

## CS3803 Operating Systems Syllabus Outline

Department: Department of Mathematics, Physics and Engineering

Course Prefix/Number: C S 3803

- I. Catalog Description: Introduction to the design and development of operating systems. Analysis of current system software technology, including process management, memory organization, security, and file systems.
  
- II. Prerequisites: CS 2413, and CS 3434.
  
- III. Expanded Course Description: The basic concepts and principles of operating systems are introduced. These include such topics as: process and task scheduling, memory management, file system management, security, and concurrency issues. Various aspects of an operating system are studied through implementation in various programming languages. Low level hardware access is investigated.
  
- IV. Intended Student Learning Outcomes: At the conclusion of the course the student will be able to :
  - Students will demonstrate the ability to explain the major aspects of a modern operating system by listing and defining the most important aspects.
  - Students will demonstrate the ability to illustrate the organization of a digital computer by listing and explaining the interaction of its major components.
  - Students will demonstrate the ability to differentiate the layers of software present in an operating system by contrasting the difference in these layers.
  - Students will demonstrate the ability to determine the resources needed by processes in an operating system by identifying the elements that support processes.
  - Students will demonstrate the ability to predict the scheduling behavior of processes in an operating system by utilizing models to investigate their behavior.

- Students will demonstrate the ability to classify synchronization problems and issues by identifying the critical factors associated with multiple threads and processes.
- Students will demonstrate the ability to predict the behavior of processes in an operating system by utilizing models to investigate their behavior.
- Students will demonstrate the ability to identify the factors that create, avoid and recovery from deadlock by detailing the algorithms used to solve this problem.
- Students will demonstrate the ability to evaluate the different techniques used to manage memory, including virtual memory by contrasting the algorithms used to manage memory.
- Students will demonstrate the ability to evaluate the different techniques used to manage a file system by comparing the techniques used to manage a file system.
- Students will demonstrate the ability to evaluate the different techniques used to protect and secure an operating system by analyzing common security models.
- Students will demonstrate the ability to describe the different types of distributed operating systems by contrasting the techniques used to communicate between them.

V. Unless otherwise stipulated in this master syllabus by the department, the following items are subject to faculty discretion as described in each faculty member's individual course outline/syllabus:

- a) Course Requirements
- b) Required Text(s)
- c) Bibliography

VI. Academic Honesty: Cheating, plagiarism (submitting another person's materials or ideas as one's own), or doing work for another person who will receive academic credit are all-impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be

taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

- VII. **Students With Disabilities Policy:** It is the policy of Tarleton State University to comply with the Americans with Disabilities Act (ADA) and other federal, state, and local laws relative to the provision of disability services. Students with disabilities attending Tarleton State University may contact the Office of Disability Services at (254) 968-9478 to request appropriate accommodation. Furthermore, formal accommodation requests cannot be made until the student has been officially admitted to Tarleton State University.