Dantuluri Narayana Raju College, P.G.Courses
(A College with Potential for Excellance)
Bhimavaram, W.G.DIST.A.P
Syllabus for the Year: 2013-2014

Department: MCA Paper: Artificial intelligence Class: II MCA Semester: I

Unit I: Introduction to Artificial Intelligence: Artificial Intelligence, AI Problems, AI Techniques, The Level of the Model, Criteria For Success. Defining the Problem as a State Space Search,Problem Characteristics , Production Systems, , Production System Characteristics **Search:** Issues in The Design of Search Programs, Un-Informed Search, BFS, DFS; Heuristic Search Techniques: Generate-And- Test, Hill Climbing, Best-First Search, A* Algorithm, Problem Reduction, AO*Algorithm, Constraint Satisfaction, Means-Ends Analysis
Unit II: Knowledge Representation: Procedural Vs Declarative Knowledge, Representations and Mappings, Approaches to Knowledge Representation, Issues in Knowledge Representation, Logic Programming Forward Vs Backward Reasoning, **Symbolic Logic:** Propositional Logic, First Order Predicate Logic: Representing Instance and is-a Relationships, Computable Functions and Predicates, Syntax & Semantics of FOPL, Normal Forms, Unification &Resolution, Representation Using Rules, Natural Deduction
Unit III: Structured Representations of Knowledge: Semantic Nets, Partitioned Semantic Nets, Frames, Conceptual Dependency, Conceptual Graphs, Scripts, CYC; Matching Techniques, Partial Matching, Fuzzy Matching Algorithms and RETE Matching Algorithms. **Reasoning under Uncertainty:** Introduction to Non-Monotonic Reasoning, Truth Maintenance Systems, Logics for Non-Monotonic Reasoning, Model and Temporal Logics; Statistical Reasoning: Bayes Theorem, Certainty Factors and Rule-Based Systems, Bayesian Probabilistic Inference, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic & Fuzzy Systems
Unit IV: Experts Systems: Overview of an Expert System, Structure of an Expert Systems, Different Types of Expert Systems- Rule Based, Model Based, Case Based and Hybrid Expert Systems, Knowledge Acquisition and Validation Techniques, Black Board Architecture, Knowledge Building System Tools, Expert System Shells, **Natural Language Processing:** Role of Knowledge in Language Understanding, Approaches Natural Language Understanding, Steps in The Natural Language Processing, Syntactic Processing and Augmented Transition Nets, Semantic Analysis, NLP Understanding Systems; Planning, Components of a Planning System, Goal Stack Planning, Hierarchical Planning, Reactive Systems

Dantuluri Narayana Raju College, P.G.Courses
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Bhimavaram, W.G.Dist., A.P.
Syllabus for the Year: **2013-14**

Department: **M.C.A.** Paper: **Computer Organization**
Class: **I Year** Semester: **I**

Unit-I: Digital Computers, Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuit, Flip-flops, Sequential Circuits, Integrated Circuits, Decoders, Multiplexers, Registers, Shift Registers, counters, Memory Unit.
Unit-II: Data Types, Complements, Fixed-point Representation, Floating point Representation, Register Transfer Language, Register Transfer, Bus and Memory Transfer, Arithmetic Micro Operations, Assembly language Instructions, 8085 Microprocessor Instruction Set Architecture. **Unit-III:** Instruction Codes, Computer Register, Computer Instructions
Timing and Control, Instruction Cycle, Memory reference Instructions, Input-Output , Interrupt, Introduction, General Register Organization, Stack Organization, Instruction formats, Addressing modes. **Unit-IV:** Peripherals Devices, I/O Interface, Asynchronous Data Transfer
Mode of Transfer, Direct memory access, Input – Output Processor(IOP), Memory Hierarchy, Main memory, Auxiliary Memory, Associate Memory, Cache Memory, Virtual Memory.

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Bhimavaram, W.G.Dist., A.P.

Syllabus for the Year: **2013-14**

Department: **M.C.A.** Paper: **Formal Languages & Automata Theory**

Class: **I Year** Semester: **II**

Topics to be Covered
UNIT1: Basic Concepts of Finite State Systems, DFA&NFA, Finite Automata with ϵ-moves, Regular Expressions, Mealy and Moore Machines, Two-Way Finite Automate, Applications of FSM, Chomsky Hierarchy of Languages, Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem
UNIT II: Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, Closure properties of CFL's, Decision Algorithm for CFL, Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down Automata.
UNITIII: The Definition of Turing Machine, Design and Techniques for Construction of Turing Machines, Combining Turing Machines, Universal Turing Machines, The Halting Problem, Variants of Turing Machines, Restricted Turing Machines, Decidable & Undecidable Problems, Post Correspondence Problem
UNIT IV:The Prepositional Calculus : Introduction, Syntax , Truth-Assignments, Resolution, Syntax, Structures and Satisfiability – Equivalence, Un-solvability and NP-Completeness

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Syllabus for the Year: **2013-14**

Department: **M.C.A.** Paper: **Fundamentals of Microprocessors &Systems Programming** Class: **II Year** Semester: **IV**

Introduction to Microprocessors and Microcomputers, Internal Architecture and Functional/Signal Description of typical 8-bit µP.- 8085, 8086 and 8088, Addressing Modes Instruction Sets and Timing Diagrams. Assembly Language Programming Requirements, Programming Techniques: Looping, Counting, and Indexing, Counter and timing Delays, Stack and Subroutines, Code Conversion, BCD Arithmetic, 16-bit data Operations, Interrupts and Interrupt Service Routines
Logical Processing, Arithmetic processing, Time Delay Loops Procedures, Data tables, Modular programming, and Macros Introduction to Systems Programming, Introduction to Assembly Language Programming, Introduction to Instruction Formats, Data formats of IBM 360/370 - Role of Base Register, Index Register
Introduction to Assembler, databases used in assembler design, Design of Assembler - Single Pass & Double Pass, Introduction to Macros, various types of Macros, Design of Macro Processor – Single Pass & Double Pass.
Introduction to Loaders, functions of a loader, types of Loaders, databases used in Loaders, Design of Loaders - Absolute & DLL; Introduction to Software Tools, Text editors, Interpreters, Program Generators, Debug Monitors.

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Syallbusfor the Year:2013-2014

Department: MCA Paper: Computer Fundamentals and Programming in C
Class: I MCA Semester:I

Unit-I : Objective: Basics on Fundamentals of Computers, Basic techniques and Algorithms and solving various types of problems, The language used for writing programs in c **Unit-II** : **Introduction to C Programming**: C Character Set, Identifiers, Keywords, Variables, Constants, Type Conversion, Operators and Expressions, Operator Precedence and Associativity, Basic Input Output Types: Single Character and String, General; Formatted Input and Output, Running a Simple C Program Using gcc, tc++ Compilers, Increment and decrement operators, Bitwise and Comma Operators and other operators, Priority of operators and evaluate expressions, input and output statements, Revision of all the previous Topics.
Unit-III : **More About c:** Selection Using Simple if, if..else and switch, Iteration using while, do.. **Control** while and for Statements. Counter Controlled and Sentinel Controlled Repetition, Break and Continue, Unconditional goto, Conditional Operator, null Statement. Functions, Library functions, Functions Properties, user defined functions, functions programs, return statements, Return Properties, prototype declaration, Types of functions, Parameter passing options, call by value.
Unit-IV: Advanced Concepts of C: Pointers**,** Pointer programs, Call by reference, Recursion, Algorithms, writing algorithms, Algorithms for GCD, Swapping, recursion, Arrays, Searching, Linear Search, Binary search, Sorting, bubble Sort, Selection Sort, Insertion Sort, Arrays with functions, Two-dimensional arrays, Pointers and two dimensional arrays.
Unit-V: Additional in C: Preprocessor directives, Structures and unions, Strings and string Library functions, Storage classes, Dynamic memory allocation, Files, types, file handling functions, file handling function, command line arguments, Quick sort, merge sort and revision for all syllabus.

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Syllabus for the Year: 2013-2014

Department: M.C.A Paper: Cloud Computing Class: V M.C.A Semester: I

UNIT-1 Cloud Computing Basics - Cloud Computing Overview, Applications, Intranets and the Cloud, First Movers in the Cloud. The Business Case for Going to the Cloud - Cloud Computing Services, Business Applications, Deleting Your Datacenter, Salesforce.com, Thomson Reuters.
UNIT-II Organization and Cloud Computing - When You Can Use Cloud Computing, Benefits, Limitations, Security Concerns, Regulatory Issues, Cloud Computing with the Titans - Google, EMC, Net App, Microsoft, Amazon, Salesforce.com, IBM Partnerships.
UNIT-III Hardware and Infrastructure - Clients, Security, Network, Services. Accessing the Cloud - Platforms, Web Applications, Web APIs,Web Browsers. Cloud Storage - Overview, Cloud Storage Providers, Standards - Application, Client, Infrastructure, Service.
UNIT-IV Software as a Service - Overview, Driving Forces, Company Offerings, Industries Software plus Services - Overview, Mobile Device Integration, Providers, Microsoft Online. **UNIT-V** Developing Applications - Google, Microsoft, Intuit QuickBase, Cast Iron Cloud, Bungee Connect, Development, Troubleshooting, Application Management.
UNIT-VI Local Clouds and Thin Clients - Virtualization in Your Organization, Server Solutions, Thin Clients, Case Study: McNeilus Steel. **UNIT-VII** Migrating to the Cloud - Cloud Services for Individuals, Cloud Services Aimed at the Mid-Market, Enterprise-Class Cloud Offerings, Migration, Best Practices and the Future of Cloud Computing - Analyze Your Service, Best Practices, How Cloud Computing Might Evolve

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Syllabus for the Year:2013-14

Department: M.C.A Paper: Computer Networks Class:III M.C.A Semester: I

UNIT I:Introduction to Computer Networks: Introduction, Network Hardware, Network**,**Software, Reference Models, Data Communication Services & Network Examples, Internet Based Applications.
Data Communications: Transmission Media, Wireless Transmission, Multiplexing, Switching, Transmission in ISDN, Broad Band ISDN, ATM Networks **UNIT II:**Data Link Control, Error Detection & Correction, Sliding Window Protocols, LANs & MANs: IEEE Standards for LANs & MANs-IEEE Standards 802.2, 802.3, 802.4, 802.5,802.6, High Speed LANs.
Design Issues in Networks: Routing Algorithms, Congestion Control Algorithms, Network Layer in the Internet, IP Protocol, IP Address, Subnets, and Internetworking. **UNIT III** **Internet Transport Protocols:** Transport Service, Elements of Transport Protocols, TCP and UDP Protocols, Quality of Service Model, Best Effort Model, Network Performance Issues.
Over View of DNS, SNMP, Electronic Mail, FTP, TFTP, BOOTP, HTTP Protocols, World Wide Web, Firewalls. **UNIT IV** **Network Devices:** Over View of Repeaters, Bridges, Routers, Gateways, Multiprotocol Routers, Brouters, Hubs, Switches, Modems, Channel Service Unit CSU, Data Service
Units DSU, NIC, Wireless Access Points, Transceivers, Firewalls, Proxies. Overview of Cellular Networks, Ad-hoc Networks, Mobile Ad-hoc Networks, Sensor Networks

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Syllabus for the Year: 2013-14

Department: MCA Paper: Design and Analysis of Algorithms
Class: II-MCA Semester: I

UNIT-1: Introduction: Fundamentals of algorithmic problem solving, Important problem types. Fundamental data structures. Fundamentals of analysis of algorithms and efficiency: Analysis frame work, Asymptotic Notations and Basic Efficiency classes, Mathematical Analysis of Non-recursive Algorithms, Mathematical analysis of Recursive algorithms, Empirical Analysis of Algorithms, Algorithm Visualization, **Brute Force:** Selection Sort and Bubble sort **UNIT II Divide-and-Conquer:** Merge Sort, Quick sort, Binary Search,
Binary Tree Traversals and Related Properties. **Decrease-and-Conquer:** Insertion Sort, Depth-First Search and Breadth-First Search- Topological Sorting, Decrease-by-a-Constant-Factor Algorithms, Variable-Size-Decrease Algorithms. **Transform-and-Conquer:**Presorting, Balanced Search Trees, Heaps and Heap sort, Problem Reduction. **UNIT III Space and Time Tradeoffs:** Sorting by Counting, Hashing, B-Trees. **Dynamic Programming:**Warshall's and Floyd's Algorithm, Optimal Binary Search Trees, The Knapsack Problem and Memory Functions. **Greedy Technique:** Prim's Algorithm, Kruskal's Algorithm, Dijkstra's Algorithm, Huffman Trees
UNIT IV Limitations of Algorithm Power: Lower-Bound Arguments, Decision Trees, P, NP and NPcomplete problems. **Coping with the Limitations of Algorithms Power:** Backtracking, Branch-and-Bound, Approximation Algorithms for NP-hard Problems.

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Syllabus for the Year:2013-14

Department: M.C.A Paper: Data Base Management Systems Class: I M.C.A Semester: II

1.Database Systems: Introduction to the Database Systems, Concepts of Relational Models and Relational Algebra. SQL: Introduction to SQL Queries, Integrity Constraints, Joins, Views, Intermediate and Advanced SQL features and Triggers.
2.Database Design: Overview of the Design process, E-R Models, Functional dependencies and other kinds of dependencies, Normal forms, Normalization and Schema Refinement. **3.Database Application Design and Development**: User Interfaces and Tools, Embedded SQL, Dynamic SQL, Cursors and Stored procedures, JDBC, Security and Authorization in SQL, Internet Applications.
4.Query Evaluation: Overview, Query processing, Query optimization, Performance Tuning. **5. Database System Architectures:** Centralized and Client-Server Architecture,Server system Architecture,
Parallel and Distributed database, Object based databases and XML. Advanced data types in databases. Cloud based data storage systems. **6.Transaction Management:** Overview of Transaction Management, Transactions,
,Concurrency control, Recovery systems, Advanced Transaction Processing. **7.Case Studies:** Postgre SQL, Oracle, IBM DB2 Universal Database, Microsoft SQL Server

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Syllabus for the Year:2013-14

Department: M.C.A Paper: Discrete Mathematical Structures Class: I M.C.A Semester: I

Unit I Introduction: Logic-Prepositional Equivalences-Truth tables-Totalogies-Predicates and Quantifiers-Sets-Operations on sets-Sequences and Summations -Growth functions - relations and their properties- n-ary relations and their applications Representation of relations-Closures of relations-Equivalence relations-Partial Orderings.
Unit II Counting Techniques: Basics of Counting- Pigeonhole Principle-Combinations and Permutations-Generalized Per mutations ge and Combinations **Recurrence relations:** Solving Recurrence Relations-Divide and Conquer relations- Inclusion and Exclusion-Applications of Inclusion-Exclusion.
Unit III Graphs: Introduction to Graphs-Terminology-Relations and Directed Graphs - Representations of Graphs- Isomorphism-Connectivity- Euler and Hamiltonian Paths - Shortest Path problems- Planar Graphs - Graph Colouring-
Trees: Introduction to trees- Applications of trees- Traversals-Trees and sorting Spanning Trees-Minimum SpanningTrees.
UnitIV: BooleanAlgebra and Models of Computation: Boolean Functions RepresentingBoolean Functions -Logic Gates-Minimizations of Circuits-Languages and Grammars- Finite State Machines with and with no output.

