exams are not released to students. Exams are graded; they will be handed back and reviewed in class and then collected by the instructor. The final exam will be available for review by appointment after exam grading is complete. Note-taking, photos, and other means of recording exam questions and answers are prohibited during an exam and the review of exam results.

Attendance Policy:
Class attendance is not directly part of the final grade. However, students are responsible for everything in class, including material covered, discussions, and announcements. If a student misses class, it is their responsibility to get the notes, etc.

Students are expected to show courtesy and respect toward their classmates and the instructor. Please avoid disruptive and distracting behavior during class, including talking, texting, arriving late or leaving early (unless the instructor has been notified in advance), using phones or other electronics for purposes other than looking up class-related material when appropriate. Please try to remember to set phones and other electronic devices to be silent during class.

Lab Tests and Exams:
All lab tests and exams must be taken in the classroom. Anyone who does not attend class on the test day will receive a zero for that lab test or exam.

Missed lab tests or exams may not be made up. Missed lab tests or exams will receive a grade of zero. Exceptions may be made only in the case of extraordinary circumstances; documentation is required, and the instructor must be notified ***before*** the scheduled lab test or exam time if possible or within two school days after the scheduled lab test or exam time at the latest.

Academic Integrity:
Unless otherwise stated explicitly in assignments are to be done independently by each student. All lab tests and exams will be done independently by each student, using only authorized materials (when allowed). The University and departmental policies on academic integrity apply; see the SVSU Code of Student Conduct at http://www.svsu.edu/studentconductprograms/codeofstudentconduct/ For more information and for background on why academic integrity is important both for the university and for students personally, see http://www.svsu.edu/academicintegrity/.

Discussion of assignments is encouraged; however, copying work is not allowed. Each student is responsible for protecting their work from copying by others. When multiple students turn in assignments (or parts of assignments), lab tests or exams answers that are essentially the same (beyond what could be expected given the nature of the assignments, lab tests, or exams question), or if students are observed looking at or using unauthorized material (including cell phones, their neighboring student's paper, etc.) during the lab test or exam, that is considered a violation of the academic integrity policy for all students involved, including any student allowing their work to be copied/used.

For the first occurrence, violations of the academic integrity policy will result in a zero (to all involved) for the assignment, lab test, or exam. A second occurrence will result in a failing grade for the course (to all involved) and be reported to the Office of Student Conduct Programs.

Disability Services:
Students with disabilities who seek accommodations must make their request by contacting the Office of Disability Services located at Curtiss Hall 112 or call (989) 964-7000. The Office must approve all accommodations of Disability Services.

Note:
The instructor reserves the right to change the syllabus during the semester and give students adequate notice of any changes.

Tentative Course Outline:

Week	Topics	Chapter Readings
1	Introduction	Chapter 1
2	Operating System Structures	Chapter 2
3	Process	Chapter 3
4	Threads and Concurrency	Chapter 4
5	CPU Scheduling	Chapter 5
6, 7	Synchronization Tools	Chapter 6
7	Synchronization Examples	Chapter 7
10, 11	Deadlocks	Chapter 8
11, 12	Main Memory	Chapter 9
13, 14, 15	Virtual Memory	Chapter 10
15	Mass-Storage Systems	Chapter 11

Labs, Lab Tests, Assignments, and Exams Schedule:

Lab 1	Available 01/11/2022
Lab 2	Available 01/20/2022
Lab 3	Available 01/25/2022
Lab 4	Available 01/27/2022
Lab 5	Available 02/03/2022
Lab Test 1	02/08/2022
Lab Test 2	02/22/2022
Assignment 1	Available 02/22/2022, Due 03/01/2022
Lab 6	Available 02/24/2022
Lab 7	Available 03/01/2022
Assignment 2	Available 02/03/2022, Due 03/18/2022
Midterm Exam	03/17/2022
Lab Test 3	03/22/2022
Lab 8	Available 04/05/2022
Lab Test 4	04/12/2022
Lab 9	Available 04/12/2022
Assignment 3	Available 04/12/2022, Due 04/21/2022
Lab Test 5	04/21/2022
Assignment 4	Available 04/19/2022, Due 04/22/2022
Final Exam	04/26/2022

Note: The instructor reserves the right to change the schedule during the semester and will give students adequate notice of any changes.