Boston University Metropolitan College

Operating Systems

MET CS 575
Course Format On-Campus
Tuesday 6:00 PM – 8:45 PM
Spring 2022

Dr. Mehrdad Nourai
mnourai@bu.edu
Office hours: after class

Course Description
Overview of operating system characteristics, design objectives, and structures. Topics include concurrent processes, coordination of asynchronous events, file systems, resource sharing, memory management, security, scheduling, and deadlock problems. 4 credits. Prerequisites: MET CS 472 and (MET CS 231 or MET CS 232). Or instructor's consent.

Books
Operating System Concepts 10th Edition, Silberschatz, Galvin, and Gagne – Wiley.
The book is available from Barnes & Noble and other retailers.

Courseware
Blackboard website: https://learn.bu.edu/

Learning Outcomes

1. Explain the fundamental concepts of operating systems, including OS structures, virtualization, address space, kernel mode, interrupt, access control, etc.
2. Explain the basic components in a computer system, an operating system, and how they interact with each other in a system.
3. Describe the kernel implementation of various OS components and functions, such as kernel mode, process/thread operations, context switch, page table, address translation, message passing, file systems, etc.
4. Compare the multi-process and multi-thread implementation of an application.
5. Evaluate and Compare different CPU scheduling algorithms.
6. Analyze the synchronization problems, identify the race condition, and properly implement synchronization in multiple processes or multi-thread applications.
7. Analyze the effect of virtual memory management on program performance.
8. Design or construct OS components such as CPU scheduler, memory management, file systems, etc.
9. Apply the OS concepts to real-world OSes such as Windows and Linux.
10. Develop hands-on experience in Linux programming.
11. Be introduced to the Linux kernel source code and simple kernel-level programming.
12. Explain the security principles and security issues in the OS design.
13. Develop system-thinking skills.