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Syallbusfor the Year: 2013-2014

Department: M.C.A Paper: Data Structures Class: I

M.C.A Semester: I

PART - A

Introduction to Data Structures

The Stack: Primitive operations – As an Abstract Data Type – Implementing the Stack operations using Arrays, and Structures

Queues:: The Queue as Abstract Data Type – Sequential Representation ,Types of Queues – Operations – Implementation using Arrays, and Structures

Linked List: Operations – Implementation of Stacks, Queues and priority Queues. Circular Lists: Insertion, Deletion and Concatenation Operations _ Stacks and Queues as Circular Lists _ Doubly Linked Lists _Applications.

Trees: Binary Trees Operations and Applications. Binary Tree Representation: Node Representation – Implicit array Representation – Choice of Representation – Binary Tree Traversal – Threaded Binary Trees and their Traversal – Trees and their Applications

Tree Searching: Insertion into a Binary Search Tree – Deleting from a Binary Search Tree – Efficiency of Binary Search Tree operation.

PART – B

File Processing Operations

Physical and logical files, opening, reading & writing and closing files in C, seeking and special characters in files, physical devices and logical files, file-related header files in C

Secondary Storage

Disks – organization, tracks, sectors, blocks, capacity, non-data overhead, cost of a disk access,Magnetic Tape – types, performance, organization estimation of tape length and data transmission times

Journey and buffer Management

File manager, I/O buffer, I/O processing, buffer strategies and bottlenecks

File Structure Concepts

A stream file, field structures, reading a stream of fields, record structures and that uses a length indicator, Mixing numbers and characters – use of a hex dump, reading the variable length records from the files

Managing records in C files

Retrieving records by keys, sequential search, direct access, choosing a record structure and record length, header records, file access and file organization

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Syllabus for the Year: 2013-2014

Department: MCA paper: E-Commerce Class: V MCA
Semester: I

Unit-I*:* Introduction: Electronic Commerce-Frame Work, Anatomy of E-Commerce Applications, E-Commerce Consumer Applications, E-Commerce Organization Applications. Consumer Oriented Electronic Commerce - Mercantile Process Models.
Unit-II: Electronic Payment Systems – Types of Electronic Payment Systems, DigitalToken-Based, Smart Cards, Credit Cards, Risks in Electronic Payment Systems, Designing Electronic Payment Systems Unit-III: Electronic Data Inter Change, Inter Organizational Commerce - EDI, EDI Implementation, Value Added Networks.
Unit-IV: Intra Organizational Commerce, Macro Forces And Internal Commerce, Work Flow Automation and Coordination, Customization And Internal Commerce, Supply Chain Management.
Unit-V: Business Cases for Document Library, Digital Document Types, Corporate Data Ware-Houses.
Unit-VI: Advertising And Marketing: Information Based Marketing, Advertising On Internet, Online Marketing Process, Market Research. Consumer Search and Resource Discovery, Information Search and Retrieval, Commerce Catalogues, Information Filtering.
Unit-VII: Multimedia-Key Multimedia Concepts, Digital Video and Electronic Commerce, Desktop Video Processing, Desktop Video Conferencing.

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Syllabus for the Year: 2013-14

Department: M.C.A Paper: Embedded Systems Class: II M.C.A Semester: II

1. Examples of Embedded systems and typical hardware.
2. Hardware Fundamentals for Software Engineer and Advanced Hardware Fundamentals
3. Interrupts and Survey of software architectures.
Introduction to RTOS and More Operating System Services Basic Design using RTOS
4. Embedded Software development tools and Debugging Techniques

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Syllabus for the Year: 2013-14

Department: MCA Paper: Information Systems Control&Audit Class: IV-MCA Semester: II

1. Introduction: Overview Of Information Systems Auditing, Conducting an Information Systems audit
2. Management Control Framework: Top Management Controls, Systems Development Management Controls
3. Application Control Framework: Boundary Controls, Input Controls, Communication Controls, Processing Controls, Database Controls, Output Controls
4. Generalized Audit Software, Code review, Test Data And Code Comparison, Concurrent auditing Techniques, Performance Measurement Tools
5. Overview Of The Effectiveness of System Evaluation Process, Evidence, Evaluating System Effectiveness, Efficiency
6. Utility Software, Expert Systems, Measures of Asset Safeguarding and Data Integrity,
7. Information System Audit Management: Managing the Information System Audit Function

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Syallbusfor the Year:2013-14

Department: M.C.A Paper: Information Systems & Organizational Behaviour
Class:I M.C.A Semester: II

UNIT I **Organization Structure**: Features of Good Organization Structures, Designing of Organization Structure
Types of Organization Structures- Functional, Product, Geographic and Matrix Organization Structures **UNIT II** **Motivation:** Nature and importance of motivation, Theories of motivation – Maslow's, Herzberg's and Mc Gregor's X and Y Theories of Motivation.
Leadership: Meaning and definition, Importance of Leadership, Leadership styles, Communication: Process of Communication, Importance, Forms of Communication and Barriers in Communication. **UNIT III** **Group Dynamics**: Types of Groups, Stages of Group Development, Group Behavior and Group Performance Factors.
Organizational Conflicts: Reasons for Conflicts, Consequences of Conflicts in Organizations, Types of Conflict, Strategies for Managing Conflicts, Organizational Climate and Culture. **UNIT IV** **Management Information System**: Nature and Scope, Characteristics and Functions. Classification of MIS - Transaction Processing System
Management Information System, Decision Support System, Executive Support System, Office Automation System and Business Expert System. Functional Information Systems: Production, Marketing, Finance and Human Resources Information Systems; Objectives and Functions of Information Resource Management.

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Syallbusfor the Year:2013-2014

Department: M.C.A Paper: Operations Research Class: III M.C.A

Semester: I

1. Overview of Operations Research, Types of OR Models , Phases of Operations Research– OR Techniques, Introduction to Linear Programming, Formulation of Linear Programming Problem, Graphical Solution; Graphical Sensitivity Analysis,

2. Standard Form of LPP, Basic Feasible Solutions , Unrestricted Variables, Simplex Algorithm , Artificial Variables, Big M Method, Two Phase Simplex Method, Degeneracy, Alternative Optimal, Unbounded Solutions, Infeasible Solutions, Primal And Dual Problems And Their Relations, Dual Simplex Method

3. Transportation Problem as LPP, Initial Solutions, North West Corner Rule, Lowest Cost Method, Vogels Approximation Method, Optimum Solutions of TPP, Degeneracy in Transportation, Transportation Algorithms ,

4. Assignment Problem , Assignment Problem as LPP, Hungarian Method, Travelling Salesman Problem, Solutions Of TSP, Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems

   a Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems

5. Network Representation of A Project, CPM and PERT , Critical Path Calculations, Time – Cost Optimizations, PERT Analysis and Probability Considerations, Resource Analysis in Network Scheduling.

6. Replacement Problems-Individual And Group Replacement Policy, Reliability & System Failure Problems, Inventory-Factors Effecting Inventory-EOQ, Inventory Problems With and Without Shortages, Inventory Problems With Price Breakups, Multi Item Deterministic Problems. Probabilistic Inventory Problems, swap-space management.

7. Non Linear Programming, Dynamic Programming, Recursive Nature of Dynamic Programming , Forward and Backward Recursion, Solutions of LPP As Dynamic Programming Technique, Integer Programming , Branch and Bound Algorithms, Cutting Plane Algorithm,

8. Introduction To Simulation, Simulation Models, Event Type Simulations, Generation of Random Numbers, Monte-Carle Simulation, Simulation Of Networks; Two Person Zero Sum Games , Mixed Strategy Games and Their Algorithms.

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Syallbusfor the Year:2013-2014

Department: M.C.A Paper: Operating Systems Class: III M.C.A
Semester: I

Introduction: Definition of Operating System, Types Of Operating Systems, Operating System Structures, Operating-System Services. System Calls, Virtual Machines, Operating System Design and Implementation, **Process Management:** Process Concepts, Operations on Processes, Cooperating Processes, Threads, Inter Process Communication, Process Scheduling, Scheduling Algorithms, Multiple -Processor Scheduling. Thread Scheduling.
UNIT II Process Synchronization: The Critical Section Problem, Semaphores, And Classical Problems of Synchronization, Critical Regions, Monitors. **Synchronization examples.** **Deadlocks:** Principles of Deadlocks, System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Avoidance, Detection & Recovery from Deadlocks.
UNIT III Memory Management: Logical Versus Physical Address, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms, Thrashing
File System Implementation: Concept of a file, Access Methods, Directory Structure, File System Structure, Allocation Methods, Free Space Management, Directory Management, Device Drivers. **Mass-storage structure:** overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management.
UNIT IV Protection: Goals and Principles of Protection, Access matrix implementation, Access control, Revocation of access rights. Case study: LINUX, Windows Operating Systems.

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Syallbusfor the Year:2013-14

Department: M.C.A Paper: Computer Networks Class:III M.C.A Semester: I

1. Introduction to HTML, Core Elements , Links and Addressing, Images , Text , Colors and Background, Lists, Tables and Layouts , Frames, Forms , Cascading Style Sheets. **2.** Introduction to Java Scripts, Elements of Objects in Java Script, Dynamic HTML with Java Script **3.**
4. Document type definition, XML Syntax, XML Schemas, Document Object model, Presenting XML, Using XML Processors **5.** JDBC OBJECTS- JDBC Driver Types, JDBC Packages, Database Connection, Statement Objects, Result Set. **6.**
7. JDBC and Embedded SQL - Tables, Inserting Data into Tables , Selecting Data from a Table, Meta Data ,Updating Table , Deleting data from Table , Joining Table , Calculating Data, Grouping and Ordering Data , Sub quires ,View.
8. Introduction to Servlet, Servlet Life Cycles, Servlet Basics, Tomcat Web Server, Configuring Apache Tomcat, Handling Client Request and Response, Handling Cookies, Session Tracking
9. Introduction to JSP, Benefits of JSP, Basic Syntax, Invoking Java code with JSP Scripting Elements, JSP Page Directive, Including Files in JSP Pages, **10.** Introduction to Java Beans, Using JAVA Bean Components in JSP Documents, MVC Architecture.

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Syllabusfor the Year:2014-2015

Department: MCA Paper: Artificial intelligence Class: II MSC
Semester: I

Topics to be Covered
Unit I: Introduction to Artificial Intelligence: Artificial Intelligence, AI Problems, AI Techniques, The Level of the Model, Criteria For Success. Defining the Problem as a State Space Search,Problem Characteristics , Production Systems, , Production System Characteristics **Search:** Issues in The Design of Search Programs, Un-Informed Search, BFS, DFS; Heuristic Search Techniques: Generate-And- Test, Hill Climbing, Best-First Search, A* Algorithm, Problem Reduction, AO*Algorithm, Constraint Satisfaction, Means-Ends Analysis
Unit II: Knowledge Representation: Procedural Vs Declarative Knowledge, Representations and Mappings, Approaches to Knowledge Representation, Issues in Knowledge Representation, Logic Programming Forward Vs Backward Reasoning, **Symbolic Logic:** Propositional Logic, First Order Predicate Logic: Representing Instance and is-a Relationships, Computable Functions and Predicates, Syntax & Semantics of FOPL, Normal Forms, Unification &Resolution, Representation Using Rules, Natural Deduction
Unit III: Structured Representations of Knowledge: Semantic Nets, Partitioned Semantic Nets, Frames, Conceptual Dependency, Conceptual Graphs, Scripts, CYC; Matching Techniques, Partial Matching, Fuzzy Matching Algorithms and RETE Matching Algorithms. **Reasoning under Uncertainty:** Introduction to Non-Monotonic Reasoning, Truth Maintenance Systems, Logics for Non-Monotonic Reasoning, Model and Temporal Logics; Statistical Reasoning: Bayes Theorem, Certainty Factors and Rule-Based Systems, Bayesian Probabilistic Inference, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic & Fuzzy Systems
Unit IV: Experts Systems: Overview of an Expert System, Structure of an Expert Systems, Different Types of Expert Systems- Rule Based, Model Based, Case Based and Hybrid Expert Systems, Knowledge Acquisition and Validation Techniques, Black Board Architecture, Knowledge Building System Tools, Expert System Shells, **Natural Language Processing:** Role of Knowledge in Language Understanding, Approaches Natural Language Understanding, Steps in The Natural Language Processing, Syntactic Processing and Augmented Transition Nets, Semantic Analysis, NLP Understanding Systems; Planning, Components of a Planning System, Goal Stack Planning, Hierarchical Planning, Reactive Systems

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Syllabusfor the Year: 2014-15

Department: M.Sc.(CS) Paper: Data Warehousing &Data Mining
Class: I M.Sc.(CS) Semester: II

