

| Department of Computer Engineering  |   |                                      |              |
|---|---|--------------------------------------|--------------|
| Operating Systems (66451)   |   |                                      |              |
| Total Credits   |   | 3                                    |              |
| major compulsory  |   |                                      |              |
| Prerequisites   |   | P1 : Computer Architecture I (66323) |              |
| Course Contents   |   |                                      |              |
| The content of the course is introductory to operating system design and implementation it includes: Overview of OS structure and components Introduction to Processes Process Scheduling Cooperating Processes Threads vs. Processes Process Synchronization Semaphores Semaphore Implementation Monitors Deadlock Virtual Addressing Demand Paging File Structure |   |                                      |              |
| Intended Learning Outcomes (ILO's)  |   | Student Outcomes (SO's)              | Contribution |
| 1   | Be able to demonstrate basic Knowledge and understanding of the basic structure and functions and usage of the different types of operating system., specially microkernel operating system such as Unix. | C                                    | 20 %         |
| 2   | Define process and demonstrate knowledge in process creation, management, scheduling and process synchronization.   | C                                    | 55 %         |
| 3   | Have necessary skills in virtual memory and file system design and implementation   | K                                    | 25 %         |
| Textbook and/ or References   |   |                                      |              |
| Textbook: Operating System Concepts, Seventh Edition, By Abraham Silberschatz, Peter Baer Galvin, Greg . Reference: Operating systems : internals and design principles by William Stallings.   |   |                                      |              |
| Assessment Criteria   |   | Percent (%)                          |              |
| First Exam  |   | 20 %                                 |              |
| Second Exam   |   | 20 %                                 |              |
| Homeworks   |   | 10 %                                 |              |
| Final Exam  |   | 50 %                                 |              |
| Course Plan   |   |                                      |              |
| Week  | Topic   |                                      |              |
| 1   | Coursed Overview and introduction   |                                      |              |
| 2   | Overview of OS structure and components   |                                      |              |
| 3   | Overview of the Unix (linux) operating systems  |                                      |              |
| 4   | Process creation and execution  |                                      |              |
| 5   | Processes vs threads  |                                      |              |
| 6   | Process scheduling  |                                      |              |
| 7   | MIDTERM EXAM 1  |                                      |              |
| 8   | Introduction to Process synchronization   |                                      |              |
| 9   | Critical section problem  |                                      |              |
| 10  | Semaphores and monitors   |                                      |              |
| 11  | Virtual memory  |                                      |              |
| 12  | Virtual memory continue   |                                      |              |
| 13  | MIDTERM EXAM 2  |                                      |              |
| 14  | Deadlock  |                                      |              |

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|----|-------------|
| 15 | File system |
| 16 | Final Exam  |