



Management Institute of Technology (MIT) Hyderabad

Affiliated with University of Sindh Jamshoro

Course Title:	Operating Systems
Course Code:	ITEC-520
Degree Program:	BS(Information Technology) P-III (2nd semester)
Course rating:	3 credit hours (Theory)
Pre-requisites:	Programming Fundamental

Course Objectives:

This course aims to help students to understand important concepts and algorithms in operating systems. Major components discussed are process management, virtual memory, I/O and file systems.

Syllabus Outline:

Background: Overview of computer system and operating system.

Process Management: Process description and control, Process

scheduling: Round-robin and priority scheduling, Threads, Symmetric Multiprocessing

Concurrency and Synchronization: Mutual exclusion and critical section, Lost update problem, Busy waiting vs. blocking, Peterson's algorithm, Interrupt disabling and spinlock, Semaphore and its application in various synchronization problems

Memory Management: Partitioning, paging and segmentation, Virtual memory, Address translation and page fault handling, Memory management hardware: page table and Translation Lookaside Buffer, Memory management algorithms: fetch policy, replacement policy, resident set management and cleaning policy

Input / Output Management and Disk Scheduling: I/O devices, Organization of I/O function, I/O buffering, Disk scheduling, RAID.

File Management: Organization of files and directories, Secondary storage management, file systems: FAT and NTFS

Learning Material/References:

- * **Operating System Concepts, 6th Edition (Windows XP Update), by Silberschatz, Galvin, and Gagne**
- * **Operating Systems: Internals and Design Principles, 5th edition by William Stallings**



Management Institute of Technology (MIT) Hyderabad

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Course Title:	Wireless Communication & Protocols
Course Code:	ITEC-522-523
Degree Program:	BS(Information Technology) P-III (2nd semester)
Course rating:	3 credit hours (Theory)
Pre-requisites:	Computer Communication and Networks

Course Objectives:

The course will discuss the protocol reference model(s) that relate to Mobile Wireless Communication Systems.

Syllabus Outline:

Introduction to Wireless Communication Systems: Evolution of wireless communications, Examples of wireless and personal communications systems, Trends in wireless communications - 1st, 2nd, and 3rd generation systems.

Physical Layer Issues: Spectrum allocation, Channel modeling and radio wave propagation, Modulation techniques, Signal processing for wireless applications

Data-link Layer Issues: Multiple-access techniques, Channel coding, Network Layer Issues: Fundamentals of a cellular system, Routing in wireless networks

Current and Future Wireless Standards: Packet radio networks and protocols, Short-range wireless data systems, Personal communications services (PCS), Wireless LANs "Hot" Topics in Wireless Research: Mobile ad hoc networks, Wireless sensor networks

Learning Material/References:

- * **Mobile Communications by Jochess Schiller, 2nd Edition, Addison Wesley**
- * **Fundamentals of Wireless Communication, published by Cambridge University Press**
- * **Wireless Communication & Networks By William Stallings**



Management Institute of Technology (MIT) Hyderabad

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Course Title:	Advance Database Systems
Course Code:	ITEC 524
Degree Program:	BS(Information Technology) P-III (2nd semester)
Course rating:	2 credit hours (Theory)
Pre-requisites:	Database Systems

Course Objectives:

An in-depth study of design and implementation issues in database systems and distributed database systems together with a coverage of recent research directions.

Syllabus Outline:

Overview of query processing: Query execution, Operators for data access, Operators for join and aggregation, Query optimization, Rewrites, Cost estimation and statistics, search algorithms.

Concurrency control: Serializable schedules, Locking, optimistic concurrency control, Concurrency Control Protocols, Two & Three Phase Commits, Replication Servers, Deadlock Handling.

Distributed DBMS: Why one need Distributed DBMS, What are Distributed DBMSs, Structure of Distributed DBMSs, Homogeneous, Heterogeneous, Federated, Full DBMS Functionality.

Distributed DBMS Issues: Data Handling, Distribution and Transportation, Transparency and Autonomy, Distributed Query Optimization.

Storage structures: storage structures and data access techniques, file and page organizations, indexing methods including B-tree, and hashing

Emerging Technologies and Systems: Object-Oriented, Multidatabases, Parallel Systems, Logic-Based, Active, Intelligent Systems, The emergence of PC-based DBMSs, Data Warehouse, Data Mining

Learning Material/References:

- * Database Systems: A Practical Approach to Design, implementation, and Management' 3ed, Connely and Begg
- * An Introduction to Database Systems, 7th ed., by C. J. Date
- * Database Management Systems, 2nd ed. By Raghu Ramakrishnan, Johannes Gehrke



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Course Title:	Multimedia Technology
Course Code:	ITEC 526
Degree Program:	BS(Information Technology) P-III (2nd semester)
Course rating:	3 credit hours (Theory)
Pre-requisites:	None

Course Objectives:

This course covers applications, tools, and design of multi media systems. It is designed to provide momentous foundation of Multimedia as well as essential core concepts of Multimedia Systems and Technology.

Theory Syllabus Outline

Introduction: Basic components of Multimedia Systems, Multimedia Systems, Importance, Applications.

Multimedia Team Building: Multimedia Team selection, team strategies, team organization, The role of The Project Manager, interface designer, writer, video specialist, audio specialist, multimedia programmer, website producer.