Unit I: Introduction to Data Mining: Evolution of I T into DBMS,Motivation and importance of Data Warehousing and Data Mining,Kinds of Patterns, Technologies, Basic Data Analytics: Data Objects and Attributes Types, Statistical Descriptions of Data, Data Visualization, Estimating Data Similarity and Dissimilarity, Major Issues in Data Mining., Data Mining Applications **Data Warehouse and OLAP Technology:** Basic Concepts of Data warehouse, Data Modeling using Cubes and OLAP, DWH Design and usage, Implementation using Data Cubes and OLAPs, Data Generalization with AOI.
Unit II: Data Mining Primitives & Data Cubes: DataMining Primitives, Data Mining Tasks, Data Mining Query Language, DesigningGraphical user Interfaces based on aData Mining Query language, Preliminary Concepts of Data Cube Computation, Data Cube Computation Methods: Multi-way Array Aggregation for Full Cube, BUC Computing for Iceberg Cubes, Star-Cubing Using Dynamic Star-Tree Structure, Pre-computing Shell Fragments for Fast High-Dimensional OLAPs
Data Mining Concept Description:: Data Preprocessing: Pre-processing the Data, Data Cleaning, Data Integration, Data Reduction, Data Transformation, Discretization and Concept Hierarchy Generation; **Data** Architectures of Data Mining Systems; Characterization and Comparison, Concept Description, Data Generalization and Summarization; Analytical Characterization: Analysisof AttributeRelevance, Mining Class Comparisons, Discriminating between Different Classes, Mining Descriptive & Statistical Measures in Large Databases.
Unit III: Mining Frequent Patterns Based on Associations and Correlations: Basic Concepts, Frequent Itemset Mining Methods: Apriori Algorithm, Association Rule Generation, Improvements to A Priori, FP-Growth Approach, Mining Frequent Patterns using Vertical Data Formats, Mining Closed and Max Patterns, Pattern Evaluation Methods **Classification**: Basic Concepts, Decision Tree Induction, Bayes Classification, Rule-Based Classification, Model Evaluation and Selection, Techniques to Improve Classification Accuracy Advanced Methods: Classification by Back Propagation, SVM, Associative Classification, Lazy Learning, Fuzzy Sets, Rough Sets, Genetic Algorithms, Multiclass Classification, Semi-Supervised Classification
Unit IV: Cluster Analysis: Basic Concepts, Types of Data in Cluster Analysis, Partitioning Methods, Hierarchical Methods, Density Based Methods, Grid Based Methods, Evaluation of Clustering Solutions **Semantic Web Mining:** Introduction, Concepts in Semantic Web Mining,XML, RDF & Web Data Mining, Ontologies and Web Data Mining,Agents in Web Data Mining, Web Mining and Semantic Web As a Data Base, semantic Interoperability and Web Mining Web Mining Vs Semantic Web Mining

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabusfor the Year:2014-15

Department: M.Sc.(CS) Paper: Discrete Mathematical Structures

Class:I M.Sc. (CS) Semester: I

UNIT I: Sets, relations and functions: Operations on sets,relations and functions, binary relations.
Partial ordering relations, equivalence relations, principles of mathematical induction. Permutations and combinations; recurrence relation and generating functions. **Unit II: Algebraic structures and morphisms:** Algebraic structures with one binary operation - semigroups, monoids and groups, congruence relation and quotient structures. Free and cyclic monoids and groups, permutation groups, substructures, normal subgroups. Algebraic structures with two binary operations, Lattices, Principle of Duality, Distributive and Complemented Lattices.
Boolean Lattices and Boolean Algebras, Uniqueness of Finite Boolean Algebras, Boolean Functions and Boolean Expressions, Propositional Calculus. **Unit III: Mathematical logic:** Syntax, semantics of Propositional and predicate calculus, valid, satisfiable and unsatisfiable formulas, encoding and examining the validity of some logical arguments. **Proof techniques:** forward proof, proof by contradiction, contrapositive proofs, proof of necessity and sufficiency. **Unit IV: Graph Theory:** Graphs and digraphs, trees, Eulerian cycle and Hamiltonian cycle.
Adjacency and incidence matrices, Vertex colouring, planarity.

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabusfor the Year: 2014-2015

Department: M.C.A Paper: Data Structures& File Structure Class: I M.Sc(CS) Semester: I

PART - A
Introduction to Data Structures **The Stack**: Primitive operations – As an Abstract Data Type – Implementing the Stack operations using Arrays, and Structures **Queues:**: The Queue as Abstract Data Type – Sequential Representation ,Types of Queues – Operations – Implementation using Arrays, and Structures **Linked List**: Operations – Implementation of Stacks, Queues and priority Queues. Circular Lists: Insertion, Deletion and Concatenation Operations _ Stacks and Queues as Circular Lists _ Doubly Linked Lists _Applications.
Trees: Binary Trees Operations and Applications. Binary Tree Representation: Node Representation – Implicit array Representation – Choice of Representation – Binary Tree Traversal – Threaded Binary Trees and their Traversal – Trees and their Applications **Tree Searching**: Insertion into a Binary Search Tree – Deleting from a Binary Search Tree – Efficiency of Binary Search Tree operation.
PART – B File Processing Operations Physical and logical files, opening, reading & writing and closing files in C, seeking and special characters in files, physical devices and logical files, file-related header files in C
Secondary Storage Disks – organization, tracks, sectors, blocks, capacity, non-data overhead, cost of a disk access,Magnetic Tape – types, performance, organization estimation of tape length and data transmission times **Journey and buffer Management** File manager, I/O buffer, I/O processing, buffer strategies and bottlenecks
File Structure Concepts A stream file, field structures, reading a stream of fields, record structures and that uses a length indicator, Mixing numbers and characters – use of a hex dump, reading the variable length records from the files **Managing records in C files** Retrieving records by keys, sequential search, direct access, choosing a record structure and record length, header records, file access and file organization

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.Dist., A.P.

Syllabus for the Year: 2014-15

Department: **I M.Sc(CS).** Paper: **Formal Languages & Automata Theory**

Class: **I Year** Semester: **II**

Topics to be Covered
UNIT1: Basic Concepts of Finite State Systems, DFA&NFA, Finite Automata with ϵ-moves, Regular Expressions, Mealy and Moore Machines, Two-Way Finite Automate, Applications of FSM, Chomsky Hierarchy of Languages, Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem
UNIT II: Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, Closure properties of CFL's, Decision Algorithm for CFL, Push down Automata: Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down Automata.
UNITIII: The Definition of Turing Machine,Design and Techniques for Construction of Turing Machines,Combining Turing Machines,Universal Turing Machines, The Halting Problem, Variants of Turing Machines, Restricted Turing Machines, Decidable & Undecidable Problems, Post Correspondence Problem
UNIT IV:The Prepositional Calculus : Introduction, Syntax , Truth-Assignments, Resolution, Syntax, Structures and Satisfiability – Equivalence, Un-solvability and NP-Completeness

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2014-15

Department: M.Sc.(CS) Paper:Advanced Operating Systems Class:I M.Sc. (CS) Semester: II

Introduction: Definition of Operating System, Types Of Operating Systems, Operating System StructuresOperating-System Services, System Calls, Virtual Machines, Operating System Design and Implementation, **Process Management:** Process Concepts, Operations on Processes, Cooperating Processes, Threads, Inter Process Communication, Process Scheduling, Scheduling Algorithms, Multiple -Processor Scheduling. Thread Scheduling**,**
UNIT II Process Synchronization: The Critical Section Problem, Semaphores, And Classical Problems of Synchronization, Critical Regions, Monitors**Synchronization examples. Deadlocks:** Principles of Deadlocks, System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Avoidance, Detection & Recovery from Deadlocks.
UNIT III Memory Management: Logical Versus Physical Address, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms, Thrashing File System Implementation: Concept of a file, Access Methods, Directory Structure, File System Structure, Allocation Methods, Free Space Management, Directory Management, Device Drivers. Unit III: Distributed Operating Systems: Distributed System Goals, Types Of Distributed Systems, and Styles & Architecture Of Distributed Systems, Threads, Virtualization, Clients, Servers, Code Migration, and Communication in Distributed Systems
Distributed Systems & Synchronization: Clock Synchronization, Logical Clocks, Mutual Exclusion, Global Positioning Of Nodes, Data-Centric Consistency Models, Client-Centric Consistency Models, Consistency Protocols Unit IV: Fault Tolerance, Security: Introduction To Fault Tolerance, Process Resilience,, Reliable Client-server Communication, Reliable Group Communication, Distributed Commit, Recovery, Secure Channels, Access Control, Security Management Case Study: Over View Of UNIX, LINUX, Windows NT , Android And IOS Operating systems

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Bhimavaram, W.G.DIST.A.P

Syllabusfor the Year:2014-2015

Department: M.Sc(CS) Paper: Operations Research Class: II M.Sc(CS) Semester: I

1. Overview of Operations Research, Types of OR Models , Phases of Operations Research– OR Techniques, Introduction to Linear Programming, Formulation of Linear Programming Problem, Graphical Solution; Graphical Sensitivity Analysis,

2. Standard Form of LPP, Basic Feasible Solutions , Unrestricted Variables, Simplex Algorithm , Artificial Variables, Big M Method, Two Phase Simplex Method, Degeneracy, Alternative Optimal, Unbounded Solutions, Infeasible Solutions, Primal And Dual Problems And Their Relations, Dual Simplex Method

3. Transportation Problem as LPP, Initial Solutions, North West Corner Rule, Lowest Cost Method, Vogels Approximation Method, Optimum Solutions of TPP, Degeneracy in Transportation, Transportation Algorithms ,

4. Assignment Problem , Assignment Problem as LPP, Hungarian Method, Travelling Salesman Problem, Solutions Of TSP, Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems

   a Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M-Machine Problems, Crew Scheduling Problems

5. Network Representation of A Project, CPM and PERT , Critical Path Calculations, Time – Cost Optimizations, PERT Analysis and Probability Considerations, Resource Analysis in Network Scheduling.

6. Replacement Problems-Individual And Group Replacement Policy, Reliability & System Failure Problems, Inventory-Factors Effecting Inventory-EOQ, Inventory Problems With and Without Shortages, Inventory Problems With Price Breakups, Multi Item Deterministic Problems. Probabilistic Inventory Problems, swap-space management.

7. Non Linear Programming, Dynamic Programming, Recursive Nature of Dynamic Programming , Forward and Backward Recursion, Solutions of LPP As Dynamic Programming Technique, Integer Programming , Branch and Bound Algorithms, Cutting Plane Algorithm,

8. Introduction To Simulation, Simulation Models, Event Type Simulations, Generation of Random Numbers, Monte-Carle Simulation, Simulation Of Networks; Two Person Zero Sum Games , Mixed Strategy Games and Their Algorithms.

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year: 2014-15

Department: M.Sc(CS) Paper: Embedded Systems Class: I M.Sc(CS)
Semester: II

1. Examples of Embedded systems and typical hardware.
2. Hardware Fundamentals for Software Engineer and Advanced Hardware Fundamentals
3. Interrupts and Survey of software architectures.
Introduction to RTOS and More Operating System Services Basic Design using RTOS
4. Embedded Software development tools and Debugging Techniques

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.Dist., A.P.

Syllabus for the Year: **2014-15**

Department: **M.Sc. (Computer Science)** Paper: **Computer Organization& Architecture** Class: **I Year** Semester: **I**

Unit-I : Basic Operational Concepts, Bus Structures, Software ,Performance, Multiprocessors and Multicomputers, Historical Perspective.
Machine Instructions and Programs, Memory locations and Addresses, Memory Operations, Instructions and Instruction sequencing, Addressing modes, Assembly language, Basic input and output operations, Stacks and queues, Subroutines, Additional instructions ,Example programs, Encoding of Machine **Unit-II:** Accessing I/O devices, Interrupts, Processor Examples ,Direct Memory Access, Interface circuits ,Standard I/O interfaces, Some basic concepts, Semiconductor RAM,ROM memories, speed,size and cost Cache Memories, Performance Considerations, Virtual Memories, Memory Management requirements, Secondary Storage
Some fundamental concepts, Execution of Complete Instruction ,Multiple Bus Organization, Hardwired and Micro programmed control. **Unit-III:** Input Devices, Output Devices, Serial Communication Links, Forms of Parallel Processing, Array Processors, The structure of Multiprocessor ,Interconnection networks, Memory organization in multiprocessors, Program parallelism and shared variables, Multicomputers, Basic logic functions, Synthysis of Logic functions.
Minimization of Logic, Synthesis with NANd and NOR gates, Practical implementation of Logic gates, Flip flops, Registers and shift registers, Counters, Decoders, Multiplexers, PLD, Sequential circuits **Unit-4:** Basic concepts, Data Hazards, Instruction Hazards, Influence on Instruction sets, Superscalar operation, Examples of Embedded Systems, Processor chips for Embedded applications, A simple Microcontroller, The IA-32 Pentium example.

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2015-2016

Department: MCA Paper: Artificial intelligence Class: II MSC Semester: I

Unit I: Introduction to Artificial Intelligence: Artificial Intelligence, AI Problems, AI Techniques, The Level of the Model, Criteria For Success. Defining the Problem as a State Space Search,Problem Characteristics , Production Systems, , Production System Characteristics **Search:** Issues in The Design of Search Programs, Un-Informed Search, BFS, DFS; Heuristic Search Techniques: Generate-And- Test, Hill Climbing, Best-First Search, A* Algorithm, Problem Reduction, AO*Algorithm, Constraint Satisfaction, Means-Ends Analysis
Unit II: Knowledge Representation: Procedural Vs Declarative Knowledge, Representations and Mappings, Approaches to Knowledge Representation, Issues in Knowledge Representation, Logic Programming Forward Vs Backward Reasoning, **Symbolic Logic:** Propositional Logic, First Order Predicate Logic: Representing Instance and is-a Relationships, Computable Functions and Predicates, Syntax & Semantics of FOPL, Normal Forms, Unification &Resolution, Representation Using Rules, Natural Deduction
Unit III: Structured Representations of Knowledge: Semantic Nets, Partitioned Semantic Nets, Frames, Conceptual Dependency, Conceptual Graphs, Scripts, CYC; Matching Techniques, Partial Matching, Fuzzy Matching Algorithms and RETE Matching Algorithms. **Reasoning under Uncertainty:** Introduction to Non-Monotonic Reasoning, Truth Maintenance Systems, Logics for Non-Monotonic Reasoning, Model and Temporal Logics; Statistical Reasoning: Bayes Theorem, Certainty Factors and Rule-Based Systems, Bayesian Probabilistic Inference, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic & Fuzzy Systems
Unit IV: Experts Systems: Overview of an Expert System, Structure of an Expert Systems, Different Types of Expert Systems- Rule Based, Model Based, Case Based and Hybrid Expert Systems, Knowledge Acquisition and Validation Techniques, Black Board Architecture, Knowledge Building System Tools, Expert System Shells, **Natural Language Processing:** Role of Knowledge in Language Understanding, Approaches Natural Language Understanding, Steps in The Natural Language Processing, Syntactic Processing and Augmented Transition Nets, Semantic Analysis, NLP Understanding Systems; Planning, Components of a Planning System, Goal Stack Planning, Hierarchical Planning, Reactive Systems

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year: 2015-16

Department: M.Sc.(CS) Paper: Data Warehousing &Data Mining
Class: I M.Sc.(CS) Semester: II

