

Govt. College, Ateli

Department of Computer Science

Session/Lesson Plan

(Dr. Mahesh Kumar)

Class	Subject	Month	Topic to be Covered
M.Sc. (Computer Science) - I	Modern Operating System with UNIX	September 2023	UNIT-I Introduction of Windows and UNIX operating system: Basic feature of Operating System; Process and CPU Scheduling, Multithreaded Programming, Scheduling Criteria, Multiple-Processor Scheduling, Real-Time Scheduling. File Structure; Memory Management: Swapping, Demand paging, Virtual Memory, Critical Section Problem, Mutual Exclusion Problem. 1ST Assignment 1st Test
		October	UNIT-II Introduction of Deadlock, methods of handling, Prevention and Avoidance, Deadlock Detection, Recovery from Deadlock, Disk Scheduling. Commands: User Names and Groups, Logging in; Format of UNIX commands; Changing your password; Characters with Special Meaning; Files and Directories; Current directory, Directory contents, Absolute and Relative Pathnames, File contents; File access Permissions; Basic operation on Files; Changing Permission Modes; Standard files, Standard output; Standard Input, Standard Error. 2nd Assignment 2nd Test
		November	UNIT-III Filter and pipelines, Text Manipulation: Inspecting Files; File Statistics, Searching for Patterns; Comparing Files; Operations on File; Printing Files, Rearranging Files; Splitting Files; translating characters; calculator command, nice command, Processes: Finding out about Process; Stopping Background Process. File System; Block and Fragments, I-nodes, Directory Structure; User to User Communication. UNIX Editor vi. Seminar Group Discussion
		December	UNIT-IV Shell Programming: Programming in the Borne Shell, C-Shell and Korn-Shell; Wild cards; shell programming; Shell variables; interactive shell scripts; AWK utility. System Administration: Definition; Booting system; Maintaining user accounts; File systems and special files; Backups and restoration; Role and functions of a system manager. Overview of Linux operating system, Difference between LINUX and UNIX. ➤ Seminar ➤ Revision ➤ Test

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M.Sc.-I	Software Lab.	September	Basics of C Language 1. WAP for adding two given numbers 2. WAP for subtraction/multiplication two given numbers 3. WAP for accepting Input from User 4. WAP for sending output to the user
		October	1. Insertion sort Algorithm 2. Bubble Sort Algorithm 3. Selection Sort Algorithm 4. Stack Input/Output Algorithm 5. Queue
		November	1. Introduction to SQL 2. DDL Commands 3. DML Commands 4. DCL Commands
		December	1. Windows Commands 2. UNIX Commands

Subject

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Class	Subject	Month	Topic to be Covered
BCA-II	Introduction to Operating System	August 2023	UNIT-I Fundamentals of Operating system: Introduction to Operating System, its need and operating System services, Early systems, Structures - Simple Batch, Multi programmed, timeshared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems. Process Management: Process concept, Operation on processes, Cooperating Processes, Threads, and Inter-process Communication. 1ST Assignment & 1st Test
		September	UNIT-II CPU Scheduling: Basic concepts, Scheduling criteria, Scheduling algorithms : FCFS, SJF, Round Robin & Queue Algorithms. Deadlocks: Deadlock characterization, Methods for handling deadlocks, Banker's Algorithm 2nd Assignment & 2nd Test
		October/November	UNIT-III Memory Management: Logical versus Physical address space, Swapping, Contiguous allocation, Paging, Segmentation. Virtual Memory: Demand paging, Performance of demand paging, Page replacement, Page replacement algorithms, Thrashing.
		November/December	UNIT-IV File management: File system Structure, Allocation methods: Contiguous allocation, Linked allocation, Indexed allocation, Free space management: Bit vector, Linked list, Grouping, Counting. Device Management: Disk structure, Disk scheduling: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK. ➤ Revision, Test