The Power of Different Multimedia Elements: The Power of Text, The Most Powerful Text, Hypertext, Hyperlink, Hypermedia , The Power of Sound, Analog and Digital Sound, Audio Formats and Significance, The Power of Image, Understanding Images, Image Drawing Techniques, 3-D Images, Vector, Bitmap, Image file Compression Standards and Formats.

The Power of Motion: Animation Principles, Image Drawing Techniques, 3-D Images, Vector, Bitmap, Image file Compression Standards and Formats.

The Power of Video: Analog and Digital Video, Video Formats, Video Compression Schemes, Codecs.

Multimedia Systems development tools: Multimedia systems tools, Hardware tools, Software tools, Significance and Role of tools.

Multimedia Systems Development Process: Scheduling , Analysis, Multimedia Systems Prototype , Alpha , Beta Development and Delivery, Interactive Multimedia Systems, Structure, Hot Spots, Graphical Approaches.

Multimedia Systems Applications: Introduction to internet and online Multimedia Contents, Multimedia Systems on the WWW, Standalone Applications, Multimedia Single User Networked Application, Multi-user Networked Applications, Video Conferencing Applications, Health care, Telemedicine and Education, Entertainment and Edutainment application.

Multimedia Information Networks: Performance Parameters and Quality of Service (Qos), Multimedia Transmission, Synchronization Accuracy specification (SAS), SAS Factors for Audio and Video, Delay, Processing Delays, Networking Delays, Latency, Jitter, Skew, Lip-Synchronization, Error rate

Simulation and Modeling: Introduction to Simulation, Simulation Categories, the Simulation Process, Virtual Reality.



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Learning Material/References

- * **Multimedia: Making it Work, sixth edition by by Tay Vaughan**
- * **Digital Multimedia by by Nigel Chapman and Jenny Chapman**

Course Title:	System Administration
Course Code:	ITEC-620-621
Degree Program:	BS(Information Technology) P-III (2nd semester)
Course rating:	2 credit hours (Theory)
Pre-requisites:	None

Course Objectives:

The objective of this course is to provide a comprehensive understanding of the administrative aspects of the Unix operating system. Students install, create and manage user accounts, install new hardware, make backups and many other mission critical tasks a System Administrator would need to know.

Syllabus Outline:

Introduction to Linux Administration: Duties of the Administrator, Administration tools, Where to get help, Overview of permissions.

Processes: Process status, Killing processes, process priority.

Starting Up & Shutting Down: Peripherals, Kernel loading, Console, The scheduler, Run-levels, Altering defaults and initialisation scripts, Shutting down.

Managing User Accounts: Principles, passwd file, Password security, Shadow file, Groups and the group file, Shells, restricted shells, user management commands, homes and permissions, default files, profiles, locking accounts, setting passwords, Switching user, Switching group, Removing users.

Managing the UNIX Filesystem: Partitions, Swap space, Device files, Raw and Block files, Formatting disks, Making filesystems, Superblock, I-nodes, Filesystem checker, Mounting filesystems, Logical Volumes, Network Filesystems, Boot disks.

Printer Administration: The scheduler, Device files, Ipstat, Models, Adding printers, Modifying printers, Removing printers, Creating classes, The spooler, Controlling the queue, Controlling the printer, Printing priorities, Moving queues.

Terminal Administration: Device files, gettys, SAF, Enabling lines, Gettydefs, tty types, termcap files, terminfo files, tty settings.

Introduction to Windows 2000 Administration: Introduction to Network Administration, Introduction to Windows 2000 Networks, Gaining Access to Network Resources, Using Administrative Tools, Using the Domain Administrator Account, Using Windows 2000 Help

Setting Up User Accounts: Introduction to User Accounts, Requirements for New User Accounts, Creating a Domain User Account, Setting Password Requirements, Setting Properties for User Accounts

Using Groups to Organize User Accounts: Introduction to Groups, Implementing Group Strategies, Implementing Groups, Implementing Local Groups, Implementing Built-in Groups

Administering File Resources: Using NTFS Permissions, How Windows 2000 Applies NTFS Permissions, Granting NTFS Permissions, Copying and Moving Files and Folders, Sharing Resources, Creating Shared Folders, NTFS Permissions and Shared Folders, Troubleshooting Access Problems

Administering Printer Resources: Introduction to Administering Printers, Managing Printer Permissions, Managing Printers, Managing Documents in the Print Queue, Administering Printers by Using a Web Browser

Managing Data Storage: Managing Data Compression, Managing Disk Quotas, Encrypting Data, Using Disk Defragmenter, Troubleshooting Data Storage

Remote Administration of Shared Folders: Introduction to Monitoring Shared Folders, Monitoring Shared Folders on Remote Computers, Administering Shared Folders on Remote Computers.

Monitoring Event Logs: Introduction to Monitoring Event Logs, Monitoring Security Events, Analyzing Security Events, Monitoring System and Application Events, Viewing Event Logs, Managing Event Logs



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Learning Material/References:

- * [The Ultimate Windows 2000 System Administrator's Guide By Robert Williams, Mark Walla.](#)
- * [Linux Network Administrator's Guide, 2nd Edition By Olaf Kirch & Terry Dawson 2nd Edition](#)