Unit I: Introduction to Data Mining: Evolution of I T into DBMS,Motivation and importance of Data Warehousing and Data Mining,Kinds of Patterns, Technologies, Basic Data Analytics: Data Objects and Attributes Types, Statistical Descriptions of Data, Data Visualization, Estimating Data Similarity and Dissimilarity, Major Issues in Data Mining., Data Mining Applications **Data Warehouse and OLAP Technology:** Basic Concepts of Data warehouse, Data Modeling using Cubes and OLAP, DWH Design and usage, Implementation using Data Cubes and OLAPs, Data Generalization with AOI.
Unit II: Data Mining Primitives & Data Cubes: DataMining Primitives, Data Mining Tasks, Data Mining Query Language, DesigningGraphical user Interfaces based on aData Mining Query language, Preliminary Concepts of Data Cube Computation, Data Cube Computation Methods: Multi-way Array Aggregation for Full Cube, BUC Computing for Iceberg Cubes, Star-Cubing Using Dynamic Star-Tree Structure, Pre-computing Shell Fragments for Fast High-Dimensional OLAPs
Data Mining Concept Description:: Data Preprocessing: Pre-processing the Data, Data Cleaning, Data Integration, Data Reduction, Data Transformation, Discretization and Concept Hierarchy Generation; **Data** Architectures of Data Mining Systems; Characterization and Comparison, Concept Description, Data Generalization and Summarization; Analytical Characterization: Analysisof AttributeRelevance, Mining Class Comparisons, Discriminating between Different Classes, Mining Descriptive & Statistical Measures in Large Databases.
Unit III: Mining Frequent Patterns Based on Associations and Correlations: Basic Concepts, Frequent Itemset Mining Methods: Apriori Algorithm, Association Rule Generation, Improvements to A Priori, FP-Growth Approach, Mining Frequent Patterns using Vertical Data Formats, Mining Closed and Max Patterns, Pattern Evaluation Methods **Classification**: Basic Concepts, Decision Tree Induction, Bayes Classification, Rule-Based Classification, Model Evaluation and Selection, Techniques to Improve Classification Accuracy Advanced Methods: Classification by Back Propagation, SVM, Associative Classification, Lazy Learning, Fuzzy Sets, Rough Sets, Genetic Algorithms, Multiclass Classification, Semi-Supervised Classification
Unit IV: Cluster Analysis: Basic Concepts, Types of Data in Cluster Analysis, Partitioning Methods, Hierarchical Methods, Density Based Methods, Grid Based Methods, Evaluation of Clustering Solutions **Semantic Web Mining:** Introduction, Concepts in Semantic Web Mining,XML, RDF & Web Data Mining, Ontologies and Web Data Mining,Agents in Web Data Mining, Web Mining and Semantic Web As a Data Base, semantic Interoperability and Web Mining Web Mining Vs Semantic Web Mining

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2015-16

Department: M.Sc.(CS) Paper: Discrete Mathematical Structures

Class:I M.Sc. (CS) Semester: I

UNIT I: Sets, relations and functions: Operations on sets,relations and functions, binary relations.
Partial ordering relations, equivalence relations, principles of mathematical induction. Permutations and combinations; recurrence relation and generating functions. **Unit II: Algebraic structures and morphisms:** Algebraic structures with one binary operation - semigroups, monoids and groups, congruence relation and quotient structures. Free and cyclic monoids and groups, permutation groups, substructures, normal subgroups. Algebraic structures with two binary operations, Lattices, Principle of Duality, Distributive and Complemented Lattices.
Boolean Lattices and Boolean Algebras, Uniqueness of Finite Boolean Algebras, Boolean Functions and Boolean Expressions, Propositional Calculus. **Unit III: Mathematical logic:** Syntax, semantics of Propositional and predicate calculus, valid, satisfiable and unsatisfiable formulas, encoding and examining the validity of some logical arguments. **Proof techniques:** forward proof, proof by contradiction, contrapositive proofs, proof of necessity and sufficiency. **Unit IV: Graph Theory:** Graphs and digraphs, trees, Eulerian cycle and Hamiltonian cycle.
Adjacency and incidence matrices, Vertex colouring, planarity.

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year: 2015-2016

Department: M.C.A Paper: Data Structures& File Structure

Class: I M.Sc(CS) Semester: I

PART - A

Introduction to Data Structures

The Stack: Primitive operations – As an Abstract Data Type – Implementing the Stack operations using Arrays, and Structures

Queues:: The Queue as Abstract Data Type – Sequential Representation ,Types of Queues – Operations – Implementation using Arrays, and Structures

Linked List: Operations – Implementation of Stacks, Queues and priority Queues. Circular Lists: Insertion, Deletion and Concatenation Operations _ Stacks and Queues as Circular Lists _ Doubly Linked Lists _Applications.

Trees: Binary Trees Operations and Applications. Binary Tree Representation: Node Representation – Implicit array Representation – Choice of Representation – Binary Tree Traversal – Threaded Binary Trees and their Traversal – Trees and their Applications

Tree Searching: Insertion into a Binary Search Tree – Deleting from a Binary Search Tree – Efficiency of Binary Search Tree operation.

PART – B

File Processing Operations

Physical and logical files, opening, reading & writing and closing files in C, seeking and special characters in files, physical devices and logical files, file-related header files in C

Secondary Storage

Disks – organization, tracks, sectors, blocks, capacity, non-data overhead, cost of a disk access,Magnetic Tape – types, performance, organization estimation of tape length and data transmission times

Journey and buffer Management

File manager, I/O buffer, I/O processing, buffer strategies and bottlenecks

File Structure Concepts

A stream file, field structures, reading a stream of fields, record structures and that uses a length indicator, Mixing numbers and characters – use of a hex dump, reading the variable length records from the files

Managing records in C files

Retrieving records by keys, sequential search, direct access, choosing a record structure and record length, header records, file access and file organization

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.Dist., A.P.

Syllabus for the Year: 2015-16

Department: **I M.Sc(CS).** Paper: **Formal Languages & Automata Theory**

Class: **I Year** Semester: **II**

UNIT1: Basic Concepts of Finite State Systems, DFA&NFA, Finite Automata with ϵ-moves, Regular Expressions, Mealy and Moore Machines, Two-Way Finite Automate, Applications of FSM, Chomsky Hierarchy of Languages, Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem
UNIT II: Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, Closure properties of CFL's, Decision Algorithm for CFL, Push down Automata: Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down Automata.
UNITIII: The Definition of Turing Machine,Design and Techniques for Construction of Turing Machines,Combining Turing Machines,Universal Turing Machines, The Halting Problem, Variants of Turing Machines, Restricted Turing Machines, Decidable & Undecidable Problems, Post Correspondence Problem
UNIT IV:The Prepositional Calculus : Introduction, Syntax , Truth-Assignments, Resolution, Syntax, Structures and Satisfiability – Equivalence, Un-solvability and NP-Completeness

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2056-16

Department: M.Sc.(CS) Paper:Advanced Operating Systems

Class:I M.Sc. (CS) Semester: II

Introduction: Definition of Operating System, Types Of Operating Systems, Operating System StructuresOperating-System Services, System Calls, Virtual Machines, Operating System Design and Implementation, **Process Management:** Process Concepts, Operations on Processes, Cooperating Processes, Threads, Inter Process Communication, Process Scheduling, Scheduling Algorithms, Multiple - Processor Scheduling. Thread Scheduling**,**
UNIT II Process Synchronization: The Critical Section Problem, Semaphores, And Classical Problems of Synchronization, Critical Regions, Monitors**Synchronization examples. Deadlocks:** Principles of Deadlocks, System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Avoidance, Detection & Recovery from Deadlocks.
UNIT III Memory Management: Logical Versus Physical Address, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms, Thrashing File System Implementation: Concept of a file, Access Methods, Directory Structure, File System Structure, Allocation Methods, Free Space Management, Directory Management, Device Drivers. Unit III: Distributed Operating Systems: Distributed System Goals, Types Of Distributed Systems, and Styles & Architecture Of Distributed Systems, Threads, Virtualization, Clients, Servers, Code Migration, and Communication in Distributed Systems
Distributed Systems & Synchronization: Clock Synchronization, Logical Clocks, Mutual Exclusion, Global Positioning Of Nodes, Data-Centric Consistency Models, Client-Centric Consistency Models, Consistency Protocols Unit IV: Fault Tolerance, Security: Introduction To Fault Tolerance, Process Resilience,, Reliable Client-server Communication, Reliable Group Communication, Distributed Commit, Recovery, Secure Channels, Access Control, Security Management Case Study: Over View Of UNIX, LINUX, Windows NT , Android And IOS Operating systems

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2015-2016

Department: M.Sc(CS) Paper: Operations Research Class: II M.Sc(CS) Semester: I

9. Overview of Operations Research, Types of OR Models , Phases of Operations Research– OR Techniques, Introduction to Linear Programming, Formulation of Linear Programming Problem, Graphical Solution; Graphical Sensitivity Analysis, 10. Standard Form of LPP, Basic Feasible Solutions , Unrestricted Variables, Simplex Algorithm , Artificial Variables, Big M Method, Two Phase Simplex Method, Degeneracy, Alternative Optimal, Unbounded Solutions, Infeasible Solutions, Primal And Dual Problems And Their Relations, Dual Simplex Method
11. Transportation Problem as LPP, Initial Solutions, North West Corner Rule, Lowest Cost Method, Vogels Approximation Method, Optimum Solutions of TPP, Degeneracy in Transportation, Transportation Algorithms , 12. Assignment Problem , Assignment Problem as LPP, Hungarian Method, Travelling Salesman Problem, Solutions Of TSP, Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems
a Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems 13. Network Representation of A Project, CPM and PERT , Critical Path Calculations, Time – Cost Optimizations, PERT Analysis and Probability Considerations, Resource Analysis in Network Scheduling.
14. Replacement Problems-Individual And Group Replacement Policy, Reliability & System Failure Problems, Inventory-Factors Effecting Inventory-EOQ, Inventory Problems With and Without Shortages, Inventory Problems With Price Breakups, Multi Item Deterministic Problems. Probabilistic Inventory Problems, swap-space management.
15. Non Linear Programming, Dynamic Programming, Recursive Nature of Dynamic Programming , Forward and Backward Recursion, Solutions of LPP As Dynamic Programming Technique, Integer Programming , Branch and Bound Algorithms, Cutting Plane Algorithm, 16. Introduction To Simulation, Simulation Models, Event Type Simulations, Generation of Random Numbers, Monte-Carle Simulation, Simulation Of Networks; Two Person Zero Sum Games , Mixed Strategy Games and Their Algorithms.

Dantuluri Narayana Raju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year: 2015-16

Department: M.Sc(CS) Paper: Embedded Systems Class: I M.Sc(CS)
Semester: II

5. Examples of Embedded systems and typical hardware.
6. Hardware Fundamentals for Software Engineer and Advanced Hardware Fundamentals
7. Interrupts and Survey of software architectures.
Introduction to RTOS and More Operating System Services Basic Design using RTOS
8. Embedded Software development tools and Debugging Techniques

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.Dist., A.P.

Syllabus for the Year: **2015-16**

Department: **M.Sc. (Computer Science)** Paper: **Computer Organization& Architecture** Class: **I Year** Semester: **I**

Unit-I : Basic Operational Concepts, Bus Structures, Software ,Performance, Multiprocessors and Multicomputers, Historical Perspective.
Machine Instructions and Programs, Memory locations and Addresses, Memory Operations, Instructions and Instruction sequencing, Addressing modes, Assembly language, Basic input and output operations, Stacks and queues, Subroutines, Additional instructions ,Example programs, Encoding of Machine **Unit-II:** Accessing I/O devices, Interrupts, Processor Examples ,Direct Memory Access, Interface circuits ,Standard I/O interfaces, Some basic concepts, Semiconductor RAM,ROM memories, speed,size and cost Cache Memories, Performance Considerations, Virtual Memories, Memory Management requirements, Secondary Storage
Some fundamental concepts, Execution of Complete Instruction ,Multiple Bus Organization, Hardwired and Micro programmed control. **Unit-III:** Input Devices, Output Devices, Serial Communication Links, Forms of Parallel Processing, Array Processors, The structure of Multiprocessor ,Interconnection networks, Memory organization in multiprocessors, Program parallelism and shared variables, Multicomputers, Basic logic functions, Synthysis of Logic functions.
Minimization of Logic, Synthesis with NANd and NOR gates, Practical implementation of Logic gates, Flip flops, Registers and shift registers, Counters, Decoders, Multiplexers, PLD, Sequential circuits **Unit-4:** Basic concepts, Data Hazards, Instruction Hazards, Influence on Instruction sets, Superscalar operation, Examples of Embedded Systems, Processor chips for Embedded applications, A simple Microcontroller, The IA-32 Pentium example.

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2016-2017

Department: MCA Paper: Artificial intelligence Class: II MCA Semester: I

Unit I: Introduction to Artificial Intelligence: Artificial Intelligence, AI Problems, AI Techniques, The Level of the Model, Criteria For Success. Defining the Problem as a State Space Search,Problem Characteristics , Production Systems, , Production System Characteristics **Search:** Issues in The Design of Search Programs, Un-Informed Search, BFS, DFS; Heuristic Search Techniques: Generate-And- Test, Hill Climbing, Best-First Search, A* Algorithm, Problem Reduction, AO*Algorithm, Constraint Satisfaction, Means-Ends Analysis
Unit II: Knowledge Representation: Procedural Vs Declarative Knowledge, Representations and Mappings, Approaches to Knowledge Representation, Issues in Knowledge Representation, Logic Programming Forward Vs Backward Reasoning, **Symbolic Logic:** Propositional Logic, First Order Predicate Logic: Representing Instance and is-a Relationships, Computable Functions and Predicates, Syntax & Semantics of FOPL, Normal Forms, Unification &Resolution, Representation Using Rules, Natural Deduction
Unit III: Structured Representations of Knowledge: Semantic Nets, Partitioned Semantic Nets, Frames, Conceptual Dependency, Conceptual Graphs, Scripts, CYC; Matching Techniques, Partial Matching, Fuzzy Matching Algorithms and RETE Matching Algorithms. **Reasoning under Uncertainty:** Introduction to Non-Monotonic Reasoning, Truth Maintenance Systems, Logics for Non-Monotonic Reasoning, Model and Temporal Logics; Statistical Reasoning: Bayes Theorem, Certainty Factors and Rule-Based Systems, Bayesian Probabilistic Inference, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic & Fuzzy Systems
Unit IV: Experts Systems: Overview of an Expert System, Structure of an Expert Systems, Different Types of Expert Systems- Rule Based, Model Based, Case Based and Hybrid Expert Systems, Knowledge Acquisition and Validation Techniques, Black Board Architecture, Knowledge Building System Tools, Expert System Shells, **Natural Language Processing:** Role of Knowledge in Language Understanding, Approaches Natural Language Understanding, Steps in The Natural Language Processing, Syntactic Processing and Augmented Transition Nets, Semantic Analysis, NLP Understanding Systems; Planning, Components of a Planning System, Goal Stack Planning, Hierarchical Planning, Reactive Systems

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.Dist., A.P.