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Class	Subject	Month	Topic to be Covered
M.Sc. (Computer Science) -II	Internet of Things	August 2023	UNIT-I Introduction of IoT, Importance of IoT, Elements of an IoT ecosystem, Technology drivers, Business drivers, Sensors, Transducers, Sensor Features, Sensor Resolution, Sensor Classes, Analog and Digital Sensors, Scalar Sensors, Vector Sensors, Types of Sensors, Actuation, Types of Actuator, Components of IoT, IoT Gateways, UAV Networks, IPv4 and IPv6, IoT vs M2M, IoT vs WoT. 1ST Assignment & 1st Test
		September	UNIT-II Protocol Standardization for IoT – Efforts – M2M and WSN Protocols – SCADA and RFID Protocols – Issues with IoT Standardization – Unified Data Standards – Protocols – 6LoWPANs, CoAP, XMPP, AMQP, MQTT, SMQTT, RPL, IEEE802.15.4, Zigbee– Network layer – APS layer – Security. 2nd Assignment & 2nd Test
		October/November	UNIT-III HART and Wireless HART, NFC, Bluetooth, L2CAP, Piconet, RFCOMM, SDP, Z Wave, ISO 100.11A, GFSK, WSN, WMSN, Nanonetworks, Device Interoperability, Introduction to Arduino IDE, Arduino Code Basics, Types of Arduino Board, Sketch Structure, Libraries, Loops, Control Statements, Operators. Seminar & Group Discussion
		November/December	UNIT-IV Web of Things versus Internet of Things – Two Pillars of the Web – Architecture Standardization for WoT– Platform Middleware for WoT – Unified Multitier WoT Architecture – WoT Portals and Business Intelligence. IoT applications for industry: Future Factory Concepts, Brownfield IoT, Smart Objects, Smart Applications. Study of existing IoT platforms/middleware. <ul style="list-style-type: none"> ➤ Seminar ➤ Revision ➤ Test

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Class	Subject	Month	Topic to be Covered
BCA -II	Data Communication & Networking	August 2023	UNIT-I Introduction to Computer Communications and Networking Technologies; Uses of Computer Networks; Network Devices, Nodes, and Hosts; Types of Computer Networks and their Topologies; Network Software: Network Design issues and Protocols; Connection-Oriented and Connectionless Services; Network Applications and Application Protocols; Computer Communications and Networking Models: Decentralized and Centralized Systems, Distributed Systems, Client/Server Model, Peer-to-Peer Model, Web- Based Model, Network Architecture and the OSI Reference Model, TCP/IP reference model, Example Networks: The Internet, X.25, Frame Relay, ATM. 1ST Assignment & 1st Test
		September	UNIT-II Analog and Digital Communications Concepts: Concept of data, signal, channel, bid-rate , maximum data-rate of channel, Representing Data as Analog Signals, Representing Data as Digital Signals, Data Rate and Bandwidth, Capacity, Baud Rate; Asynchronous and synchronous transmission, data encoding techniques, Modulation techniques, Digital Carrier Systems; Guided and Wireless Transmission Media; Communication Satellites; Switching and Multiplexing; Dialup Networking; Analog Modem Concepts; DSL Service. 2nd Assignment & 2nd Test
		October/November	UNIT-III Data Link Layer: Framing, Flow Control, Error Control; Error Detection and Correction; Sliding Window Protocols; Media Access Control: Random Access Protocols, Token Passing Protocols; Token Ring; Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast Ethernet, gigabit Ethernet, token ring, FDDI, Wireless LANs; Bluetooth; Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers, Gateways. Seminar & Group Discussion
		November/December	UNIT-IV Network Layer and Routing Concepts: Virtual Circuits and Datagrams; Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing, Hierarchical Routing; Congestion Control Algorithms; Internetworking; Network Security Issues: Security threats; Encryption Methods; Authentication; Symmetric – Key Algorithms; Public-Key Algorithms. ➤ Seminar, Revision, Test

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Class	Subject	Month	Topic to be Covered
BCA-4 th Sem	Object Oriented Programming Using C++	January	UNIT-I Object Oriented Programming Concepts : Procedural Language and Object Oriented approach, Characteristics of OOP, user defined types, polymorphism and encapsulation. Getting started with C++: syntax, data types, variables, string, function, namespace and exception, operators, flow control, recursion, array and pointer, structure . 1ST Assignment
		February	UNIT-II Abstracting Mechanism: classes, private and public, Constructor and Destructor , member function, static members, references; Memory Management: new, delete, object copying, copy constructor, assignment operator, this input/output 2nd Assignment
		March	UNIT-III Inheritance and Polymorphism: Derived Class and Base Class, Different types of Inheritance, Overriding member function, Abstract Class, Public and Private Inheritance, Ambiguity in Multiple inheritance , Virtual function, Friend function, Static function. Group Discussion
		April	UNIT-IV Exception Handling: Exception and derived class, function exception declaration, unexpected exception, exception when handling exception, resource capture and release. Template and Standard Template Library: Template classes, declaration, template functions, namespace, string, iterators, hashes, iostreams and other types. > Revision > Test

