

Course Description:

CSE 421/521 is an introductory course on the design and implementation of operating systems. It covers the principles and techniques in the design of operating systems. Describes concepts of operating systems in terms of functions, structure, and implementation, particularly emphasizing multiprogramming. Topics include process coordination, deadlocks, memory management, device management, file systems, scheduling policies for CPU, and network and distributed operating systems. Illustrates concepts with examples from existing operating systems.

Course Prerequisites:

CSE 250 Data Structures, or an equivalent course, understanding C programming language. Students should make sure they are comfortable with reading and writing C code. Availability of Zoom, and the use of audio and video is expected for any potential online component. Please install the software and make sure your webcam and microphone work properly. Exceptions are only allowed if discussed with the instructor at the start of the semester.

Learning Outcomes:

At the end of this course, a successful student should be able to:

- Define different OS design techniques.
- Explain process management, processor scheduling, concurrent programming, deadlocks and synchronization, memory management, file management and I/O systems, disk scheduling.
- Distinguish main memory and virtual memory.
- Recognize user level and kernel level programming differences.
- Implement synchronization in multi-threaded programs.

Textbook:

Operating System Concepts (9th Edition)
A. Silberschatz, P.B. Galvin, and G. Gagne. Wiley Publishers, 2012
ISBN: 978-1-118-06333-0

Recommended Supplementary Text:

The C Programming Language
B. Kernighan and D. Ritchie. Prentice Hall, Inc., 1988
ISBN 0-13-110362-8