Syllabus for the Year: **2016-17**

Department: **M.C.A.** Paper: **Computer Organization**

Class: **I Year** Semester: **I**

Unit-I: Digital Computers, Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuit, Flip-flops, Sequential Circuits, Integrated Circuits, Decoders, Multiplexers, Registers, Shift Registers, counters, Memory Unit.
Unit-II: Data Types, Complements, Fixed-point Representation, Floating point Representation, Register Transfer Language, Register Transfer, Bus and Memory Transfer, Arithmetic Micro Operations, Assembly language Instructions, 8085 Microprocessor Instruction Set Architecture. **Unit-III:** Instruction Codes, Computer Register, Computer Instructions
Timing and Control, Instruction Cycle, Memory reference Instructions, Input-Output , Interrupt, Introduction, General Register Organization, Stack Organization, Instruction formats, Addressing modes. **Unit-IV:** Peripherals Devices, I/O Interface, Asynchronous Data Transfer
Mode of Transfer, Direct memory access, Input – Output Processor(IOP), Memory Hierarchy, Main memory, Auxiliary Memory, Associate Memory, Cache Memory, Virtual Memory.

Dantuluri Narayana Raju College, P.G.Courses

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Bhimavaram, W.G.Dist., A.P.

Syllabus for the Year: **2016-17**

Department: **M.C.A.** Paper: **Formal Languages & Automata Theory**

Class: **I Year** Semester: **II**

Topics to be Covered
UNIT1: Basic Concepts of Finite State Systems, DFA&NFA, Finite Automata with ϵ-moves, Regular Expressions, Mealy and Moore Machines, Two-Way Finite Automate, Applications of FSM, Chomsky Hierarchy of Languages, Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem
UNIT II: Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, Closure properties of CFL's, Decision Algorithm for CFL, Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down Automata.
UNITIII: The Definition of Turing Machine, Design and Techniques for Construction of Turing Machines, Combining Turing Machines, Universal Turing Machines, The Halting Problem, Variants of Turing Machines, Restricted Turing Machines, Decidable & Undecidable Problems, Post Correspondence Problem
UNIT IV:The Prepositional Calculus : Introduction, Syntax , Truth-Assignments, Resolution, Syntax, Structures and Satisfiability – Equivalence, Un-solvability and NP-Completeness

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Bhimavaram, W.G.Dist.,A.P.

Syllabus for the Year: **2016-17**

Department: **M.C.A.** Paper: **Fundamentals of Microprocessors and Systems Programming** Class: **II Year** Semester: **IV**

Introduction to Microprocessors and Microcomputers, Internal Architecture and Functional/Signal Description of typical 8-bit µP.- 8085, 8086 and 8088, Addressing Modes Instruction Sets and Timing Diagrams. Assembly Language Programming Requirements, Programming Techniques: Looping, Counting, and Indexing, Counter and timing Delays, Stack and Subroutines, Code Conversion, BCD Arithmetic, 16-bit data Operations, Interrupts and Interrupt Service Routines
Logical Processing, Arithmetic processing, Time Delay Loops Procedures, Data tables, Modular programming, and Macros Introduction to Systems Programming, Introduction to Assembly Language Programming, Introduction to Instruction Formats, Data formats of IBM 360/370 - Role of Base Register, Index Register
Introduction to Assembler, databases used in assembler design, Design of Assembler - Single Pass & Double Pass, Introduction to Macros, various types of Macros, Design of Macro Processor – Single Pass & Double Pass.
Introduction to Loaders, functions of a loader, types of Loaders, databases used in Loaders, Design of Loaders - Absolute & DLL; Introduction to Software Tools, Text editors, Interpreters, Program Generators, Debug Monitors.

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Syllabus for the Year: **2016-17**

Department: **M.C.A.** Paper: **Object Oriented Software Engineering**

Class: **II Year** Semester: **IV**

UNIT I: Nature Of The Software, Types Of Software, Software Engineering Projects, Software Engineering Activities, Software Quality, Introduction To Object Orientation, Concepts Of Data Abstraction, Inheritance & Polymorphism, Domain Analysis, Problem Definition And Scope, Requirements Definition, Types Of Requirements, Techniques For Gathering And Analyzing Requirements, Requirement Documents, Reviewing, Managing Change In Requirements. Simple Chat Instant Messaging System, GPS Based Automobile Navigation System
UNIT II: Introduction To UML, Modelling Concepts, Types Of UML Diagrams With Examples, User-Centered Design, Characteristics Of Users, Use Case Diagram, Use Case Descriptions, The Basics Of User Interface Design, Usability Principles, User Interface, Essentials Of UML Class Diagrams, Advanced Features Of Class Diagrams, Interaction And Behavioral Diagrams.
UNIT III: The Process Of Design, Principles Leading To Good Design,Techniques For Making Good Design Decisions, Writing A Good Design Document., Pattern Introduction, Design Patterns, Software Architecture Contents Of An Architecture Model, Architectural Patterns. **UNIT IV:** Effective and Efficient Testing, Defects in Ordinary Algorithms, Numerical Algorithms, Timing and Co-ordination, Stress and Unusual Situations, Testing Strategies for Large Systems.
Introduction To Software Project Management,Activities Of Software Project Management,Structure Of Project Plan, Software Engineering Teams,Software Cost Estimation,Project Scheduling, Tracking And Monitoring, Waterfall Model, The Phased Released Model, The Spiral Model, Evolutionary Model, The Concurrent Engineering Model, Rational Unified Process.

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Syllabus for the Year:2016-2017

Department: MCA Paper: Computer Fundamentals and Programming in C

Class: I MCA Semester:I

Unit-I : Objective: Basics on Fundamentals of Computers, Basic techniques and Algorithms and solving various types of problems, The language used for writing programs in c **Unit-II** : **Introduction to C Programming**: C Character Set, Identifiers, Keywords, Variables, Constants, Type Conversion, Operators and Expressions, Operator Precedence and Associativity, Basic Input Output Types: Single Character and String, General; Formatted Input and Output, Running a Simple C Program Using gcc, tc++ Compilers, Increment and decrement operators, Bitwise and Comma Operators and other operators, Priority of operators and evaluate expressions, input and output statements, Revision of all the previous Topics.
Unit-III : **More About c:** Selection Using Simple if, if..else and switch, Iteration using while, do.. **Control** while and for Statements. Counter Controlled and Sentinel Controlled Repetition, Break and Continue, Unconditional goto, Conditional Operator, null Statement. Functions, Library functions, Functions Properties, user defined functions, functions programs, return statements, Return Properties, prototype declaration, Types of functions, Parameter passing options, call by value.
Unit-IV: Advanced Concepts of C: Pointers**,** Pointer programs, Call by reference, Recursion, Algorithms, writing algorithms, Algorithms for GCD, Swapping, recursion, Arrays, Searching, Linear Search, Binary search, Sorting, bubble Sort, Selection Sort, Insertion Sort, Arrays with functions, Two- dimensional arrays, Pointers and two dimensional arrays.
Unit-V: Additional in C: Preprocessor directives, Structures and unions, Strings and string Library functions, Storage classes, Dynamic memory allocation, Files, types, file handling functions, file handling function, command line arguments, Quick sort, merge sort and revision for all syllabus.

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Syllabus for the Year: 2016-2017

Department: M.C.A Paper: Cloud Computing

Class: V M.C.A Semester: I

UNIT-1 Cloud Computing Basics - Cloud Computing Overview, Applications, Intranets and the Cloud, First Movers in the Cloud. The Business Case for Going to the Cloud - Cloud Computing Services, Business Applications, Deleting Your Datacenter, Salesforce.com, Thomson Reuters.
UNIT-II Organization and Cloud Computing - When You Can Use Cloud Computing, Benefits, Limitations, Security Concerns, Regulatory Issues, Cloud Computing with the Titans - Google, EMC, NetApp, Microsoft, Amazon, Salesforce.com, IBMPartnerships.
UNIT-III Hardware and Infrastructure - Clients, Security, Network, Services. Accessing the Cloud - Platforms, Web Applications, Web APIs,Web Browsers. Cloud Storage - Overview, Cloud Storage Providers, Standards - Application, Client, Infrastructure, Service.
UNIT-IV Software as a Service - Overview, Driving Forces, Company Offerings, Industries Software plus Services - Overview, Mobile Device Integration, Providers, Microsoft Online. **UNIT-V** Developing Applications - Google, Microsoft, Intuit QuickBase, Cast Iron Cloud, Bungee Connect, Development, Troubleshooting, Application Management.
UNIT-VI Local Clouds and Thin Clients - Virtualization in Your Organization, Server Solutions, Thin Clients, Case Study: McNeilus Steel. **UNIT-VII** Migrating to the Cloud - Cloud Services for Individuals, Cloud Services Aimed at the Mid-Market, Enterprise-Class Cloud Offerings, Migration, Best Practices and the Future of Cloud Computing - Analyze Your Service, Best Practices, How Cloud Computing Might Evolve.

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Syllabus for the Year:2016-17

Department: M.C.A Paper: Computer Networks

Class:III M.C.A Semester: I

UNIT I **Introduction to Computer Networks:** Introduction, Network Hardware, Network Software, Reference Models, Data Communication Services & Network Examples, Internet Based Applications.
Data Communications: Transmission Media, Wireless Transmission, Multiplexing, Switching, Transmission in ISDN, Broad Band ISDN, ATM Networks **UNIT II** Data Link Control, Error Detection & Correction, Sliding Window Protocols, LANs & MANs: IEEE Standards for LANs & MANs-IEEE Standards 802.2, 802.3, 802.4, 802.5, 802.6, High Speed LANs.
Design Issues in Networks: Routing Algorithms, Congestion Control Algorithms, Network Layer in the Internet, IP Protocol, IP Address, Subnets, and Internetworking. **UNIT III** **Internet Transport Protocols:** Transport Service, Elements of Transport Protocols, TCP and UDP Protocols, Quality of Service Model, Best Effort Model, Network Performance Issues.
Over View of DNS, SNMP, Electronic Mail, FTP, TFTP, BOOTP, HTTP Protocols, World Wide Web, Firewalls. **UNIT IV** **Network Devices:** Over View of Repeaters, Bridges, Routers, Gateways, Multiprotocol Routers, Brouters, Hubs, Switches, Modems, Channel Service Unit CSU, Data Service
Units DSU, NIC, Wireless Access Points, Transceivers, Firewalls, Proxies. Overview of Cellular Networks, Ad-hoc Networks, Mobile Ad-hoc Networks, Sensor Networks

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Syllabus for the Year: 2016-17

Department: MCA Paper: Design and Analysis of Algorithms

Class: II-MCA Semester: I

UNIT-1: Introduction: Fundamentals of algorithmic problem solving, Important problem types. Fundamental data structures. Fundamentals of analysis of algorithms and efficiency: Analysis frame work, Asymptotic Notations and Basic Efficiency classes, Mathematical Analysis of Non-recursive Algorithms, Mathematical analysis of Recursive algorithms, Empirical Analysis of Algorithms, Algorithm Visualization, **Brute Force:** Selection Sort and Bubble sort
UNIT II Divide-and-Conquer: Merge Sort, Quick sort, Binary Search, Binary Tree Traversals and Related Properties. **Decrease-and-Conquer:** Insertion Sort, Depth-First Search and Breadth-First Search- Topological Sorting, Decrease-by-a-Constant-Factor Algorithms, Variable-Size-Decrease Algorithms. **Transform-and-Conquer:**Presorting, Balanced Search Trees, Heaps and Heap sort, Problem Reduction
. **UNIT III Space and Time Tradeoffs:** Sorting by Counting, Hashing, B-Trees. **Dynamic Programming:**Warshall's and Floyd's Algorithm, Optimal Binary Search Trees, The Knapsack Problem and Memory Functions. **Greedy Technique:** Prim's Algorithm, Kruskal's Algorithm, Dijkstra's Algorithm, Huffman Trees
UNIT IV Limitations of Algorithm Power: Lower-Bound Arguments, Decision Trees, P, NP and NPcomplete problems. **Coping with the Limitations of Algorithms Power:** Backtracking, Branch-and-Bound, Approximation Algorithms for NP-hard Problems.

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Syllabus for the Year:2016-17

Department: M.C.A Paper: Data Base Mangement Systems

Class: I M.C.A Semester: II

UNIT I

Database and Database Users: Data models, schemas, and instances, three-schemas architecture and data independence, database languages and interfaces, the database system environment, Centralized and client/server architectures for DBMSs, Classification of database management system.

Data Modeling Using the Entity-Relationship Model: Using High—Level Conceptual data model, Entity types, entity sets Attributes and keys,

Relationships types, relationship sets, roles and structural constraints, Weak Entity types, ER diagrams Meaning conventions and design issues, Enhance Entity Relationship model,

Relational data model and relational database constraints: Relational model constraints and relational schemas, update operations. **Relational Algebra and Relational Calculus**: Unary Relational operations, Relational Algebra operations, Binary Relational operation, Additional Relational operation, Examples of Queries in Relational Algebra, Domain Relational Calculus.

UNIT II

Relational database design by ER and EER Relational Mapping: Relational database design using ER to Relational Mapping, Mapping EER Model Construct to Relations,

Schema Definition, Basic Constraints and Queries: SQL Data definition, Specifying basic constraints in SQl, Schema change Statements in SQL, Basic queries in SQL, More complex SQL queries, INSERT DELETE UPDATE queries in SQL, Views in SQL, Data base stored Procedures,

UNIT III

Relational Database Design: Informal design Guide lines for Relation Schema, Functional Dependences, Normal forms based on Primary keys, General definitions of Second and Third Normal form, BOYCE-CODE Normal form, Algorithm for Relational database schema design, Multi-valued dependencies and fourth Normal forms,

File Organization and Indexes: Introduction, Secondary Storage Devices, Buffering Blocks, Placing file records on disk, Operations on Files, Hashing Techniques, Parallelizing Disk Access using RAID Technology, Indexing Structures for files.

UNIT IV

Algorithm for query processing and Optimization: Translating SQL Queries into Relational Algebra, Algorithms for SELECT and JOIN Operations, Algorithms for PROJECT and SET Operations,

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Process, Transaction and System Concepts, Characterizing Schedules, Concurrency Control Techniques, Database Recovery Concepts, Recovery Techniques.

