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| **King Saud University****College of Computer and Information Sciences****Department of Computer Science****CSC 227 – Operating Systems (3-0-1) - Core Course** |
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| **Semester:** First Semester 1442**Instructors:** Dr. Sarab AlMuhaideb salmuhaideb@ksu.edu.sa, Dr. Rabia Jafri rjafri@ksu.edu.sa, L. Abeer Alshaya aalshaya@ksu.edu.sa, L. Heba Abdulrahman Khojah hkhojah@ksu.edu.sa, L. Afnan Algobail aalgobail@ksu.edu.sa , L. Nouf Alajmi naalajmi@ksu.edu.sa.**Course description:** |
| This is an introductory course in Operating Systems. As such, it is intended to cover many of the concepts related to most of the actual Operating Systems. Although the study of a particular Operating System is out of the scope of this course, nevertheless, we will cover most of the concepts found in any existing Operating System. We will review computer system and operating system structures, processes and threads (concepts of, communication, synchronization and deadlocks), CPU Scheduling, memory management and virtual memory.**Prerequisite:** CSC212 |
| **Prerequisite to:** CSC 329 Computer Networks, CSC328 Systems Programming, CSC453 Parallel Processing. |
| **Co-requisite to:** None. |
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| **Textbook:** |  |
| Operating System Concepts, A. Silberschatz, P.B. Galvin, G. Gagne, 10th Edition, John Wiley & Sons Inc.,2018, ISBN 978-1-119-32091-3 |
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| **Course Learning Outcomes:** |
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| 1. Describe and explain the role and fundamental components of a modern operating system. [Knowledge]
2. Describe how operating systems manage computing resources and relate the use of system calls, APIs, interrupts, and protection rings to providing services to users and application software. [Knowledge]
3. Explain the concepts of processes and threads, and compare their effects on performance. [Knowledge]
4. Compare and contrast between process scheduling algorithms, identify problems, apply possible solutions, and examine performance implications. [Cognitive skills]
5. Identify critical sections and apply constructs of process synchronization like locks and semaphores [Cognitive skills]
6. Illustrate different memory management schemes, including contiguous allocation, paging and swapping. [Cognitive skills]
7. Design and implement some components of modern operating systems. [Cognitive skills].
8. Function effectively in groups to design, build and evaluate an OS related SW component. [Interpersonal skills and responsibility]

**Topics:**1. Introduction to Operating Systems and computer systems
2. Operating System Structures
3. Processes
4. Threads and Concurrency
5. CPU Scheduling
6. Process synchronization
7. Main memory
8. Multithreaded Programming
9. Virtual memory
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| **Schedule:**  |

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| 13 weeks of three 50-minute lectures/week and one 50-minute tutorial per week. |

**Notes:**

Plagiarism is strictly prohibited.

Attendance is mandatory; if it exceeds 25% (even with excuse) you may be denied taking the final exam

No makeups are made for quizzes

Makeups for Mid exams are decided by the Makeup Exam Committee

Makeup for the Final is decided by the Department Council

Submission Delays:

 Mind the deadlines, they will not be postponed under any circumstances.

 Late submissions will be subject to deductions in grade for each late day.

**Email Guidelines:**

Your email header must start with [CSC227]

Use your student email address.

Please write your name and your ID at the end of the email.