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| **COURSE CODE& TITLE**  SE-303 Operating Systems | **SEMESTER**  🞏 SPRING 🗹 FALL  2020 | **CREDIT HOURS**  TH 🞏3 🗹2 🞏1 🞏0 PR 🞏3 🞏2 🗹1 🞏0 |
| **PREREQUISITE COURSE(S)**  Nil | **DATE OF APPROVAL** | **BATCH**  2018 |
| **COURSE CONTENTS**   |  |  |  |  | | --- | --- | --- | --- | | **S. No.** | **Topic** | **Contents** | **Remarks (if any)** | | ***1*** | Introduction | Concept of OS, Roles of OS, Resources managed by OS, Interrupt, BIOS, CMOS, Setup, Firmware |  | Introduction, Background & Fundamental Chapters | | ***2*** | Terminologies & Fundamentals | Re-locatable Code, Buffering & Spooling, Interleaving |  | Introduction, Background & Fundamental Chapters | | ***3*** | Operating System Structure | Protection – types, need  Components & Layered Architecture, Time sharing, Multiprogramming etc. |  | OS Basics Chapters | | ***4*** | Operating System Structure | Interrupt working, DMA, Storage Hierarchy, Cache, System Calls, Process Management Component, |  | OS Basics Chapters | | ***5*** | OS Components | Components – MM, File, SS, I/o, Networking, Command Interpreter; OS Services |  | OS Components Chapter | | ***6*** | OS Components & Architecture | System Programs, Virtual Machine, JVM, OS Architectures |  | OS Components Chapter | | ***7*** | Process Management | Process Concept, Life Cycle, PCB, Context Switching |  | Process Management Chapters | | ***8*** | Process Management & Scheduling | Job Queues, Schedules, Optimization Criteria, Scheduling Objectives, Scheduling Criteria, Threads |  | Process Management Chapters | | ***9*** |  | **Midterm** |  |  | | ***10*** | CPU Scheduling | Algorithms – FCFS, SJF, SRTF, RR, Pre-emptive and non-pre-emptive |  | Scheduling Chapters | | ***11*** | CPU Scheduling | Priority Scheduling, Multi level Queue, Feedback Queue, |  | Scheduling Chapters | | ***12*** | Deadlock | Definition & Problem, Conditions, Avoidance, Prevention, detection & Recovery |  | Deadlock Chapters | | ***13*** | Deadlock | Banker’s Algo, Combined approach.  Virtual Memory Concepts |  | Deadlock Chapters | | ***14*** | VM | Paging, Segmentation, Combined Approach |  | Virtual Memory Chapters | | ***15*** | VM & File System | Page Replacement Policies  File Concepts, File Structure |  | Virtual Memory Chapters | | ***16*** | File System & Example of OS | File Access Methods, Directory Structure  Example and comparison of OS |  | File Systems Chapters | | | |
| **TEXTBOOKS (Book Name, Authors, edition, Publisher, Year)**   1. *“Operating Systems Concepts”*, Abraham Silberschatz, Peter B. Galvin and Greg Gagne, John Wiley & Sons, latest edition. 2. *“Operating Systems”*, Colin Ritchie, BPB Publications, latest edition. 3. *“Modern Operating Systems”*, Andrew S. Tanenbaum, Prentice Hall, latest edition | | |
| **COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME**   |  |  |  |  | | --- | --- | --- | --- | | **Sr. No.** | **CLOs** | **Taxonomy level** | **Programme learning outcome (PLO)** | | At the end of the course, the student will be able to: | | | | | **01.** | Will develop understanding of the concepts, structure and design of operating Systems | C2  Comprehension | G1  Engineering Knowledge | | **02.** | Will develop understanding of operating system design and its impact on application design and performance | C3  Application | G2  Problem Analysis | | **03.** | Will develop understanding of design and development principles in the construction of Operating Systems Components | P4  Mechanism | G2  Problem Analysis | |  |  |  |  |   **REMARKS (if any):** | | |

**Recommended by : \_** Prof. Dr. Najmi Ghani Haider **\_ Approved by :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

(Chairperson/Date) (Dean/Date)