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Syllabus for the Year:2016-17

Department: M.C.A Paper: Discrete Mathematical Structures
Class: I M.C.A Semester: I

Unit I Introduction: Logic-Prepositional Equivalences-Truth tables-Totalogies-Predicates and Quantifiers-Sets-Operations on sets-Sequences and Summations -Growth functions - relations and their properties- n-ary relations and their applications Representation of relations-Closures of relations-Equivalence relations-Partial Orderings.
Unit II Counting Techniques: Basics of Counting- Pigeonhole Principle-Combinations and Permutations-Generalized Per mutations ge and Combinations **Recurrence relations:** Solving Recurrence Relations-Divide and Conquer relations- Inclusion and Exclusion-Applications of Inclusion-Exclusion.
Unit III Graphs: Introduction to Graphs-Terminology-Relations and Directed Graphs - Representations of Graphs- Isomorphism-Connectivity- Euler and Hamiltonian Paths - Shortest Path problems- Planar Graphs - Graph Colouring-
Trees: Introduction to trees- Applications of trees- Traversals-Trees and sorting Spanning Trees-Minimum SpanningTrees.
UnitIV: BooleanAlgebra and Models of Computation: Boolean Functions RepresentingBoolean Functions -Logic Gates-Minimizations of Circuits-Languages and Grammars- Finite State Machines with and with no output.

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Syllabus for the Year: 2016-2017

Department: M.C.A Paper: Data Structures

Class: I M.C.A Semester: I

Unit I The Stack: Primitive operations – stack as an ADT–Implementing the Stack operations using Arrays and Structures, Queue as Abstract Data Type–Sequential Representation, Types of Queues – Operations – Implementation using Arrays and Structures, Linked List: Operations, Implementation of Stacks, Queues and priority Queues, insertion, deletion and concatenation operations on circular lists, Stacks and Queues as circular lists, doubly linked lists-applications.
Unit II Trees: Binary Trees Operations and Applications. **Binary Tree Representation:** Node Representation–Implicit array Representation–Choice of Representation–Binary Tree Traversal–Threaded Binary Trees and their Traversal- Huffman Algorithm-Representing Lists as Binary Trees–Trees and their Applications.
Binary Search Tree: Insertion in to a Binary Search Tree–Deleting from a Binary Search Tree–Efficiency of Binary Search Tree operation **Unit III Sorting:** General Background-Exchange sorts-Selection and Tree Sorting-Insertion sorts Merge and Radix Sort
Searching: Basic Search Techniques- Tree Searching-**General Search Trees:**B Trees and B+ Trees.
Unit IV Hashing: Open Addressing-deleting items-Binary Tree hashing-Dynamic Hashing and Extendible Hashing-Choosing a hash function **Graphs**: Graphs-Linked Representation of Graphs-**Graph Traversals:** BFS and DFS.

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Syllabus for the Year: 2016-2017

Department: MCA paper: E-Commerce Class: V MCA Semester: I

Unit-I*:* Introduction: Electronic Commerce-Frame Work, Anatomy of E-Commerce Applications, E-Commerce Consumer Applications, E-Commerce Organization Applications. Consumer Oriented Electronic Commerce - Mercantile Process Models.
Unit-II: Electronic Payment Systems – Types of Electronic Payment Systems, Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment Systems, Designing Electronic Payment Systems Unit-III: Electronic Data Inter Change, Inter Organizational Commerce - EDI, EDI Implementation, Value Added Networks.
Unit-IV: Intra Organizational Commerce, Macro Forces And Internal Commerce, Work Flow Automation and Coordination, Customization And Internal Commerce, Supply Chain Management. **Unit-V:** Business Cases for Document Library, Digital Document Types, Corporate Data Ware-Houses.
Unit-VI: Advertising And Marketing: Information Based Marketing, Advertising On Internet, Online Marketing Process, Market Research. Consumer Search and Resource Discovery, Information Search and Retrieval, Commerce Catalogues, Information Filtering.
Unit-VII: Multimedia-Key Multimedia Concepts, Digital Video and Electronic Commerce, Desktop Video Processing, Desktop Video Conferencing.

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Syllabus for the Year: 2016-17

Department: M.C.A Paper: Embedded Systems

Class: II M.C.A Semester: II

9. Examples of Embedded systems and typical hardware.
10. Hardware Fundamentals for Software Engineer and Advanced Hardware Fundamentals
11. Interrupts and Survey of software architectures.
Introduction to RTOS and More Operating System Services Basic Design using RTOS
12. Embedded Software development tools and Debugging Techniques

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Syllabus for the Year: 2016-17

Department: MCA Paper: Information Systems Control&Audit

Class: IV-MCA Semester: II

1. Introduction: Overview Of Information Systems Auditing, Conducting an Information Systems audit
2. Management Control Framework: Top Management Controls, Systems Development Management Controls
3. Application Control Framework: Boundary Controls, Input Controls, Communication Controls, Processing Controls, Database Controls, Output Controls
4. Generalized Audit Software, Code review, Test Data And Code Comparison, Concurrent auditing Techniques, Performance Measurement Tools
5. Overview Of The Effectiveness of System Evaluation Process, Evidence, Evaluating System Effectiveness, Efficiency
6. Utility Software, Expert Systems, Measures of Asset Safeguarding and Data Integrity,
7. Information System Audit Management: Managing the Information System Audit Functions

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Syllabus for the Year:2016-17

Department: M.C.A Paper: Information Systems & Organizational Behaviour

Class:I M.C.A Semester: II

UNIT I **Organization Structure**: Features of Good Organization Structures, Designing of Organization Structure
Types of Organization Structures- Functional, Product, Geographic and Matrix Organization Structures **UNIT II** **Motivation:** Nature and importance of motivation, Theories of motivation – Maslow's, Herzberg's and Mc Gregor's X and Y Theories of Motivation.
Leadership: Meaning and definition, Importance of Leadership, Leadership styles, Communication: Process of Communication, Importance, Forms of Communication and Barriers in Communication. **UNIT III** **Group Dynamics**: Types of Groups, Stages of Group Development, Group Behavior and Group Performance Factors.
Organizational Conflicts: Reasons for Conflicts, Consequences of Conflicts in Organizations, Types of Conflict, Strategies for Managing Conflicts, Organizational Climate and Culture. **UNIT IV** **Management Information System**: Nature and Scope, Characteristics and Functions. Classification of MIS - Transaction Processing System
Management Information System, Decision Support System, Executive Support System, Office Automation System and Business Expert System.

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Syllabus for the Year:2016-17

Department: M.C.A Paper: Network Security And Cryptography Class: II M.C.A Semester: II

1. Introduction :Confidentiality -- Data Integrity -- Authentication -- Non-Repudiation. -- Overview of Issues involved. 2. Classical Encryption Techniques: Monoalphabetic, Substitution Methods, Polyalphabetic Substation Methods -- Permutation Methods -- Cryptanalysis of these Methods.
3. Modern Encryption Techniques: Simplified DES -- DES -- Triple DES -- Block Cipher , Design Principles -- Block Cipher Modes of Operation. IDEA -- Security Issues Involved with these methods. 4. Confidentiality Using Conventional Encryption : Placement of Encryption -- Traffic Confidentiality -- Key Distribution -- Random Number , Generation.
5. Introduction to Number Theory: (Basics Pertaining to Security Related Algorithms). i. 6. Public Key Cryptography : Principles -- RSA Algorithm. Message Authentication and Hash Functions -- Hash an MAC Algorithms. Digi Signatures and Authentication Protocols -- Authentication Applications
7. Basic Overview of :Electronic Mail Security -- IP Security -- WEB Security
8. System Security : Intruders, Viruses and Worms -- Firewalls

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Syllabus for the Year:2016-2017

Department: M.C.A Paper: Operations Research Class: III M.C.A Semester: I

17. Overview of Operations Research, Types of OR Models , Phases of Operations Research– OR Techniques, Introduction to Linear Programming, Formulation of Linear Programming Problem, Graphical Solution; Graphical Sensitivity Analysis,

18. Standard Form of LPP, Basic Feasible Solutions , Unrestricted Variables, Simplex Algorithm , Artificial Variables, Big M Method, Two Phase Simplex Method, Degeneracy, Alternative Optimal, Unbounded Solutions, Infeasible Solutions, Primal And Dual Problems And Their Relations, Dual Simplex Method

19. Transportation Problem as LPP, Initial Solutions, North West Corner Rule, Lowest Cost Method, Vogels Approximation Method, Optimum Solutions of TPP, Degeneracy in Transportation, Transportation Algorithms ,

20. Assignment Problem , Assignment Problem as LPP, Hungarian Method, Travelling Salesman Problem, Solutions Of TSP, Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems

a Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems

21. Network Representation of A Project, CPM and PERT , Critical Path Calculations, Time – Cost Optimizations, PERT Analysis and Probability Considerations, Resource Analysis in Network Scheduling.

22. Replacement Problems-Individual And Group Replacement Policy, Reliability & System Failure Problems, Inventory-Factors Effecting Inventory-EOQ, Inventory Problems With and Without Shortages, Inventory Problems With Price Breakups, Multi Item Deterministic Problems. Probabilistic Inventory Problems, swap-space management.

23. Non Linear Programming, Dynamic Programming, Recursive Nature of Dynamic Programming , Forward and Backward Recursion, Solutions of LPP As Dynamic Programming Technique, Integer Programming , Branch and Bound Algorithms, Cutting Plane Algorithm,

24. Introduction To Simulation, Simulation Models, Event Type Simulations, Generation of Random Numbers, Monte-Carle Simulation, Simulation Of Networks; Two Person Zero Sum Games , Mixed Strategy Games and Their Algorithms.

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Syllabus for the Year:2016-2017

Department: M.C.A Paper: Operating Systems Class: III M.C.A Semester: I

Introduction: Definition of Operating System, Types Of Operating Systems, Operating System Structures, Operating-System Services. System Calls, Virtual Machines, Operating System Design and Implementation, **Process Management:** Process Concepts, Operations on Processes, Cooperating Processes, Threads, Inter Process Communication, Process Scheduling, Scheduling Algorithms, Multiple -Processor Scheduling. Thread Scheduling.
UNIT II Process Synchronization: The Critical Section Problem, Semaphores, And Classical Problems of Synchronization, Critical Regions, Monitors. **Synchronization examples. Deadlocks:** Principles of Deadlocks, System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Avoidance, Detection & Recovery from Deadlocks.
UNIT III Memory Management: Logical Versus Physical Address, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms, Thrashing
File System Implementation: Concept of a file, Access Methods, Directory Structure, File System Structure, Allocation Methods, Free Space Management, Directory Management, Device Drivers. **Mass-storage structure:** overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management.
UNIT IV Protection: Goals and Principles of Protection, Access matrix implementation, Access control, Revocation of access rights. Case study: LINUX, Windows Operating Systems.

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Syllabus for the Year: 2016-17

Department: MCA Paper: Wireless and Adhoc Networks Class: III-MCA Semester: I

UNIT I Introduction: Introduction to Wireless Networks, Various Generations of Wireless Networks, Virtual Private Networks- Wireless Data Services, Common Channel Signaling, Various Networks for Connecting to the Internet,
Blue tooth Technology, Wifi-WiMax- Radio Propagation mechanism, Path loss Modeling and Signal Coverage **Wireless Local Area Networks:** Introduction-WLAN topologies-IEEE 802.11 Standards, MAC Protocols,Comparision of 802.11 a,b,g and n Standards, HIPER LAN , ZigBee 802.15.4, Wireless Local Loop.
UNIT II Wireless Adhoc Networks: Basics of Wireless Networks, Infrastructured Versus Infrastructureless Networks – Properties of Wireless, Ad hoc Networks, Types of Ad hoc Networks, Challenges in Ad hoc Networks –Applications of Wireless Ad Hoc Networks **Routing Protcols for Ad hoc Networks:** Introduction-Proactive Routing Protocols- Reactive Routing protocols-Hybrid Routing Protocols-QoS Metrics-Energy impact issues in Routing.
UNIT III Mobile Ad hoc Networks (MANETs): Overview, Properties of A MANET, Spectrum of MANET Applications, Routing and Various Routing Algorithms. **Other Wireless Technologies:** Introduction, IEEE 802.15.4 and Zigbee, General Architecture, Physical Layer, MAC layer, Zigbee, WiMAX and IEEE 802.16, Layers and Architecture, Physical Layer, OFDM Physical layer.
UNIT IV Security in Ad hoc Networks: Introduction- Security Attacks, Intrusion Detection System, Intrusion Prevention system, Intrusion Response system, Wired Equivalent Privacy (WEP) -A Security Protocol for Wireless Local Area Networks (WLANs), Security in MANETs.

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Syllabus for the Year:2016-17

Department: M.C.A Paper: Computer Networks

Class:III M.C.A Semester: I

1. Introduction to HTML, Core Elements , Links and Addressing, Images , Text , Colors and Background, Lists, Tables and Layouts , Frames, Forms , Cascading Style Sheets. **2.** Introduction to Java Scripts, Elements of Objects in Java Script, Dynamic HTML with Java Script **3.**
4. Document type definition, XML Syntax, XML Schemas, Document Object model, Presenting XML, Using XML Processors **5.** JDBC OBJECTS- JDBC Driver Types, JDBC Packages, Database Connection, Statement Objects, Result Set. **6.**
7. JDBC and Embedded SQL - Tables, Inserting Data into Tables , Selecting Data from a Table, Meta Data ,Updating Table , Deleting data from Table , Joining Table , Calculating Data, Grouping and Ordering Data , Sub quires ,View.
8. Introduction to Servlet, Servlet Life Cycles, Servlet Basics, Tomcat Web Server, Configuring Apache Tomcat, Handling Client Request and Response, Handling Cookies, Session Tracking
9. Introduction to JSP, Benefits of JSP, Basic Syntax, Invoking Java code with JSP Scripting Elements, JSP Page Directive, Including Files in JSP Pages, **10.** Introduction to Java Beans, Using JAVA Bean Components in JSP Documents, MVC Architecture.

