COP 4610 – Computer Operating Systems


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**Office Hours:** CSE #422, MW 10:00 – 12:00 A.M

**Objectives:**
- To provide fundamental concepts applied in modern operating systems, including process management, memory organization and management, and I/O management
- To apply the design of collaborative processes and threads and their synchronization using semaphores
- To understand the problem of deadlock and their solutions
- To provide knowledge of various memory organizations and management techniques
- To provide knowledge of basic principles of I/O management
- To develop simulation program for evaluation of CPU schedulers
- To design an application using a multithreading system

**Prerequisites:** COP 3510 - Data Structures and Algorithms and CDA 3331 - Introduction to Microcomputers

**Topics:**

1. Functions and Characteristics of Operating Systems
2. Process Management – Process Concept
3. Resource Allocation and Scheduling
4. Process Collaboration and Synchronization
5. Deadlocks and Their Prevention
6. Memory Organization and Management – Real Memory
7. Virtual Memory Organization
8. Virtual Memory Management
9. Input/Output Management and Disc Scheduling
10. Case Studies
### Grading format:
- Two Programming Assignments (20% x 20%) = 40%
- Two Tests (2x30%) = 60%

**TOTAL** = 100%

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<tr>
<th>STUDENT LEARNING OUTCOMES</th>
<th>RELATED TOPICS</th>
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| 2. Proficiency in the areas of software design and development, data structures, and operating systems | • Process management  
• Process collaboration and synchronization  
• Memory organization  
• Virtual memory management  
• I/O management |
| 5. An ability to communicate effectively and to function on multidisciplinary teams        | • Project 1: Design and evaluation of CPU schedulers  
• Project 2: Design of a multithreading system |