OPERATING SYSTEMS INTERNALS

Course code: 13CS2204 **L P C**
4 0 3

Pre requisites: Operating systems, Computer Networks, Android

Course Educational Objectives:
This Course aims in Describing process creation, execution, and termination and Discuss kernel thread scheduling and preemption the placement policies that the UNIX file system (UFS) uses to place inodes and blocks of data.

Course Outcomes:
By the end of the course student will gain knowledge on

1. UINIX O.S. Architecture and internals of Unix O.S.
2. System calls which explore networking and security Applications.
3. Process and inner mechanism with processes security issues in operating system.
4. Inter process communication mechanism
5. Android mobiles inner process system.

UNIT – I
Introduction to Kernel - Architecture of the UNIX operating system, System concepts, Data structures. Buffer Cache: Buffer header, Structure of Buffer pool, Reading and writing disk blocks. Files INODES, Structure of a regular file, Directories, Super block, Inode assignment. System calls - OPEN, Read, Close, Write, Create, CHMOD, CHOWN, Pipes, Mounting and Unmounting

UNIT – II
Process - Layout the system memory, Context, Process control, process creation, signals, Process scheduling, time, clock. Inter-Process Communications - Process tracing, System V IPC, Shared Memory, Semaphores.

UNIT – III
Network Communications - Socket programming: Sockets, descriptors, Connections, Socket elements, Stream and Datagram Sockets.

UNIT – IV

Windows Operating system - versions, Concepts and tools, Windows internals, System Architecture, Requirements and design goals, Operating system model, Architecture overview.

Key system components. System mechanisms - Trap dispatching, object manager, Synchronization, System worker threads, Windows global flags, Local procedural calls, Kernel
event tracing.

UNIT – V

what is android, basic building blocks – activities, services, broadcast receivers & content, ui components- views & notifications, components for communication -intents & intent filters, android api levels launching emulator editing emulator settings emulator shortcuts log cat usage, Applications of Android.

TEXT BOOKS:

1. Maurice J. Bach: "The Design of the Unix Operating System", Prentice Hall of India, 1991.

2. Mark E. Russinovich and David A. Solomon: "Microsoft® Windows® Internals", 4th Edition, Microsoft Press, 2004.

REFERENCES:

1. W. Stallings: "Operating Systems: Internals and Design Principles", 5th Edition, Prentice Hall, 2005.

2. A. Tanenbaum, A. Woodhull: "Operating Systems Design and Implementation", 3rd Edition, Prentice Hall, 2006.