



## SYLLABUS

COLLEGE OF COMPUTING AND SOFTWARE ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE

CS 3502: OPERATING SYSTEMS

ACADEMIC TERM: SPRING 2020

## Course Information

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Class meeting time: TBD

Modality: Traditional On Campus and Full Online.

Location: TBD

## Instructor Information

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Name: TBD

Email: TBD

Office Location: TBD

Office phone: TBD

Office Hours: TBD

Preferred method of communication: TBD

## Course Description

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### Catalog Description:

The course covers the basic concepts, design and implementation of operating systems. Topics include an overview of basic computing hardware components, operating system structures, process management, memory management, file systems, input/output systems, protection and security. The Windows and/or UNIX/Linux operating systems will be reviewed as example systems.

Prerequisites: CS 3305 and CS 3503

Credit Hours: 3-0-3

## Course Materials

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Required Texts: "Operating System Concepts" by A. Silberschatz, P. Galvin and G. Gagne, John Wiley & Sons, 2009, (Tenth Edition) ISBN: 978-1-118-06333-0

Recommended/Alternative Texts:

- *Principles of Modern Operating Systems, 2<sup>nd</sup> ed.* by Jose M. Garrido, Richard Schlesinger, and Ken Hoganson. Jones and Bartlett, 2012.
- *Operating Systems: Three Easy Pieces*, <http://pages.cs.wisc.edu/~remzi/OSTEP/>  
Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau, ISBN-13: 978-1985086593

Technology requirements: None

## Learning Outcomes

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Upon the completion of the course, students should be able to:

1. Demonstrate the understanding of the conceptual workings and design fundamentals of operating systems.
2. Demonstrate the understanding and be able to evaluate the features offered by various types of operating systems.
3. Develop a program (in Java and/or C++) that uses calls to the OS system functions, using threads and synchronization to demonstrate the understanding of threads and synchronization.
4. Demonstrate the understanding and be able to evaluate performance issues of computer systems, by designing and implementing key OS concepts, modifying an OS kernel, or simulating models (in a course project).

## Course Requirements and Assignments

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**Summary of course requirements:**

1. Homework assignments
2. Exams
3. Quizzes
4. Semester-long project

## Evaluation and Grading Policies

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The final grade will be assessed based on students' progress and findings as follows:

Assessment Criteria:	
Homework Assignments	10%
3 Exams	50%
Quizzes	10%
Semester Project	30%
Total	100%

*Notes: Quizzes, Homework, and Attendance could amount to 20% (total)*

Grading Scale:	
A	90% - 100%
B	89% - 80%
C	79% - 70%
D	69% - 60%
F	59% or below

I will round up grades if they are  $>$  or  $= .5$  or above, for example, an 89.6 is an A, but 79.2 is a C. Examinations/Quizzes/Homework will be graded and returned within a week.

## Course Policies

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**Homework Submission:** Copying or paraphrasing codes from other sources or other students will be considered a violation of the Student Code of Conduct. Due dates for homework assignments will be specified on the homework themselves. **No late submission is accepted.**

**Feedback in a Timely Manner:** Use ONLY the D2L email system to corresponding with the professor, and check your replies in same within 1-2days.

**Attendance Policy:** Regular attendance is expected, with a lead time of one week to be excused for business travel or other critical reason or emergency. Frequent misses of class could affect a student's final grade.

**Quiz/Exam Policy:** Two-to-three regular exams will be given in the semester. There will be no makeup exams, and no extra time will be given when a student shows up late for exams.

**Electronic Devices and Classroom Behavior Policy:** In order to minimize the level of distraction, all beepers and cellular phones must be on quiet mode during class meeting times. Students who wish to use a computer/PDA for note taking need prior approval of the instructor since key clicks and other noises can distract other students. Recording of lectures by any method requires prior approval of the instructor. Students using a laptop in class should not check their email, browse the web, or in other way detract from the focus of the class.

Students are reminded to conduct themselves in accordance with the Student Code of Conduct ([KSU Student Code of Conduct, Section III](#)), as published in the Undergraduate and Graduate Catalogs. Every KSU student is responsible for upholding the provision. Students who are in violation of KSU policy will be asked to leave the classroom and may be subject to disciplinary action by the University.