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Syllabus for the Year:2017-18

Department: M.C.A Paper: Advanced Data Structure Class: II M.C.A
Semester: II

UNIT-I **Skip Lists and Hashing:** Dictionaries, Linear List Representation, Skip List Representation-The Ideal Case, Insertion and Deletions, Assigning, The Class SkipNode and SkipList, Complexity, Hash Table Representation-Ideal hashing, Hashing with Linear open addressing, hashing with chains, An application-Text Compression-LZW Compression, Implementation of LZW Compression, LZW Decompression, Implementation of LZW Decompression.
Lists, Stacks, Queues: Implementation of the Stack ADT (Abstract Data Type) and the Queue ADT. **Trees:** The Search Tree ADT- Biary Search Trees, AVL Trees, Splay Trees, Red Black Trees, B-Trees. **UNIT-II** **Priority Queues:** Introduction, Linked Lists, Heaps-Definitions, Insertion into a Max Heap, Deletion from a Max Heap, Applications-Heap Sort, Machine Scheduling, Huffman Codes.
Sorting algorithms: General Background, Efficiency considerations, O Notation, Efficiency of Sorting, Exchange sorts: Bubble sort, quick sort, Insertion sorts: Simple insertion, Shell Sort, Address Calculation Sort, Merge and Radix sorts **The Disjoint Set Class:** Equivalence Relations, the Dynamic Equivalence Problem, Basic Data Structure, Smart Union Algorithms, Path Compression, Worst Case for Union-by-Rank and Path Compression, an Application.
UNIT-III **Graph Algorithms:** Definition, Topological Sort, Shortest-Path Algorithms, Network Flow Problems, Minimum Spanning Tree, Applications of Depth-First Search, Introduction to NPCompleteness. **Algorithm Design Techniques:** Greedy Algorithms, Divide and Conquer, Dynamic Programming, Randomized Algorithms, Backtracking Algorithms
UNIT-IV **Amortized Analysis:** An Unrelated Puzzle, Binomial Queues, Skew Heaps, Fibonacci Heaps, Splay Trees. **Advance Data Structures and Implementation:** Top-Down splay Trees, Red-Black Trees, Deterministic Skip Lists, AA-Trees, Treaps, k-d Trees, Pairing Heaps.

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Syllabus for the Year:2017-2018

Department: MCA Paper: Artificial intelligence Class: II MCA Semester: I

Unit I: Introduction to Artificial Intelligence: Artificial Intelligence, AI Problems, AI Techniques, The Level of the Model, Criteria For Success. Defining the Problem as a State Space Search,Problem Characteristics , Production Systems, , Production System Characteristics **Search:** Issues in The Design of Search Programs, Un-Informed Search, BFS, DFS; Heuristic Search Techniques: Generate-And- Test, Hill Climbing, Best-First Search, A* Algorithm, Problem Reduction, AO*Algorithm, Constraint Satisfaction, Means-Ends Analysis
Unit II: Knowledge Representation: Procedural Vs Declarative Knowledge, Representations and Mappings, Approaches to Knowledge Representation, Issues in Knowledge Representation, Logic Programming Forward Vs Backward Reasoning, **Symbolic Logic:** Propositional Logic, First Order Predicate Logic: Representing Instance and is-a Relationships, Computable Functions and Predicates, Syntax & Semantics of FOPL, Normal Forms, Unification &Resolution, Representation Using Rules, Natural Deduction
Unit III: Structured Representations of Knowledge: Semantic Nets, Partitioned Semantic Nets, Frames, Conceptual Dependency, Conceptual Graphs, Scripts, CYC; Matching Techniques, Partial Matching, Fuzzy Matching Algorithms and RETE Matching Algorithms. **Reasoning under Uncertainty:** Introduction to Non-Monotonic Reasoning, Truth Maintenance Systems, Logics for Non-Monotonic Reasoning, Model and Temporal Logics; Statistical Reasoning: Bayes Theorem, Certainty Factors and Rule-Based Systems, Bayesian Probabilistic Inference, Bayesian Networks, Dempster-Shafer Theory, Fuzzy Logic & Fuzzy Systems
Unit IV: Experts Systems: Overview of an Expert System, Structure of an Expert Systems, Different Types of Expert Systems- Rule Based, Model Based, Case Based and Hybrid Expert Systems, Knowledge Acquisition and Validation Techniques, Black Board Architecture, Knowledge Building System Tools, Expert System Shells, **Natural Language Processing:** Role of Knowledge in Language Understanding, Approaches Natural Language Understanding, Steps in The Natural Language Processing, Syntactic Processing and Augmented Transition Nets, Semantic Analysis, NLP Understanding Systems; Planning, Components of a Planning System, Goal Stack Planning, Hierarchical Planning, Reactive Systems

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Syllabus for the Year: **2017-18**

Department: **M.C.A.** Paper: **Computer Organization**

Class: **I Year** Semester: **I**

Unit-I: Digital Computers, Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuit, Flip-flops, Sequential Circuits, Integrated Circuits, Decoders, Multiplexers, Registers, Shift Registers, counters, Memory Unit.
Unit-II: Data Types, Complements, Fixed-point Representation, Floating point Representation, Register Transfer Language, Register Transfer, Bus and Memory Transfer, Arithmetic Micro Operations, Assembly language Instructions, 8085 Microprocessor Instruction Set Architecture. **Unit-III:** Instruction Codes, Computer Register, Computer Instructions
Timing and Control, Instruction Cycle, Memory reference Instructions, Input-Output , Interrupt, Introduction, General Register Organization, Stack Organization, Instruction formats, Addressing modes. **Unit-IV:** Peripherals Devices, I/O Interface, Asynchronous Data Transfer
Mode of Transfer, Direct memory access, Input – Output Processor(IOP), Memory Hierarchy, Main memory, Auxiliary Memory, Associate Memory, Cache Memory, Virtual Memory.

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Syllabusfor the Year: **2017-18**

Department: **M.C.A.** Paper: **Formal Languages & Automata Theory**

Class: **I Year** Semester: **II**

UNIT1: Basic Concepts of Finite State Systems, DFA&NFA, Finite Automata with ϵ-moves, Regular Expressions, Mealy and Moore Machines, Two-Way Finite Automate, Applications of FSM, Chomsky Hierarchy of Languages, Basic Definitions of Formal Languages and Grammars, Regular Sets and Regular Grammars, Closure Properties of Regular Sets, Pumping Lemma for Regular Sets, Decision Algorithm for Regular Sets, Myhill-Nerode Theorem
UNIT II: Context Free Grammars and Languages, Derivation Trees, Simplification of Context Free Grammars, Normal Forms, Pumping Lemma for CFL, Closure properties of CFL's, Decision Algorithm for CFL, Push down Automata: Informal Description, Definitions, Push-Down Automata and Context free Languages, Parsing and Push-Down Automata.
UNITIII: The Definition of Turing Machine,Design and Techniques for Construction of Turing Machines,Combining Turing Machines,Universal Turing Machines, The Halting Problem, Variants of Turing Machines, Restricted Turing Machines, Decidable & Undecidable Problems, Post Correspondence Problem
UNIT IV:The Prepositional Calculus : Introduction, Syntax , Truth-Assignments, Resolution, Syntax, Structures and Satisfiability – Equivalence, Un-solvability and NP-Completeness

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Syllabus for the Year: **2018-19**

Department: **M.C.A.** Paper: **Object Oriented Software Engineering**

Class: **II Year** Semester: **IV**

UNIT I: Nature Of The Software, Types Of Software, Software Engineering Projects, Software Engineering Activities, Software Quality, Introduction To Object Orientation, Concepts Of Data Abstraction, Inheritance & Polymorphism, Domain Analysis, Problem Definition And Scope, Requirements Definition, Types Of Requirements, Techniques For Gathering And Analyzing Requirements, Requirement Documents, Reviewing, Managing Change In Requirements. Simple Chat Instant Messaging System, GPS Based Automobile Navigation System
UNIT II: Introduction To UML, Modelling Concepts, Types Of UML Diagrams With Examples, User-Centered Design, Characteristics Of Users, Use Case Diagram, Use Case Descriptions, The Basics Of User Interface Design, Usability Principles, User Interface, Essentials Of UML Class Diagrams, Advanced Features Of Class Diagrams, Interaction And Behavioral Diagrams.
UNIT III: The Process Of Design, Principles Leading To Good Design,Techniques For Making Good Design Decisions, Writing A Good Design Document., Pattern Introduction, Design Patterns, Software Architecture Contents Of An Architecture Model, Architectural Patterns. **UNIT IV:** Effective and Efficient Testing, Defects in Ordinary Algorithms, Numerical Algorithms, Timing and Co-ordination, Stress and Unusual Situations, Testing Strategies for Large Systems.
Introduction To Software Project Management,Activities Of Software Project Management,Structure Of Project Plan, Software Engineering Teams,Software Cost Estimation,Project Scheduling, Tracking And Monitoring, Waterfall Model, The Phased Released Model, The Spiral Model, Evolutionary Model, The Concurrent Engineering Model, Rational Unified Process.

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Syllabusfor the Year: 2017-2018

Department: M.C.A Paper: Big Data Analysis

Class: V M.C.A Semester: I

	Unit-1: Introduction:, Velocity, Variety, Veracity; Drivers for Big Data, Sophisticated Consumers, Automation, Monetization, Big Data Analytics Applications: Social Media Command Center, Product Knowledge Hub, Infrastructure and Operations Studies, Product Selection, Design and Engineering, Location-Based Services, Online Advertising, Risk Management
	Unit-II: Architecture Components: Massively Parallel Processing (MPP) Platforms, Unstructured Data Analytics and Reporting: Search and Count, Context-Sensitive and Domain-Specific Searches, Categories and Ontology, Qualitative Comparisons, Data Privacy Protection, Real-Time Adaptive Analytics and Decision Engines **Unit-III: Advanced Analytics Platform:** Real-Time Architecture for Conversations, Orchestration and Synthesis Using Analytics Engines, Entity Resolution, Model Management, .Discovery Using Data at Rest, Integration Strategies
	Unit-IV: Implementation of Big Data Analytics: Revolutionary, Evolutionary, or Hybrid, Big Data Governance, Integrating Big Data with MDM, Evolving Maturity Levels **Unit-V: Map-Reduce and the New Software Stack**: Distributed File Systems .Physical Organization of Compute Nodes, Large-Scale File-System Organization, Map-Reduce features: Map Tasks, Grouping by Key, Reduce Tasks, Combiners, Map-Reduce Execution, Coping With Node Failures, Algorithms Using Map-Reduce for Matrix multiplication, Relational Algebra operations, Workflow Systems, Recursive Extensions to Map-Reduce.
	Unit-VI: Communication Cost Models, Complexity Theory for Map-Reduce, Reducer Size and Replication Rate, Graph Model and Mapping Schemas, Lower Bounds on Replication Rate
	Unit-VII: Mining Data Streams: Stream Data Mode l and Management Stream Source, Stream Queries, and issues, Sampling Data in a Stream , Filtering Streams, Counting Distinct Elements in a Stream, Estimating Moments, Counting Ones in a Window, Decaying Windows **Unit-VIII: Link Analysis**: PageRanking in web search engines, Efficient Computation of PageRank using Map-Reduce and other approaches, Topic-Sensitive PageRank , Link Spam, Hubs and Authorities

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Syllabus for the Year:2017-2018

Department: MCA Paper: Computer Fundamentals and Programming in C
Class: I MCA Semester:I

Unit-I : Objective: Basics on Fundamentals of Computers, Basic techniques and Algorithms and solving various types of problems, The language used for writing programs in c **Unit-II** : **Introduction to C Programming**: C Character Set, Identifiers, Keywords, Variables, Constants, Type Conversion, Operators and Expressions, Operator Precedence and Associativity, Basic Input Output Types: Single Character and String, General; Formatted Input and Output, Running a Simple C Program Using gcc, tc++ Compilers, Increment and decrement operators, Bitwise and Comma Operators and other operators, Priority of operators and evaluate expressions, input and output statements, Revision of all the previous Topics.
Unit-III : **More About c:** Selection Using Simple if, if..else and switch, Iteration using while, do.. **Control** while and for Statements. Counter Controlled and Sentinel Controlled Repetition, Break and Continue, Unconditional goto, Conditional Operator, null Statement. Functions, Library functions, Functions Properties, user defined functions, functions programs, return statements, Return Properties, prototype declaration, Types of functions, Parameter passing options, call by value.
Unit-IV: Advanced Concepts of C: Pointers**,** Pointer programs, Call by reference, Recursion, Algorithms, writing algorithms, Algorithms for GCD, Swapping, recursion, Arrays, Searching, Linear Search, Binary search, Sorting, bubble Sort, Selection Sort, Insertion Sort, Arrays with functions, Two- dimensional arrays, Pointers and two dimensional arrays.
Unit-V: Additional in C: Preprocessor directives, Structures and unions, Strings and string Library functions, Storage classes, Dynamic memory allocation, Files, types, file handling functions, file handling function, command line arguments, Quick sort, merge sort and revision for all syllabus.

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Syllabus for the Year: 2017-2018

Department: M.C.A Paper: Cloud Computing

Class: V M.C.A Semester: I

UNIT-1 Cloud Computing Basics - Cloud Computing Overview, Applications, Intranets and the Cloud, First Movers in the Cloud. The Business Case for Going to the Cloud - Cloud Computing Services, Business Applications, Deleting Your Datacenter, Salesforce.com, Thomson Reuters
UNIT-II Organization and Cloud Computing - When You Can Use Cloud Computing, Benefits, Limitations, Security Concerns, Regulatory Issues, Cloud Computing with the Titans - Google, EMC, NetApp, Microsoft, Amazon, Salesforce.com, IBMPartnerships.
UNIT-III Hardware and Infrastructure - Clients, Security, Network, Services. Accessing the Cloud - Platforms, Web Applications, Web APIs,Web Browsers. Cloud Storage - Overview, Cloud Storage Providers, Standards - Application, Client, Infrastructure, Service.
UNIT-IV Software as a Service - Overview, Driving Forces, Company Offerings, Industries Software plus Services - Overview, Mobile Device Integration, Providers, Microsoft Online. **UNIT-V** Developing Applications - Google, Microsoft, Intuit QuickBase, Cast Iron Cloud, Bungee Connect, Development, Troubleshooting, Application Management.
UNIT-VI Local Clouds and Thin Clients - Virtualization in Your Organization, Server Solutions, Thin Clients, Case Study: McNeilus Steel. **UNIT-VII** Migrating to the Cloud - Cloud Services for Individuals, Cloud Services Aimed at the Mid-Market, Enterprise-Class Cloud Offerings, Migration, Best Practices and the Future of Cloud Computing - Analyze Your Service, Best Practices, How Cloud Computing Might Evolve.

