2017 - 2020 Catalog Data: CMPS 400 **OPERATING SYSTEMS**
(Credit, 3 hour) (Lecture, 3 hours). This course is intended to bring the student to grips with the actual programs encountered in systems programming. Operating system principles, hardware/software interface, resource management, segmentation, paging, virtual memory; operating characteristics, user service and their limitations will be given. Overall structure of multiprogramming systems on multiprocessor hardware configurations will be treated, as well as details on addressing techniques, core management, and file system design and management. **Prerequisite: CMPS 301.**

I. COURSE INFORMATION

Course Information:

CRN	17017
Rubric No	CMPS 400
Section	1
Title	Operating Systems
Credit Hours	3
Type	In Person

Lectures: Day and Time: 9:00AM – 9:50AM MWF
Class Location: Thurman Hall 206

II. TEXTBOOK AND MATERIALS

Main Textbook: Silberschatz, Galvin, Gagne, *Operating System Concepts Essentials, 2nd Edition* (ISBN: 978-1-118-80492-6).

References: Silberschatz, Galvin, Gagne, *Operating System Concepts, 9th Edition*, (ISBN: 978-1-118-06333-0).
Andrew S. Tanenbaum, *Modern Operating Systems, 3rd Edition* (ISBN: 978-0-13-600663-3).
William Stallings, *Operating Systems: Internals and Design Principles, 6th Edition* (ISBN: 978-0-13-600632-9).

III. INSTRUCTOR INFORMATION

Instructor(s): Name: Yaser Banadaki, Ph.D.
Office Location: 114E Henry Thurman Jr. Hall, Southern University Baton Rouge
Office Phone: 225-771-3941
Office Hours: MWF 11:00 AM – 12:00PM or by appointment and contact
E-mail: yaser_banadaki@subr.edu

IV. COURSE LEARNING OUTCOMES

Course Objectives:

The objectives of this course are to cover:
1. the major components of operating systems and the basic organization of computer systems.
2. the services an operating system provides to users, processes, and other systems.
3. the various ways of structuring an operating system.
4. the notion of process, thread and the issue related to multithreaded programming.
5. the communication in Client-Server Systems
6. the concept of CPU scheduling, critical section problem, and deadlocks in a computer system.
7. the various ways of organizing memory hardware and memory-management techniques.
8. the concept of virtual memory system, demand paging- replacement algorithms, and allocation of page frames.

Course Learning Outcomes:
1. An ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solution. (ABET Outcome-1),
2. An ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline. (ABET Outcome-2),

Course Educational Strategies:
1. Provide clear lectures and discussions of major components of operating systems.
2. Provide students with the opportunity to learn course material through reading and homework assignments.
3. Allow students to demonstrate mastery of the course concepts through submitted exercises such as exams, quizzes, and homework problems.
4. Provide students with the opportunity to learn more about basic organization of computer systems and the related concepts through their applications to real world problems.

V. COURSE OUTLINE

Course Topics:

This course will cover the following concepts in operating systems:

Week 1	Introduction to Operating Systems
Week 2	Operating-System Structures
Week 3	Processes
Week 4	Threads
Week 5	Process Synchronization
Week 6	CPU Scheduling
Week 7	Main Memory
Week 8	Virtual Memory
Week 9	Mass-Storage Structure
Week 10	File-System Interface
Week 11	File-System Implementation
Week 12	I/O
Week 13	Protection
Week 14	Security

VI. EVALUATION AND GRADING

Grading Distribution

A student's grade at the end of the semester will be determined by following percentages:

Class Participation	10%
Assignments/Quizzes/Projects	30%
Midterm Exam	30%
Final Exam	30%

Students will demonstrate knowledge of the subject through 10 Quizzes, 6 assignments, midterm exam, and the final exam.

Grading Scale

Course grades at the end of the semester will be given based upon performance using the standard grading scale:

90– 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
Below 60%	F

Grades may be curved at the end of session at the instructor's discretion.

VII. COURSE RULES AND PROCEDURES

Exam policy: Exams will emphasize concepts developed in the course. Exams will be closed book and notes unless stated otherwise (if formulas, tables, etc. are needed, the instructor will supply them). Students will not be able to pause the exams. There must be no sharing of any materials during exams. Communicating to one another is not permitted while taking an exam. If there are questions, they should be directed to the instructor.

Attendance policy and class participation: Students are expected to be present and on time and participate in class (whether virtual or in-person attendance) from the beginning throughout the end of the class period. Though attendance is strongly encouraged, merely attending classes does not guarantee a passing grade. It is every student responsibility to make sure that he/she signs the roll during class (Hybrid: you need to login to the Moodle and sign the roll).

Makeup test or exam: No makeup test or exam will be given except in the case of emergency such as the student being sick, or he/she is unable to come to class due to some unforeseen event. An official proof MUST be presented to the instructor and student is required to take the makeup test/exam as soon he/she returns to class in the following class session. Failure to comply will result in the grade of zero (0) for the test/exam.

