MISSOURI WESTERN STATE UNIVERSITY
COLLEGE OF LIBERAL ARTS AND SCIENCES
DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS, AND PHYSICS

*CO URSE NUMBER:* CSC 386

*COURSE NAME:* Operating System Concepts

*COURSE DESCRIPTION:*
This course is an introduction to operating system principles. Topics include processor management, real and virtual storage management, device management and scheduling, multiprocessing, concurrent programming, and other topics related to operating systems. The course also includes a survey of major operating systems.

*PREREQUISITE:*
A grade of C or higher in both CSC 285 and CSC 384.

*TEXT:*

Operating System Design and Implementation, Tanenbaum & Woodhull, Edition 3rd 06, Pearson, ISBN: 9780131429383

*COURSE OBJECTIVES:*

1. Understand the role of an operating system as an intermediary between a user program (or, a user) and the computer hardware. Explain how different operating system components facilitate the role.
2. Compare different operating system design alternatives.
3. Identify their advantages and tradeoffs.
4. Understand how an operating system provides to user programs an illusion of exclusive access to the hardware, while facilitating collaborations between them.
5. Understand and compare scheduling algorithms designed for various operating system components.
6. Examine some popular scheduling algorithms for problems that they address and their tradeoffs in terms of various factors including time/space complexity and possibilities of starvation.

*COURSE OUTLINE:*

1. Operating System overview
   a. System calls
   b. Operating system structures
2. Processes
   a. Inter-process communication
   b. Process scheduling
3. Input/Output
   a. Principles of I/O hardware
   b. Principles of I/O software
   c. Deadlocks
4. Memory Management

       a. Swapping
       b. Virtual Memory
       c. Paging
       d. Segmentation
5. File Systems
       a. Files
       b. Directories
       c. File system implementation
       d. Security
       e. Protection mechanisms