**Tutoring:** The College of Computing and Software Engineering offers tutoring services for certain courses. If needed, contact: <http://ccse.kennesaw.edu/ccselabs/ccse-tutoring.php>

**Withdrawal:** Check the KSU Calendar for the last day to withdraw without penalty.

## Department or College Policies

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Students are expected to be aware that the Computer Science department has certain policies in place that govern practices within the department including:

1. "B" or better grade is required for CS 1321/L and CSE 1322/L and their equivalent transfers. All courses used toward any undergraduate degree in the computer science must be completed with an assessed performance grade of "C" or better. This means that all prerequisite courses from the CS Department must have been completed with a "C" or better in order for a student to enter the next course in a sequence.
2. All requests for course overloads must be made through the College advising office and with the approval of the Program coordinator and department chair. The instructor of any course is not permitted to authorize course overloads.
3. All requests for prerequisite bypasses must be made through the College advising office and with the approval of the Program coordinator and department chair. The instructor of any course is not permitted to authorize course overwrites.
4. All students are encouraged to register their current choice of major using the department major change process. Students who are not recorded under their intended major may find that they may be limited from registering for courses they require to complete their intended program of study.

# Institutional Policies

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Please visit each of the following links for Institutional policies.

Federal, BOR, & KSU Course Syllabus Policies:

[https://curriculum.kennesaw.edu/resources/federal\\_bor\\_ksu\\_student\\_policies.php](https://curriculum.kennesaw.edu/resources/federal_bor_ksu_student_policies.php)

Student Resources:

[https://curriculum.kennesaw.edu/resources/ksu\\_student\\_resources\\_for\\_course\\_syllabus.php](https://curriculum.kennesaw.edu/resources/ksu_student_resources_for_course_syllabus.php)

Academic Integrity Statement:

<https://scai.kennesaw.edu/codes.php>

## KSU Student Resources

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This link contains information on help and resources available to students:

[https://curriculum.kennesaw.edu/resources/ksu\\_student\\_resources\\_for\\_course\\_syllabus.php](https://curriculum.kennesaw.edu/resources/ksu_student_resources_for_course_syllabus.php)

## Course Schedule

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**Course Topics and Outline (could vary depending on the instructor and selected textbook)**

- Introduction to OS
- OS Structures
- Process, Thread and CPU Scheduling (must be covered by the end of week3)
- (Parallel Programming) and Deadlock (must be covered by the end of week4)
- Memory Management
- Virtual Memory
- File Storage (optional)
- File Systems (Logical Design)
- File Systems (Implementation)
- Unix/Linux System

**Suggested Weekly Schedule – An Example from Spring 2019**

Session #	Dates (T/R)	Chapter	Topics
1.	01/08/19	3	Processes
2.	01/10/19	3	Processes
3.	01/15/19	3	Processes <b>Homework Assignment</b>
4.	01/17/19	5	CPU Scheduling
5.	01/22/19	5	CPU Scheduling
6.	01/24/19	5	CPU Scheduling & Phase1 Project Discussion
7.	01/29/19	2	OS Structures
8.	01/31/19	2	OS Structures

<b>9.</b>	02/05/19		<b>Exam 1 (Ch. 2, 3, 5)</b>
<b>10.</b>	02/07/19	6	Process Synchronization
<b>11.</b>	02/12/19	6	Process Synchronization
<b>12.</b>	02/14/19	6/7	Process Synchronization, Deadlocks
<b>13.</b>	02/19/19	7	Deadlocks
<b>14.</b>	02/21/19	7/8	Deadlocks/Memory Management <b>Homework Assignment</b>
<b>15.</b>	02/26/19	8	Memory Management
<b>16.</b>	02/28/19	9	Virtual Memory
<b>17.</b>	03/05/19	9	Virtual Memory
<b>18.</b>	03/07/19	9	Virtual Memory
<b>19.</b>	03/12/19		<b>Exam 2 (Ch. 6, 7, 8, 9)</b>
<b>20.</b>	03/14/19		Phase 1 Reports Due Project Discussion – Phase 2 – Assigned
<b>21.</b>	03/19/19	11	File Systems - Logical
<b>22.</b>	03/21/19	11	File Systems - Logical
<b>23.</b>	03/26/19	12	File Systems - Implementation
<b>24.</b>	03/28/19	12	File Systems – Implementation <b>Homework Assignment</b>
<b>25.</b>	03/30-04/05/19		Spring Break - Holiday
<b>26.</b>	04/09/19	18	Unix System
<b>27.</b>	04/11/19	18	Unix System
<b>28.</b>	04/16/19		Project Advance/Completion
<b>29.</b>	04/18/19		Project Pres/Demos & Final Reports Due
<b>30.</b>	04/23/19		Project Pres/Demos & Final Reports Due
<b>31.</b>	04/25/19		Exam 3 Review
<b>32-33.</b>	04/30-05/06/19		<b>Exam 3 (Ch. 11, 12, 18)</b>