OPERATING SYSTEMS INTERNALS

Course code: 15CS2204 **L P C**
3 0 3

Pre requisites: Operating systems, Computer Networks, Android

Course Outcomes:
By the end of the course student will gain knowledge on
CO1: UINIX O.S. Architecture and internals of Unix O.S.
CO2: System calls which explore networking and security Applications.
CO3: Process and inner mechanism with processes security issues in operating system.
CO4: Inter process communication mechanism.
CO5: Android mobiles inner process system.

UNIT – I: (10-Lectures)
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: (10-Lectures)
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: (10-Lectures)
NETWORK COMMUNICATIONS - Socket programming: Sockets, descriptors, Connections, Socket elements, Stream and Datagram Sockets.

UNIT – IV: (10-Lectures)

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: (10-Lectures)

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.