Use of electronic devices while in class: Students are not allowed to use the computers for other purpose unrelated to the course content during the lectures unless authorized by the instructor of this course for the purpose of the course. Please turn off (or place on silence) your cellular phones before the lecture starts. The Hybrid classes will be through Microsoft Teams. Make sure to mute your microphone during the remote delivery of the lectures.

Missing or late assignments/quizzes/exams: At the instructor's discretion, students may be given opportunity for late submission of an assignment or retake of a quiz or exam upon presentation of a valid excuse.

Academic honesty and plagiarism: Please review the Southern University – Baton Rouge Student Handbook for information regarding the university's academic conduct policy and what constitutes plagiarism. Academic dishonesty and plagiarism will NOT be tolerated. The remote attendees must specially stick to these guidelines.

Assignment policy: Students are NOT allowed to share their assignments or to communicate during the tests or exam. No late assignment will be accepted and no make up for assignments and quizzes.

Change to syllabus: Any aspects of this syllabus may be subject to change. However, any substantive changes affecting distribution of grades for various components of the course will be accompanied with prior notice given to students via class announcement and Blackboard announcement or email.

Livetext Access: Each student is required to have access to LiveText. Southern University and A&M College-Baton Rouge has entered into partnership with LiveText, Inc. to provide online academic resources for student collaboration and learning outcomes assessment. Therefore, all students enrolled in this course are required to purchase a subscription from LiveText, Inc. through the Southern University Bookstore. LiveText, Inc. provides students with the electronic tools and services needed to serve them in their courses and in their career or academic pursuits beyond graduation.

Moodle Access: Southern University and A&M College at Baton Rouge will used Moodle extensively in this course. Moodle is a learning management system designed to help teachers and students communicate effectively online. The course syllabus, class materials (e.g., handouts, PowerPoint slides, journal articles, assignments, readings, etc.) will be placed on Moodle. The student should check Moodle DAILY for all assignments submitted via Moodle. All course communications will be primarily via SUBR email or Moodle. Students are responsible for regularly checking their emails and Moodle. If the student has problems with his Moodle account, he/she should contact Ms. Chrisena Williams-Brown in the Division of Information Technology via email at chrisena_williams@subr.edu or via phone at (225) 771-5017.

Academic Dishonesty: The University defines academic dishonesty as premeditated and un-premeditated fraudulent behavior. Premeditated fraud is defined as conscious, pre-planned, deliberate cheating with materials prepared in advance. Unpremeditated fraud is defined as cheating without the benefit of materials prepared in advance. See the Southern University and A & M College Catalog for a more detailed definition of academic dishonesty. In addition, administrative

regulations governing the conduct of students enrolled at the University are contained in the Code of Student Conduct. A copy of the Code of Student Conduct may be obtained from the Office for Student Affairs.

ADA Compliance: Students with documented disabilities who believe that they may need accommodations in this class are encouraged to contact the Disability Services Coordinator in the Office of Disability services, 234 A.C. Blanks Hall, 225-771-3950 (Voice/TTD), 225-771-5652 (Fax), as soon as possible to ensure that such accommodations are implemented in a timely fashion. Students who need accommodations must be registered with the Office of Disability Services. Students are responsible for informing the instructor of any instructional accommodations and/or special learning needs at the beginning of the semester. All discussions will remain confidential.

VIII. COURSE ASSESSMEN

Course Objectives	Course Learning Outcomes	Methods of Assessment	Target	Relationship to Program Learning Outcomes
Students will be able to describe the major components of operating systems, the basic organization of computer systems and the various ways of structuring an operating system.	Students will demonstrate the ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solution.	Outcome Rubrics 1 and 2 will be assessed through 3 tests, 6 assignments, and the final exams.	70% will perform at the level of performance 2, 3 or 4 in achieving Outcomes 1 and 2	Outcomes 1 and 2
Students will be able to describe the notion of process, thread and the issue related to multithreaded programming.	Students will demonstrate the ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	Outcome Rubrics 1 and 2 will be assessed through 3 tests, 6 assignments, and the final exams	70% will perform at the level of performance 2, 3 or 4 in achieving Outcome 2	Outcomes 1 and 2
Students will be able to describe the concept of CPU scheduling, critical section problem, and deadlocks in a computer system.	Students will demonstrate the ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solution.	Outcome Rubrics 1 and 2 will be assessed through 3 tests, 6 assignments, and the final exams.	70% will perform at the level of performance 2, 3 or 4 in achieving Outcomes 1 and 2	Outcomes 1 and 2
Students will be able to describe the concept of client-server communication systems, virtual memory system, demand paging-replacement algorithms, and allocation of page frames.	Students will demonstrate the ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	Outcome Rubrics 1 and 2 will be assessed through 3 tests, 6 assignments, and the final exams	70% will perform at the level of performance 2, 3 or 4 in achieving Outcome 2	Outcomes 1 and 2
Students will be able to describe the memory hardware organization and memory-management techniques.	Students will demonstrate the ability to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solution.	Outcome Rubrics 1 and 2 will be assessed through 3 tests, 6 assignments, and the final exams.	70% will perform at the level of performance 2, 3 or 4 in achieving Outcomes 1 and 2	Outcomes 1 and 2