School of Computing
UNIVERSITY OF GEORGIA

Course Information Sheet
CSCI 4730
Operating Systems

Brief Course Description (50-words or less)	Coverage of the key concepts in modern operating systems. Specific topics include process management, synchronization mechanisms, scheduling strategies, deadlock detection/avoidance, memory management, file systems, protection and security, and distributed systems. Concepts will be reinforced through programming projects using a realistic operating system
Extended Course Description / Comments	N/A
Pre-Requisites and/or Co-Requisites	CSCI 4720 Computer Architecture and Organization
Required, Elective or Selected Elective	Selected Elective Course
Approved Textbooks (if more than one listed, the textbook used is up to the instructor's discretion)	Authors: Abraham Silberschatz, Bell Laboratories Peter Baer Galvin, Corporate Technologies Greg Gagne, Westminster College Title: *Operating System Concepts* Edition: 8th or later ISBN-13: 978-1118112731 Authors: Andrew S Tanenbaum and Albert S Woodhull Title: *Operating Systems Design and Implementation* Edition: 3rd or later ISBN-13: 978-0131429383
Specific Learning Outcomes (Performance Indicators)	At the completion of this course students should be able to do the following: 1. Describe and explain the processes and threads, and the concepts of inter-process communication and synchronization. 2. Describe the context switch, and components of process scheduling: process control blocks, the interrupts, the ready queue, CPU scheduling algorithms. 3. Design, implement and analyze concurrent programs using semaphores or monitors, with the awareness of race conditions, deadlock, and starvation. 4. Describe and apply memory management concepts: virtual and physical address spaces, paging, segmentation, page sharing and protection, page replacement algorithms, and translation lookaside buffer. 5. Define, restate, discuss, and explain mass storages, disk scheduling, and file systems.

Relationship Between Student Outcomes and Learning Outcomes

	ABET Learning Outcomes						
Specific Learning Outcomes		**A**	**B**	**C**	**D**	**E**	**F**
	1	●		●			●
	2	●		●			●
	3	●	●			●	●
	4	●	●	●			●
	5	●	●	●		●	●

ABET Learning Outcomes

A. Graduates of the program will have an ability to: Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
B. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
C. Communicate effectively in a variety of professional contexts.
D. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
E. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
F. Apply computer science theory and software development fundamentals to produce computing-based solutions.

Major Topics Covered
(Approximate Course Hours)

3 credit hours = 37.5 contact hours
4 credit hours = 50 contact hours

Note: Exams count as a major topic covered

Operating System Structure (5 hours)

Processes (6 hours)

Threads (4 hours)

Scheduling (5 hours)

Synchronization (6 hours)

Deadlock (4 hours)

Memory (6 hours)

File System (6 hours)

Advanced Concepts, such as Protection & Security, Concurrency, I/O Subsystem, Mass Storage, Time Management in Distributed Systems (6 hours)

Course Master

Dr. Maria Hybinette