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Class	Subject	Month	Topic to be Covered
M.Sc. (Computer Science) -2 nd Sem	Computer Networks	January	UNIT-I Data Communication: Introduction of data communication; analog and digital signals; asynchronous and synchronous transmission; Data Encoding and Modulation Techniques, Broadband and Base band transmission; Pulse Code Modulation, bandwidth, channel, baud rate of transmission; Multiplexing; Transmission Medium; transmission errors - error detection and correction. 1ST Assignment
		February	UNIT-II Network Classification: PAN, LAN, MAN, WAN and wireless network; Network Topology; Network Modes; internet, intranet and Extranet; X.25, frame relay, narrow band and broad band ISDN, ATM. Network Reference Models: Layered architectures, protocol hierarchies, interface and services: ISO- OSI reference model, TCP/IP reference model; internet protocol stacks. 2nd Assignment
		March	UNIT-III Data Link Layer Functions and Protocols: Framing, Error-control, Flow-control; sliding window protocol; HDLC; Shortest Path Algorithm, Flooding, Hierarchical Routing, Link State and Distance Vector Routing Medium Access Sub layer: CSMA/CD Protocol, switched and fast Ethernet, Token Bus, Token Ring, FDDI, IEEE standards for LAN and MAN; satellite networks. Seminar Group Discussion
		April	UNIT-IV Network functions and protocols: Switching Concept; cell switching, routing and congestion control, TCP/IP protocol architecture. Network Device: Repeater, hub, switch, router and gateway; IRC ; TCP and UDP. Network Applications: File transfer protocol, E- mail, World Wide Web, Client-Server Environment, DNS. ➤ Seminar ➤ Revision ➤ Test

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BCA-4 th Sem	WEB DESIGNING	January	UNIT-I Introduction to Internet and World Wide Web; Evolution and History of World Wide Web; Basic features; Web Browsers; Web Servers; Hypertext Transfer Protocol, Overview of TCP/IP and its services; URLs; Searching and Web-Casting Techniques; Search Engines and Search Tools; 1ST Assignment
		February	UNIT-II Web Publishing: Hosting your Site; Internet Service Provider; Web terminologies, Phases of Planning and designing your Web Site; Steps for developing your Site; Choosing the contents; Home Page; Domain Names, Front page views, Adding pictures, Links, Backgrounds, Relating Front Page to DHTML. Creating a Website and the Markup Languages (HTML, DHTML); 2nd Assignment
		March	UNIT-III Web Development: Introduction to HTML; Hypertext and HTML; HTML Document Features; HTML command Tags; Creating Links; Headers; Text styles; Text Structuring; Text colors and Background; Formatting text; Page layouts; Group Discussion
		April	UNIT-IV Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts; Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes; DHTML: Dynamic HTML, Features of DHTML, CSSP(cascading style sheet positioning) and JSSS(JavaScript assisted style sheet), Layers of netscape, The ID attributes, DHTML events. ➤ Revision ➤ Test

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Class	Subject	Month	Topic to be Covered
BCA-6 th Sem	INTRODUCTION TO .NET	January	<p>UNIT-I The Framework of .Net: Building blocks of .Net Platform (the CLR, CTS and CLS), Features of .Net, Deploying the .Net Runtime, Architecture of .Net platform, Introduction to namespaces & type distinction. Types & Object in .Net, the evolution of Web development.</p> <p>1ST Assignment</p>
		February	<p>UNIT-II Class Libraries in .Net, Introduction to Assemblies & Manifest in .Net, Metadata & attributes. Introduction to C#: Characteristics of C#, Data types: Value types, reference types, default value, constants, variables, scope of variables, boxing and unboxing.</p> <p>2nd Assignment</p>
		March	<p>UNIT-III Operators and expressions: Arithmetic, relational, logical, bitwise, special operators, evolution of expressions, operator precedence & associativity, Control constructs in C#: Decision making, loops, Classes & methods: Class, methods, constructors, destructors, overloading of operators & functions.</p> <p>Group Discussion</p>
		April	<p>UNIT-IV Inheritance & polymorphism: visibility control, overriding, abstract class & methods, sealed classes & methods, interfaces. Advanced features of C#: Exception handling & error handling, automatic memory management, Input and output (Directories, Files, and streams).</p> <p>➤ Revision ➤ Test</p>