**Spring Semester L-3, T-I**

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| **COURSE INFORMATION** | | | | | | | | | |
| Course Code  Course Title | | : CSE 308  : Operating System Sessional | Lecture Contact Hours  Credit Hours | | : 3.00  : 0.75 | | | | |
| **PRE-REQUISITE** | | | | | | | | | |
| None | | | | | | | | | |
| **CURRICULUM STRUCTURE** | | | | | | | | | |
| Outcome Based Education (OBE) | | | | | | | | | |
| SYNOPSIS/RATIONALE | | | | | | | | | |
| Understand the basic components of a computer operating system, and the interactions among the various components on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. | | | | | | | | | |
| **OBJECTIVE** | | | | | | | | | |
| 1. To learn basic OS concepts and to be familiar with the design principles of Operating System.  2. Developing Internal and design principles of Operating System.  3. Be Familiar with the boot loader, kernel and how they works. | | | | | | | | | |
| **LEARNING OUTCOMES& GENERIC SKILLS** | | | | | | | | | |
| No. | Course Learning Outcome | | | Bloom’s Taxonomy | CP | CA | | KP | Assessment Methods |
| CO1 | Evaluate major operating systems like Windows, Linux. | | | C2, C5 | 3 | 1 | | 4 | T, F |
| CO2 | Discuss and apply internal design principles of Operating System. | | | C4 | 1 |  | | 1, 3 | T,F |
| CO3 | Able to develop and design algorithms for process, thread and memory management. | | | P3 | 7 | 3 | | 6 | PR, ASG |
| CO4 | Able to configure system software to enhance system capacity and security. | | | C4, C6 | 6 | 5 | | 6 | PR |
| (CP- Complex Problems, CA-Complex Activities, KP-Knowledge Profile,T – Test ; PR – Project ; Q – Quiz; ASG – Assignment; Pr – Presentation; R - Report; F – Final Exam) | | | | | | | | | |
| **COURSE CONTENT** | | | | | | | | | |
| Introduction of Linux Operating System, Installation of Linux in various modes, Installation of windows application programs on Linux, Installation of Linux application programs on Windows, Basic Command Line commands, Linux Kernels and Office Environments, Orientation with Shell Programing, Introduction with a lightweight open source OS (For e.g., NACHOS), Implementation of Process & Thread Synchronization, Implementation of Memory management. | | | | | | | | | |
| **SKILL MAPPING** | | | | | | | | | |
| |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | No. | Course Learning Outcome | PROGRAM OUTCOMES (PO) | | | | | | | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | CO1 | Evaluate major operating systems like Windows, Linux. |  |  |  |  |  | H |  |  |  |  |  |  | | CO2 | Discuss and apply internal design principles of Operating System. |  |  |  |  |  |  | H |  |  |  |  |  | | CO3 | Able to develop and design algorithms for deadlock and memory management. |  |  |  |  |  |  | H |  |  |  |  |  | | CO4 | Able to configure system software to enhance system capacity and security. |  |  |  |  |  |  |  |  |  |  | H |  |   (H – High, M- Medium, L-low) | | | | | | | | | |
| **TEACHING LEARNING STRATEGY** | | | | | | | | | |
| Teaching and Learning Activities | | | | | | | Engagement (hours) | | |
| Face-to-Face Learning | | | | | | |  | | |
| Lecture | | | | | | | 10 | | |
| Practical / Tutorial / Studio | | | | | | | 11 | | |
| Student-Centred Learning | | | | | | | - | | |
| Self-Directed Learning | | | | | | |  | | |
| Non-face-to-face learning | | | | | | | 10 | | |
| Revision | | | | | | | 15 | | |
| Assessment Preparations | | | | | | | 20 | | |
| Formal Assessment | | | | | | |  | | |
| Continuous Assessment | | | | | | | 3 | | |
| Final Quiz | | | | | | | 1 | | |
| Total | | | | | | | 70 | | |
| **TEACHING METHODOLOGY** | | | | | | | | | |
| Lecture and Discussion, Co-operative and Collaborative Method, Problem Based Method | | | | | | | | | |
| **COURSE SCHEDULE** | | | | | | | | | |
| |  |  |  | | --- | --- | --- | | **Week** | **Topics** | **Remarks** | | **1-2** | Introduction of Linux Operating System  Installation of Linux in various modes  Installing Ubuntu in as a virtual machine  Basic Command Line commands | Assignment: Installation of windows application programs on Linux and vice versa | | **3-4** | Playing with Linux Kernels and Office Environments  Assigning related Project | Assignment on Kernel | | **5-6** | Orientation with Shell Programing | Online Declaration | | **7-8** | Introduction with a lightweight open source OS (For e.g., NACHOS) Implementation of Process & Thread Synchronization | Assignment on Synchronization | | **9-10** | Evaluation on Synchronization  Implementation of Memory management | Assignment on Memory management | | **11-12** | Evaluation on Memory management | Report on Local Reposition | | **13-14** | Quiz + Final Report Submission |  | | | | | | | | | | |
| **ASSESSMENT STRATEGY** | | | | | | | | | |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | | | CO | Blooms Taxonomy | | Components | | Grading | | Continuous Assessment (60%) | Online Exam | 30% | CO 1 | C1, C5 | | CO 3 | P3 | | Home Assignment | 20% | CO 1 | C1, C5 | | CO 3 | P3 | | CO 4 | C4, C6 | | Class Performance | 10% | CO 1 | P3 | | CO 2 | C4 | | CO 3 | P3 | | Viva / Presentation | | 20% | CO 2 | C4 | | Attendance | | 10% |  |  | | Quiz | | 10% | CO 1 | C1, C2 | | CO 2 | C3, C4 | | CO 3 | P3 | | CO 4 | C4, C6 | | Total Marks | | 100% |  | |   **(CO = Course Outcome, C = Cognitive Domain, P = Psychomotor Domain, A = Affective Domain)** | | | | | | | | | |
| **REFERENCE BOOKS** | | | | | | | | | |
| 1. Modern Operating Systems (4thed) - Andrew S. Tanenbaum; Prentice Hall (2014)  2**.** Operating Systems: Internals and Design Principles – (9thed) -William Stallings  3. Operating System concepts - A. Silberschatz, P.B. Galvin, Greg Gagne | | | | | | | | | |