**BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]**

## 5CP04: ADVANCED OPERATING SYSTEMS
## CREDITS - 4 (LTP:3,0,1)

**Course Objective:**
To impart the knowledge of operating system design issues, data structures and algorithms used for implementation of operating systems.

**Teaching and Assessment Scheme:**

| Teaching Scheme (Hours per week) | | | Credits | Assessment Scheme | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | |
| L | T | P | C | ESE | CE | ESE | CE | |
| 3 | 0 | 2 | 4 | 60 | 40 | 20 | 30 | 150 |

**Course Contents:**

| Unit No | Topics | Teaching Hours |
|---|---|---|
| 1 | **Introduction**: Block diagram of Unix/Linux kernel, Kernel & its Data structures, Design Structures, Consistency of global data structures | 06 |
| 2 | **File System Implementations** : Buffer cache, File System related system calls and algorithms, Unix/Linux file system implementation, Issues related to file system performance, Vnode/Vfs architecture | 12 |
| 3 | **Process**: States & transitions, Context, Creation & termination, System boot & init, Unix/Linux scheduling algorithm, Clocks, System calls & algorithms, Interprocess communication: Shared memory and message passing mechanisms, Signals: Signal generation and handling, Unreliable signals, Reliable signals, Signals in SVR4, Signals implementation, Exceptions | 12 |
| 4 | **Memory management**: Swapping, Demand paging, Hybrid systems. | 06 |
| 5 | **I/O Subsystems**: Driver interfaces, Disk drivers, Terminal Drivers, Streams. | 03 |
| 6 | **Multi-Processor, Distributed and Real-time operating systems** : Fundamentals, Scheduling Algorithms and Case study | 06 |
| | **Total** | 45 |

**List of References**:

1. The design of the Unix Operating System, Maurice J. Bach , PHI
2. UNIX Internals, Uresh Vahalia, Pearson Education
3. Unix Network Programming Volume I & II, W. Richard Stevens, Addison Wesley
4. Advanced Programming in the UNIX Environment, Stevens , Addison Wesley
5. Modern Operating Systems, Andrew S Tanenbaum, Pearson Education
6. Distributed Operating Systems, Andrew S Tanenbaum, Pearson Education