CUNY Queens College
Department of Computer Science
Operating Systems Principles

Course	CSCI 340-221
Semester	Spring 2025
Instructor	Cuneyt Akinlar
Class	Tu/Th 1:40pm-2:55pm @SB-B141
	No class on February 18, March 6, April 15, April 17
Office Hours	Wednesday 11:00am-1:00pm @JH-210P
Email	cuneyt.akinlar@qc.cuny.edu

Recommended Resources:

1. Silberschatz, Galvin, Gagne: Operating System Concepts, 10th Edition, ISBN-13: 9781118063330 (https://www.os-book.com/OS10/index.html)
2. Tanenbaum, Bos: Modern Operating Systems, 5th edition, ISBN-13: 9780137618873
3. Stallings: Operating Systems: Internals and Design Principles, 8th Edition, ISBN-13: 9780133805918

Course Description: This course is about the fundamental concepts in operating systems. The course concentrates on the structure and implementation of general-purpose operating systems and their major components including process and thread management, inter-process communication, CPU scheduling, deadlocks, process synchronization, I/O subsystem structure and disks, file systems, and memory management techniques such as segmentation, virtual memory and paging. Successful students will also be able to implement programs in Linux operating system using the Portable Operating System Interface for Unix-based Systems (POSIX) API.

Course Grades will be determined, solely, based on your performance on exams and programming assignments. Here are the weights of each exam:

Exam I: 20%
Exam II: 30%
Final Exam: 30%
Programming assignments: 20%

You will only get letter grades A+, A, A-, B+, B, B-, C+, C based on the distribution of the scores with the median falling somewhere around B- or C+. Letter grades C-, D+, D, D- will **NOT** be given. *Your final course grade is final;* we grade on skills displayed, not relative skills. Exams will be given in-person.

There are *no online alternatives to in-person exams* and *I do **NOT** give makeups* and do not entertain requests to take exams at an earlier or later date. Please do not ask for special treatment. *This policy is not negotiable.* And there are no extra credit projects. *If you miss or skip an exam, your grade on that exam will be calculated as 0.*

For all exams, *you must provide a Queens College ID with your picture (or some other Government ID)*; *you will not be allowed to take the exam if you do not.* Your picture on the ID must match both your enrollment

information and your appearance. You may also be asked to answer personal identifier questions. Failure to prove your identity to my satisfaction will result in a grade of 0 on the exam and possible further action.

During exams, you are *not* permitted to leave the exam room until after your examination paper has been turned in. If you leave, you will not be allowed to return to work on the exam. If you have to use the bathroom, go before class.

If a student does not take the Final Exam (that is, Exam III), a course grade of WU will be given (with the exception given in the next paragraph). Handing in a blank exam or just selecting some multiple choice 'answers' and not showing work *does not count* as 'taking' the Final Exam (or any exam); evidence of *real effort must be satisfactorily displayed*. Further, *only* taking the Final Exam will also result in WU.

A 'grade' of Incomplete will only be given in cases where it applies per QC/CUNY policy.

Exam I covers all the material up to the time that that exam is given. Exam II focuses on the material covered after Exam I (but will have some material from the first part of the course, too). And the Final Exam covers the whole of the course.

If I judge that your performance on an examination *does not seem consistent with your previous work or there is some aspect of your work that is suspect*, I may *require* you to meet with me in a private 1-to-1 video session or in-person where I will ask you to solve some similar questions to ones on the exam, as an oral exam (the grade on which may supersede the other exam). If it seems that you may have given or received unfair aid on an exam, I may assign a grade of 0 or contact you for an immediate explanation. And you'll be reported to the Office of Student Conduct/Judicial Affairs and the Computer Science Department.

The Office of Special Services (SPSV) is committed to supporting students with qualifying disabilities under the Americans with Disabilities Act (ADA) by providing reasonable accommodations to ensure equal access. If you have previously received accommodations due to a disability, believe you may have a disability, or have a temporary disability, please visit the office's website (https://www.qc.cuny.edu/sp/) for further information on the assistance they can offer you. Accommodations are not retroactive, so you are encouraged to get registered sooner rather than later. You may also contact their office at qc.spsv@qc.cuny.edu or call 718-997-5870 during office hours for assistance as well.

