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Course Code: 203
Course Title: Operating System

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Course Code	203
Course Title	Operating System
Credits	4
Course Category	Minor Course - Minor discipline is the broader understanding course beyond the major discipline course. - Student can opt the course from the available basket with open, generic-electives of the courses offered by the college/institute from the pool of courses offered by University from available basket. - Minor subjects may be from same or different disciplines as per choice of the students. - Student may make choices according to their interest/need, from ODL courses also.
Level of Course	100-199 (Foundation / Introductory)
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	2022-2023
Implementation Year:	A.Y. 2023-2024
Purpose of Course	- An Operating System (OS) is a software that manages computer hardware and software resources and provides common services for computer programs. The operating system is an essential component of the system software in a computer system. Application programs usually require an operating system to function. The course is based on open source operating systems like Linux. - It helps students to gain broader knowledge in addition to relevant major disciplines courses as per their choices.
Course Objective	1. To understand functionality provided by an Operating System. 2. To make aware with basic concepts of Windows O. S. Management. 3. To learn about device management.
Pre-requisite	Basic knowledge of computer fundamentals.
Course Outcomes	**CO1:** Students will learn how operating system is important for computer system and what is the role of an OS, and also learn different types of operating system and their services. **CO2:** Students will be able to understand the structure and organization of file system. **CO3:** To differentiate between windows and linux OS **CO4:** To install and maintain linux workstation and also able to manage user accounts. **CO5:** To understand devices, usage of devices, scheduling algorithms and decide which is the best one. **CO6:** Students will be able to develop application the coordinate with respective OS in a much better way which is an essential.

Mapping between Course Outcomes(CO) with Program Outcomes(PSO)		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
	CO1	■	■	■	■				
	CO2	■	■	■	■	■			
	CO3				■	■	■		
	CO4				■	■	■	■	
	CO5	■	■		■	■	■	■	■
	CO6					■	■	■	■

Course Content

Unit 1. Operating System Concepts

    1.1.Evolution of Operating System & History

      1.1.1 Need of an Operating System

      1.1.2 Single User & Multi User Operating System

    1.2. Elements of an Operating System

    1.3. Operating System as a Resource Manager

    1.4 Introduction to File System and File Management

      1.4.1 File Concept

      1.4.2 Operations on File

      1.4.3 File Access Methods

      1.4.4 Sequential Access and Direct Access)

    1.5 Directory Systems File Management Functions.

    1.6 File System and Directory Structure organization.

Unit 2: Process and Memory Management

  2.1 Process Concepts and States

    2.1.1 Concepts of Process Scheduling

    2.1.2 Process Synchronization and Deadlocks

    2.1.3 Inter-process Communication

    2.1.4 Threads and Multithreading

  2.2 Memory Management

    2.2.1 Memory Hierarchy and Address Binding

    2.2.2 Logical and Physical Address Spaces

    2.2.3 Memory Allocation Techniques

    2.2.4 Virtual Memory Concepts and Paging

Unit 3. Introduction of Linux

    3.1.Introduction of Linux versions

    3.2.Components of Linux

    3.3.Comparison of Windows and Linux

Unit 4. Linux Administration

    4.1. Installing Linux

    4.2. Installation of Open Source Software

    4.3.Maintaining User Accounts

    4.4.System Config Services (Package)

Unit 5. Device Management and

    5.1.Device Management Function

    5.2.Device Characteristics

    5.3.Disk space Management

    5.4.Allocation and Disk Scheduling Methods

Reference Books	1. Operating System Concepts: – James Peterson: – McGraw Hill 2. Operating System: – Stallings - PHI 3. Operating System Principles: – Silberschatz, Galvin, Gagne - Willey, India 4. Operating Systems – A. S. Godbole – Tata McGraw Hill 5. Linux – The Complete Reference – Richard Petersen – Tata McGraw Hill 6. "Operating System Concepts" Author: Abraham Silberschatz, Greg Gagne, Peter B. Galvin ISBN: 978-1118063330 Publisher: Wiley 7. "Linux System Programming: Talking Directly to the Kernel and C Library" Author: Robert Love ISBN: 978-1449339531 Publisher: O'Reilly Media 8. "Linux Bible" Author: Christopher Negus ISBN: 978-1118999875 Publisher: Wiley 9. "Understanding the Linux Kernel" Author: Daniel P. Bovet, Marco Cesati ISBN: 978-0596005658 Publisher: O'Reilly Media 10. "Linux Command Line and Shell Scripting Bible" Author: Richard Blum ISBN: 978-1118983843 Publisher: Wiley
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. 50% External assessment.