

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI

Computer Science Engineering

Subject Name: **Operating System Design**

Subject Code: **163101**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
2	0	2	4	70	30	50

Sr. No	Course Content	Total Hrs.
1.	General Overview of the System: History; System Architecture; User Perspective; Operating System Services; Assumptions about hardware	2
2.	Introduction to Kernel: Architecture of Unix Operating System; Introduction to system concepts; kernel Data Structure; System Administration	3
3.	The Buffer Cache: Buffer Headers; Structure of the buffer pool; Scenarios for Retrieval of buffer; Reading and writing disk blocks; advantages and disadvantages of the buffer cache	2
4.	Internal Representation of Files: Inodes; Structure of a regular file; Directories; Conversion of Path name to an inode; Super Block; Inode assignment to new file; allocation of disk blocks	2
5.	System Calls for The File System: Open; Read; Write; File and record Locking; Adjusting the position of file; Close; File Creation; Creation of Special Files; Change Directory and change root; STAT and FSTAT; Pipes; DUP; Mounting and Unmounting File System; Link; unlink; File System Abstractions; File system Maintenance	6
6.	The Structure of Process: Process States and transitions; layout of System Memory; The Context of Process; Saving the context of a process; manipulation of the process address space; Sleep	5
7.	Process Control: Process Creation; Signals; Process Termination; Awaiting Process termination; Invoking other programs; The user ID of a process; Changing the size of a process; the shell; system Boot and The init process	6

8.	Process and the kernel: Introduction; Mode, Space and Context; The process abstraction; Executing in Kernel mode; Synchronization; Process Scheduling; Signals; new Process Programs	6
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Text Book:

1. The Design of the Unix Operating System by Maurice J. Bach, PHI Edition; ISBN:81-203-0516-7

Reference Book:

1. Unix Internals- The New Frontiers by Uresh Vahalia
2. Learning the UNIX Operating System By Jerry Peek, Grace Todino & John Strang; ISBN 1-56592-390-1, Fourth Edition, January 1998.