If you have an 'out-of-town' exam conflict due to Queens College athletic team out-of-area competition, you must notify me during the first week of the semester and I will try to work with you and the Athletic Department so you can take the exam off-site.

If you are not satisfied with the grading of any question on either the first or second exam, you have the option to have your (whole) exam re-graded *but* doing so will 'cost' **five points** of that exam score. Re-grading of individual questions is *not* an option. Errors in grading are rare but if you are convinced a problem that deserves full credit was incorrectly graded, please bring it to my attention *but* before you do so, please make sure your answer is completely correct. *Grubbing for points is not welcome.*

Attending class is strongly suggested - but not required nor demanded. When you come to class, you *must* properly follow QC and proper guidelines for vaccinations and masking.

If you have not been counted in attendance for *at least* one of the first five classes of the semester, a grade of WN will be assigned and that action is final.

If you do come to class, please *do not* come late. If you come late, the whole class will pause while *we all* wait for you to take your seat and settle in. And these delays constitute time taken away from class and preparation for exams. I understand that there are legitimate circumstances where you may be late to class; please let me know in advance if this is going to be the case. If you are rushing to class, be careful: your safe arrival is more important than reckless speed.
It is expected that your attention will be focused on the class lecture and not on your cell phone or computer screen or on catching up on sleep*; close all screens and turn off your phones, remove headphones - and put them away during class.* (Exceptions may only be made if you have a note from Special Services that you must use a computer or you're expecting an emergency phone call.) If you are seen using your phone – or the phone is on your desk during class - in violation of this strict policy, *one point will be deducted from your (next) examination score for every such offense*. You may ***NOT*** record this class.

Cheating in any form will *not be accepted and will be dealt with harshly* in accordance with College policy. *If you cheat on an exam, you'll receive an F in this course. You will also be reported to the Computer Science Department and the Office of Student Conduct/Judicial Affairs.* (Subsequent course exams will not be graded.) *I take cheating very seriously and report all incidents of suspected cheating.* Investigations may lead to (temporary) PEN grades.

Please *do not* email me with questions about course material: ask in class or during the office hour. And please do not email me with questions about grades.

You are responsible for all course material discussed in lecture and assigned reading and homework. And you are each responsible for all class announcements - whether or not you are in attendance.

Bulk email messages will be rare. (The email addresses I will use for you are the ones in Brightspace. Make sure your Brightspace email address is updated. In addition, you should check and update your CUNYFirst email address with your QC address.)

By accepting this syllabus, you agree to the rules described herein and understand the contents and terms. None of the policies in this syllabus are negotiable. If you have any issues, questions or concerns, contact me during the first week of the semester. I reserve the right to make minor changes to this syllabus and any such changes will be announced.

Schedule and Course Topics

We will cover the following topics in the approximate order given below:

Introduction to Operating Systems (OS): Definition, major OS components, OS APIs – POSIX and Win32, and system calls, OS structure and implementation
Process Management: Process definition, representation, creation, termination
Inter-process communication: Methods of inter-process communication such as shared-memory, message queues, pipes
Threads: Motivation, definition, creation, termination, POSIX pthreads
CPU Scheduling: CPU Scheduling algorithms: FIFO, Shortest-Job First, Round-Robin Scheduling, Priority Scheduling, Multi-Level Feedback Queuing, Linux Fair Scheduling Algorithm
Synchronization: The need for synchronization, synchronization primitives: mutex locks, semaphores, monitors and condition variables, message passing
Deadlocks: Definition, detection, Banker's algorithm
I/O Subsystem and Secondary Storage: OS I/O Subsystem, device independent software, device drivers, disks and disk scheduling algorithms
File Systems: Definition, files, directories, modern file system implementations
Memory Management: Segmentation, virtual memory, paging, page replacement algorithms

Exam Dates

Exam I: Tuesday March 11, 2025 1:40pm-2:55pm @SB- B141
Exam II: Tuesday April 29, 2025 1:40pm-2:55pm @SB- B141
Final Exam: Thursday May 22, 2025 1:45pm-3:45pm @SB-B141

Note: The date of the final exam might be changed by the College during the semester.