

Fall 2023

## CS 630: Operating System Design

Kamlesh Naik

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Course Information:	
Course Code :	CS630_102/Jersey-City
Course Name :	Operating Systems Design
Term :	Fall 2023
Class Meeting Time :	<u><b>CS630 101</b></u> Wednesdays : 06:00 pm – 08:50 pm  <u><b>CS630 Jersey-City</b></u> Fridays : 06:00 pm – 08:50 pm
Teacher :	Prof. Kamlesh Naik (M.S. Computer Science)
Office Hours : (In Person)	Office No : GITC 4307 Tuesdays : 04:15 pm – 05:45 pm Wednesdays : 04:15 pm – 05:45 pm
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## **CS-630 Course Overview & Learning Outcomes:**

This course gives the student the necessary background and experience with operating systems. From this course the student will be able:

- To describe and discuss the basic components of a modern computer-based operating system.
- To describe and reason about the interactions among the various basic components of a computer-based operating system.
- To define and explain the operating systems concepts of process, threads, deadlocks, synchronization, systems calls.
- To learn how different CPU scheduling algorithms work, compare and explain their relative merits.
- To understand memory organization, physical and virtual memory, and differences between segmented and paged memory, and be able to describe their usage and relative merits.
- To understand I/O and I/O device behaviour and be able to compare and explain the merits of interrupt-driven vs DMA access.

## **Teacher's Availability and Response Time:**

Please include CS630 in the Subject line of any email you send me and thus it will make it easier to manage my emails. I will abide with the same strategy in the emails I send you. I usually check my email regularly (after every 30 minutes). If I do not respond to your email within 60 minutes (except my class hours) during the weekdays, please send the email again. If an E-mail is sent to me after 12:00 am, you will receive the response to that E-mail after 8:00 am, the next day. If you need to have an online meeting with me, please send me an email and I will make every single effort to serve your query with regards to the course.

## **Course Materials and Announcements:**

All material related to the course, including home-works will be posted on CANVAS. Announcements and notices will also be posted. It is mandatory for students to submit their home-works online over canvas. The Teaching Assistant will grade the submissions within a week. No E-mail submissions will be entertained. Homework submissions will not be entertained beyond the due date as the solutions will be posted online after the due date.

## **Textbook:**

Operating Systems: Internals and Design Principles 9th edition, William Stallings, Pearson.  
ISBN-13: 978-0-13-467095-9, ISBN-10: 978-0-13-467095-7

## **Exam Rules:**

The duration of each quiz will be 25 minutes. The duration of the mid-term will be 90 minutes and that of the final will be 150 minutes. Exams will be in class for face-to-face classes. If the class runs in full distance learning mode, appropriate software tools will be used for exams taken off campus. I reserve the right to take penalty points off from students whose phones/electronic gadgets are found ringing during an exam.

## **Mid Term Exam Chapter Distribution:**

<b>Chapter:</b>
Chapter 1 : Computer System Overview
Chapter 2 : Operating System Overview
Chapter 3 : Process Description and Control
Chapter 4 : Threads
Chapter 5 : Concurrency : Mutual Exclusion & Synchronization
Chapter 6 : Concurrency : Deadlock and Starvation

## **Final Exam Chapter Distribution:**

<b>Chapter:</b>
Chapter 7 : Memory Management
Chapter 8 : Virtual Memory
Chapter 9 : Uniprocessor Scheduling
Chapter 10 : Multiprocessor, Multicore & Real-Time Scheduling
Chapter 11 : File Management

## **Grading Policy:**

Criteria	% Distribution
Mid Term Exam:	35%
Final Exam:	35%
6 Quizzes (Written + Oral):	20%
Home-works:	10%
Total =	100%

Final Letter Grade is based on absolute grading with the following scale as a guide.

84%-100% = A grade

73%-83.99% = B+ grade

60%-72.99% = B grade

47%-59.99% = C+ grade

35%-46.99% = C grade

Below 35% = F grade (Fail)

Also note that most students typically get all the points on the Homework assignments. Thus, your class grade depends almost entirely on the exams.

## **Make-Up Exam policy:**

Make Up Exam policy is based upon generally accepted policies of the NJIT CS Department and individual circumstances. Exam makeup *after* missing the exam will be only allowed in extreme cases with written proof, e.g., hospital stay, car accident with police report, and similar. Exam makeup due to travel may or may not be approved ahead of time and never after the trip. As above, trips related to an extreme emergency, e.g., death in the family, will be allowed with written proof (death announcement in a newspaper or government death certificate with *official* English translation, if from a foreign country).

## **Simple rules:**

- Turn off your cell-phones during class hours and examinations.
- I expect you to behave professionally.
- Speak to me about any issues you have related to the course.

## **Ethical Conduct:**

Cheating during in-class quizzes/examinations/homework is, of course, illegal and immoral. The essential quality of the NJIT University Code on Academic Integrity is that each student shall demonstrate honesty and integrity in the completion of all assignments and in the participation of the learning process. Adherence to the University Code on Academic Integrity promotes the level of integrity required within the university and professional communities and assures students that their work is being judged fairly with the work of others.

You may "talk" about Homework assignments with each other. Where does talking end and cheating start? You may NOT copy exactly the same answers written by your friends. I will be checking for plagiarism, and I will have no mercy if I catch you. The student in question will be failed out of the course. In addition, I may give questions from the homework assignments and quizzes on the midterm and final exam. If your answers on the exams are substantially wrong, even though you did the homework correctly I might question you about the homework and reduce your homework credit to zero, from whatever it was before.

## **Exam Schedule:**

<b>Week</b>	<b>Examination</b>
Week 8	Mid Term Examination (40 points)
Week 15	Final Examination (80 points)

## **Homework Schedule:**

<b>Homework</b>	<b>Assigned Week</b>	<b>Submission Week</b>
Homework 01	3 <sup>rd</sup> week	4 <sup>th</sup> week
Homework 02	5 <sup>th</sup> week	6 <sup>th</sup> week
Homework 03	6 <sup>th</sup> week	7 <sup>th</sup> week
Homework 04	11 <sup>th</sup> week	12 <sup>th</sup> week
Homework 05	12 <sup>th</sup> week	13 <sup>th</sup> week
Homework 06	13 <sup>th</sup> week	14 <sup>th</sup> week

### **Quiz Schedule:**

Quiz	Date Scheduled
Quiz 01 (Written)	4 <sup>th</sup> week (tentative)
Quiz 02 (Written)	6 <sup>th</sup> week (tentative)
Quiz 03 (Written)	10 <sup>th</sup> week (tentative)
Quiz 04 (Written)	12 <sup>th</sup> week (tentative)
Quiz 05 (Written)	14 <sup>th</sup> week (tentative)
Quiz 06 (Oral)	Runs throughout the semester

### **Note:**

In case of emergency wherein we are not able to cover all the destined chapters mentioned in the lecture schedule, it would be wise to exclude certain chapters and be within the expected time limits.

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