CS 630: Operating Systems Design

Instructor: **Dr. Lay**
Email: lay@njit.edu
Phone: 973 596 2654
Office Hours: Check Canvas after the semester begins
Office: GITC 4401 (online meeting preferred. In person meeting only with appointments.)

Course Content: *Organization of operating systems covering structure, process management and scheduling; interaction of concurrent processes; interrupts; I/O, device handling; memory and virtual memory management.*

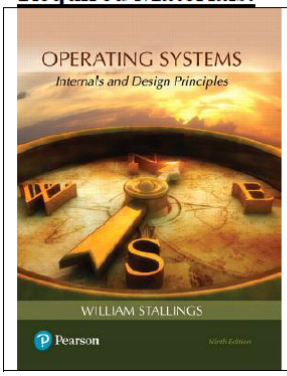
This course does not talk about how to use WINDOWS and its associated applications.
This course will talk about how an operating system is programmed, and how a modern OS will facilitate an application program.
You should NOT take this course

1. *If you are not interested in writing computer programs using any coding language*
2. *If you do not want to read any programming code*

Students are expected to know all fundamentals of computer programming.
And this course is NOT designed for students who are only interested in business management.

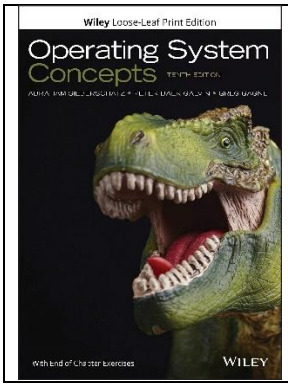
- **The NJIT Honor Code will be upheld, and that any violations will be brought to the immediate attention of the Dean of Students.**
- **Each student has the responsibility to monitor https://canvas.njit.edu/ for updates and assignments!**

Required Materials:



Text: **Operating Systems: Internals and Design Principles (9th Edition)**

- **Publisher:** Prentice Hall;
- **ISBN-10:** 013-380591-3
- **ISBN-13:** 9780-380591-8



Operating System Concepts 10th Edition

- **Publisher :** Wiley; 10th edition (February 9, 2021)
- **ISBN-10 :** 1119800366
- **ISBN-13 :** 978-1119800361

Attendance & Class Participation:
This is one of the core courses for CS program. Students are strongly encouraged to attend every class. Significant constructive class participation will heavily impact assignment of final grades.
Ethics and Integrity:

Each student is expected to write her/his own assignments. Students may work in groups to discuss the issues, but when it comes time to write, students MUST submit their own work product.

Cell Phone and Laptop PC Policy

1. Do not use your laptop PC during the quizzes and exams.
2. Turn cell phone to silent mode or vibration mode during the class
3. Turn off the cell phone during the quizzes and exams.

Quizzes:

Reminder: You should do Homework of the corresponding Chapter before you take quizzes.

In each class, a quiz may be given for the materials taught last week and before. There is no make-up for quizzes. There will be at least 10 quizzes. Types of questions: True/False, Multiple choices, Fill in the blanks, and calculations.

All quizzes are closed note and closed book, only scientific/engineer calculator is allowed.

NO makeup for any reason. If your absence is legitimate, you will need approval from the Dean of the Students. And only so I will waive the quiz to be counted into total grades.

How to prepare quizzes:

To prepare the quizzes and exams you will need to read textbook, at least once. Power-point slides and the notes below slides are good summaries of textbook. Make sure you go over the definition of "Key Terms" at the end of each chapter.

Grading:

The final grade will be calculated based upon the following points:

Graded Tasks	Points	Grading Guidelines
Online Homework	10%	
Project	10%	
Quizzes	10%	
Midterm Exam	27%	
Final Exam	35%	
Attendance	3%	
Class Participation	5%	3 participation reports defined in Canvas.

Total: 100%

Grading Policies
A 85% and above
B 65% and above (B+ 75% and above)
C 45% and above (C+ 55% and above)
F otherwise

Extra credit: Often some students approached me for extra credit, or extra assignments when they have not done well in the exams. Here I want to set a rule: the extra credit, or extra assignments will only be considered for students who have actively participated in the classroom and Piazza discussions. That means you answer my questions, you ask me questions, or answer questions from other students.

Week	Date	Content
1	19-Jan	Chapter 1: Computer System Overview
2	26-Jan	Chapter 2: Operating System Overview

3	2-Feb	Chapter 3: Process Description and Control
4	9-Feb	CH3 continued
5	16-Feb	Chapter 4: Threads
6	23-Feb	Chapter 7: Memory Management
7	2-Mar	Chapter 8: Virtual Memory
8	TBD	Midterm exam
9	16-Mar	Spring Break
10	23-Mar	CH8 Continued
11	30-Mar	Chapter 5: Concurrency: Mutual Exclusion and Synchronization
12	6-Apr	Chapter 5: Concurrency: Mutual Exclusion and Synchronization
13	13-Apr	Chapter 6: Concurrency: Deadlock and Starvation
14	20-Apr	Chapter 9: Uniprocessor Scheduling
15	27-Apr	Chapter 10: Multiprocessor and Real-Time Scheduling
	4-May	Reading Date
	TBD	**Final Exam**

P.S. The schedule is subject to change without prior notice.

Teaching philosophy:
The lecture is to add values to the textbook, not just repeating. I will try to:
1. Enhance the concepts already covered in the textbook and PPT slides by adding new materials
2. Point out key concepts

It will be your responsibility to read the textbook and go over all the slides I post in Canvas.

All prepared materials (other than textbook) and communications are posted on Canvas.njit.edu. You should visit the web site often.

How to ask questions:
Please ask all of your questions in Piazza of Canvas.

Project: To be determined.