

COURSE DESCRIPTION

Course No.	CSC 562	Course Title	Principles of Operating Systems
Course Type	Required		
Sem. Hours	3	Coordinator	Jing Deng

Current Catalog Description:

Techniques and strategies used in operating system design and implementation: managing processes, input/output, memory, scheduling, file systems, and protection.

Textbook:

“Operating System Concept,” 9th edition, Silberschatz, Galvin, Gagne: Wiley, 2012. ISBN-13: 978-1118063330 ISBN-10: 1118063333.

References:

Modern Operating Systems, Andrew Tanenbaum: Prentice Hall, 3rd edition, 2008.

Course Outcomes:

1. Demonstrate knowledge in fundamental operating system abstractions such as processes, threads, and process management.
2. Demonstrate knowledge in semaphores, monitors, conditions, deadlocks, IPC abstractions, shared memory regions, etc.
3. Demonstrate knowledge in principles of memory management.
4. Demonstrate knowledge in file abstraction and storage management.
5. Able to apply knowledge outlined above to design and develop system programs based on operating system abstractions and to write correct concurrent programs/software, including basic resource management techniques (scheduling or time management, space management) and considering issues such as performance and fairness objectives, and avoiding deadlocks.

Activities Enabling Program Outcomes (POx refers to program student outcome x)

Instruction: The core of this course involves exploration of principles behind computer operating systems. It focuses on the core knowledge in computing and its application (POa). Processes, memory operation, implementation, and evaluation are discussed in detail along with system design tradeoffs (POc and POj). The latest developments in computer systems including mobile systems are explored (POh).

Student Activities and Assessment: This course has no activities identified for data collection in program outcome assessment.

Prerequisites by Topic:

Students must have

- grade of at least C (2.0 in CSC 261 (Computer Organization and Assembly Language) and
- CSC 340 (Software Engineering) or
- permission of instructor.
- successful completion of CSC 561 (Computer Architecture) is helpful

Major Topics Covered in the Course:

- Overview of OS, OS structure
- Process and Thread Management, Scheduling, Synchronization and Deadlocks.
- Memory Management (Main Memory and Virtual Memory)
- File Management.
- I/O Management.
- Protection and Security.

Estimated Curriculum Category Content (Semester hours):

<i>Area</i>	<i>Core</i>	<i>Advanced</i>	<i>Area</i>	<i>Core</i>	<i>Advanced</i>
Algorithms	0.5	0	Software design	0.5	0
Data structures	0	0	Prog. Languages	0.5	0
Comp Org & Arch	1.5	0			