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Syllabusfor the Year: 2017-18

Department: MCA Paper: Design and Analysis of Algorithms

Class: II-MCA Semester: I

UNIT-1: Introduction: Fundamentals of algorithmic problem solving, Important problem types. Fundamental data structures. Fundamentals of analysis of algorithms and efficiency: Analysis frame work, Asymptotic Notations and Basic Efficiency classes, Mathematical Analysis of Non-recursive Algorithms, Mathematical analysis of Recursive algorithms, Empirical Analysis of Algorithms, Algorithm Visualization, **Brute Force:** Selection Sort and Bubble sort
UNIT II Divide-and-Conquer: Merge Sort, Quick sort, Binary Search, Binary Tree Traversals and Related Properties. **Decrease-and-Conquer:** Insertion Sort, Depth-First Search and Breadth-First Search- Topological Sorting, Decrease-by-a-Constant-Factor Algorithms, Variable-Size-Decrease Algorithms. **Transform-and-Conquer:**Presorting, Balanced Search Trees, Heaps and Heap sort, Problem Reduction.
UNIT III Space and Time Tradeoffs: Sorting by Counting, Hashing, B-Trees. **Dynamic Programming:**Warshall's and Floyd's Algorithm, Optimal Binary Search Trees, The Knapsack Problem and Memory Functions. **Greedy Technique:** Prim's Algorithm, Kruskal's Algorithm, Dijkstra's Algorithm, Huffman Trees
UNIT IV Limitations of Algorithm Power: Lower-Bound Arguments, Decision Trees, P, NP and NPcomplete problems. **Coping with the Limitations of Algorithms Power:** Backtracking, Branch-and-Bound, Approximation Algorithms for NP-hard Problems.

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Syllabusfor the Year:2017-18

Department: M.C.A Paper: Data Base Mangement Systems Class: I M.C.A Semester: II

UNIT I

Database and Database Users: Data models, schemas, and instances, three-schemas architecture and data independence, database languages and interfaces, the database system environment, Centralized and client/server architectures for DBMSs, Classification of database management system.

Data Modeling Using the Entity-Relationship Model: Using High—Level Conceptual data model, Entity types, entity sets Attributes and keys,

Relationships types, relationship sets, roles and structural constraints, Weak Entity types, ER diagrams Meaning conventions and design issues, Enhance Entity Relationship model,

Relational data model and relational database constraints: Relational model constraints and relational schemas, update operations. **Relational Algebra and Relational Calculus**: Unary Relational operations, Relational Algebra operations, Binary Relational operation, Additional Relational operation, Examples of Queries in Relational Algebra, Domain Relational Calculus.

UNIT II

Relational database design by ER and EER Relational Mapping: Relational database design using ER to Relational Mapping, Mapping EER Model Construct to Relations,

Schema Definition, Basic Constraints and Queries: SQL Data definition, Specifying basic constraints in SQl, Schema change Statements in SQL, Basic queries in SQL, More complex SQL queries, INSERT DELETE UPDATE queries in SQL, Views in SQL, Data base stored Procedures,

UNIT III

Relational Database Design: Informal design Guide lines for Relation Schema, Functional Dependences, Normal forms based on Primary keys, General definitions of Second and Third Normal form, BOYCE-CODE Normal form, Algorithm for Relational database schema design, Multi-valued dependencies and fourth Normal forms,

File Organization and Indexes: Introduction, Secondary Storage Devices, Buffering Blocks, Placing file records on disk, Operations on Files, Hashing Techniques, Parallelizing Disk Access using RAID Technology, Indexing Structures for files.

UNIT IV

Algorithm for query processing and Optimization: Translating SQL Queries into Relational Algebra, Algorithms for SELECT and JOIN Operations, Algorithms for PROJECT and SET Operations,

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Process, Transaction and System Concepts, Characterizing Schedules, Concurrency Control Techniques, Database Recovery Concepts, Recovery Techniques.

Dantuluri Narayana Raju College, PG Courses

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Syllabusfor the Year: 2017-18

Department: MCA Paper: Data Warehousing &Data Mining

Class: IV-MCA Semester: II

UNIT I **Data Warehouse and OLAP Technology: An overview** DataWarehouse Basic Concepts, Data Warehouse Modeling: Data Cube and OLAP, Data Warehouse Implementation **Data Preprocessing**: An Overview,Data Cleaning,Data Integartion, DataReduction, Data Transformation and Data Discretization, From Data Warehousing to Data Mining
UNIT II **Introduction to Data Mining**: Motivation and importance, What is Data Mining, Data Mining on what kind of data, What kinds of patterns can be mined, Which technologies are used, Which kinds of applications are targeted, Major issues in Data Mining. **Getting to know your Data**: Data Objects and Attribute Types, Basic Statistical Descriptions of Data, Data Visualization, Measuring data Similarity and Dissimilarity
UNIT III **Concept Description: Characterization and comparison** What is Concept Description, Data Generalization by Attribute-Oriented Induction(AOI), AOI for Data Characterization, Efficient Implementation of AOI, AOI for Class comparisons.
Mining Frequent Patterns, Associations and Correlations: Basic Concepts, Frequent Itemset Mining Methods: Apriori method, generating Association Rules, Improving the Efficiency of Apriori, Pattern-Growth Approach for mining Frequent Item sets, Mining Frequent Itemsets using vertical data format, Mining Closed and Max Patterns
UNIT IV **Classification Basic Concepts**: Basic Concepts, Decision Tree Induction: Decision Tree Induction, Attribute Selection Measures, Tree Pruning, Bayes Classification Methods, Classification by Back Propagation, Suport Vector Machines. **Cluster Analysis:** Cluster Analysis, Partitioning Methods, Heirarichal methods, Density based methods-DBSCAN and OPTICS.

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Syllabusfor the Year:2017-18

Department: M.C.A Paper: Discrete Mathematical Structures

Class:I M.C.A Semester: I

Unit I Introduction: Logic-Prepositional Equivalences-Truth tables-Totalogies-Predicates and Quantifiers-Sets-Operations on sets-Sequences and Summations -Growth functions - relations and their properties- n-ary relations and their applications Representation of relations-Closures of relations-Equivalence relations-Partial Orderings.

Unit II Counting Techniques: Basics of Counting- Pigeonhole Principle- Combinations and Permutations-Generalized Per mutations and Combinations

Recurrence relations: Solving Recurrence Relations-Divide and Conquer relations- Inclusion and Exclusion-Applications of Inclusion-Exclusion.

Unit III Graphs: Introduction to Graphs-Terminology-Relations and Directed Graphs - Representations of Graphs- Isomorphism-Connectivity- Euler and Hamiltonian Paths - Shortest Path problems- Planar Graphs - Graph Colouring-

Trees: Introduction to trees- Applications of trees- Traversals-Trees and sorting Spanning Trees-Minimum SpanningTrees. **UnitIV: BooleanAlgebra and Models of Computation:**Boolean Functions RepresentingBoolean Functions -Logic Gates-Minimizations of Circuits-Languages and Grammars- Finite State Machines with and with no output.

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Syllabus for the Year: 2017-2018

Department: M.C.A Paper: Data Structures

Class: I M.C.A Semester: I

Unit I The Stack: Primitive operations – stack as an ADT–Implementing the Stack operations using Arrays and Structures, Queue as Abstract Data Type–Sequential Representation, Types of Queues – Operations – Implementation using Arrays and Structures
Linked List: Operations, Implementation of Stacks, Queues and priority Queues, insertion, deletion and concatenation operations on circular lists, Stacks and Queues as circular lists, doubly linked lists-applications.
Unit II Trees: Binary Trees Operations and Applications. **Binary Tree Representation:** Node Representation–Implicit array Representation–Choice of Representation–Binary Tree Traversal–Threaded Binary Trees and their Traversal- Huffman Algorithm-Representing Lists as Binary Trees–Trees and their Applications.
Binary Search Tree: Insertion in to a Binary Search Tree–Deleting from a Binary Search Tree–Efficiency of Binary Search Tree operation **Unit III Sorting:** General Background-Exchange sorts-Selection and Tree Sorting-Insertion sorts Merge and Radix Sort
Searching: Basic Search Techniques- Tree Searching-**General Search Trees:**B Trees and B+ Trees. **Unit IV Hashing:** Open Addressing-deleting items-Binary Tree hashing-Dynamic Hashing and Extendible Hashing-Choosing a hash function **Graphs**: Graphs-Linked Representation of Graphs-**Graph Traversals:** BFS and DFS.

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Syllabusfor the Year: 2017-18

Department: MCA Paper: Information Systems Control&Audit

Class: IV-MCA Semester: II

8. Introduction: Overview Of Information Systems Auditing, Conducting an Information Systems audit
9. Management Control Framework: Top Management Controls, Systems Development Management Controls
10. Application Control Framework: Boundary Controls, Input Controls, Communication Controls, Processing Controls, Database Controls, Output Controls
11. Generalized Audit Software, Code review, Test Data And Code Comparison, Concurrent auditing Techniques, Performance Measurement Tools
12. Overview Of The Effectiveness of System Evaluation Process, Evidence, Evaluating System Effectiveness, Efficiency
13. Utility Software, Expert Systems, Measures of Asset Safeguarding and Data Integrity,
14. Information System Audit Management: Managing the Information System Audit Functions

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Syllabus for the Year:2017-18

Department: M.C.A Paper: Information Systems & Organizational Behaviour

Class:I M.C.A Semester: II

UNIT I **Organization Structure**: Features of Good Organization Structures, Designing of Organization Structure
Types of Organization Structures- Functional, Product, Geographic and Matrix Organization Structures **UNIT II** **Motivation:** Nature and importance of motivation, Theories of motivation – Maslow's, Herzberg's and Mc Gregor's X and Y Theories of Motivation.
Leadership: Meaning and definition, Importance of Leadership, Leadership styles, Communication: Process of Communication, Importance, Forms of Communication and Barriers in Communication. **UNIT III** **Group Dynamics**: Types of Groups, Stages of Group Development, Group Behavior and Group Performance Factors.
Organizational Conflicts: Reasons for Conflicts, Consequences of Conflicts in Organizations, Types of Conflict, Strategies for Managing Conflicts, Organizational Climate and Culture. **UNIT IV** **Management Information System**: Nature and Scope, Characteristics and Functions. Classification of MIS - Transaction Processing System
Management Information System, Decision Support System, Executive Support System, Office Automation System and Business Expert System.

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Syllabus for the Year:2017-18

Department: M.C.A Paper: Information Security And Cryptography Class: II M.C.A Semester: II

UNIT I **Introduction:** The need for security-security approaches-principles of security-Plain Text and Cipher Text-substitution and Transposition Techniques-Encryption and Decryption-Symmetric and Asymmetric Cryptography-Stenography-key range and key size-types of attacks.
Number Theory: Introduction to number theory- Modular Arithmetic, Euclidean algorithm, Euler theorem, Fermat Theorem, Totient Function, Multiplicative and Additive Inverse. **UNIT II** **Symmetric Key Cryptographic Algorithms:** Algorithm types and modes-overview of symmetric key cryptography-DES-IDEA-Blowfish-AES-Differential and Linear Cryptanalysis.
Asymmetric Key Cryptographic Algorithms: Overview of asymmetric key cryptography-RSA algorithm-symmetric and asymmetric key cryptography together-digital signatures.
UNIT III **User Authentication Mechanisms**: Introduction-Authentication basics-passwordsauthentication tokens-certificate based authentication-biometrics authentication-Hash functions-SHA1. **System Security**: Intruders, Viruses, Related Threats, Trusted Systems.
UNIT IV **Internet Security Protocols:** Basic concepts-SSL-SHTTP-TSP-SET-SSL versus SET- 3D secure protocol-Electronic money-Email security-WAP security-security in GSM. **Network Security:** Brief Introduction to TCP/IP -Firewalls -IP security-Virtual Private Networks.

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Syllabus for the Year:2017-2018

Department: M.C.A Paper: Operations Research Class: III M.C.A Semester: I

25. Overview of Operations Research, Types of OR Models , Phases of Operations Research– OR Techniques, Introduction to Linear Programming, Formulation of Linear Programming Problem, Graphical Solution; Graphical Sensitivity Analysis, 26. Standard Form of LPP, Basic Feasible Solutions , Unrestricted Variables, Simplex Algorithm , Artificial Variables, Big M Method, Two Phase Simplex Method, Degeneracy, Alternative Optimal, Unbounded Solutions, Infeasible Solutions, Primal And Dual Problems And Their Relations, Dual Simplex Method
27. Transportation Problem as LPP, Initial Solutions, North West Corner Rule, Lowest Cost Method, Vogels Approximation Method, Optimum Solutions of TPP, Degeneracy in Transportation, Transportation Algorithms , 28. Assignment Problem , Assignment Problem as LPP, Hungarian Method, Travelling Salesman Problem, Solutions Of TSP, Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems
a Sequencing Problems, N-Jobs Two Machine Problems, N-Jobs K Machines Problems, Two-Jobs M- Machine Problems, Crew Scheduling Problems 29. Network Representation of A Project, CPM and PERT , Critical Path Calculations, Time – Cost Optimizations, PERT Analysis and Probability Considerations, Resource Analysis in Network Scheduling.
30. Replacement Problems-Individual And Group Replacement Policy, Reliability & System Failure Problems, Inventory-Factors Effecting Inventory-EOQ, Inventory Problems With and Without Shortages, Inventory Problems With Price Breakups, Multi Item Deterministic Problems. Probabilistic Inventory Problems, swap-space management.
31. Non Linear Programming, Dynamic Programming, Recursive Nature of Dynamic Programming , Forward and Backward Recursion, Solutions of LPP As Dynamic Programming Technique, Integer Programming , Branch and Bound Algorithms, Cutting Plane Algorithm, 32. Introduction To Simulation, Simulation Models, Event Type Simulations, Generation of Random Numbers, Monte-Carle Simulation, Simulation Of Networks; Two Person Zero Sum Games ,Mixed Strategy Games and Their Algorithms

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Syllabusfor the Year:2017-18

Department: M.C.A Paper: Operating Systems

Class:III M.C.A Semester: I

Introduction: Definition of Operating System, Types Of Operating Systems, Operating System Structures, Operating-System Services.
System Calls, Virtual Machines, Operating System Design and Implementation, **Process Management:** Process Concepts, Operations on Processes, Cooperating Processes, Threads, Inter Process Communication, Process Scheduling, Scheduling Algorithms, Multiple -Processor Scheduling. Thread Scheduling. **UNIT II Process Synchronization:** The Critical Section Problem, Semaphores, And Classical Problems of Synchronization, Critical Regions, Monitors.
Synchronization examples. Deadlocks: Principles of Deadlocks, System Model, Deadlocks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Avoidance, Detection & Recovery from Deadlocks. **UNIT III Memory Management:** Logical Versus Physical Address, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation, Virtual Memory, Demand Paging, Page Replacement Algorithms, Thrashing File System Implementation: Concept of a file, Access Methods, Directory Structure, File System Structure, Allocation Methods, Free Space Management, Directory Management, Device Drivers. **Mass-storage structure:** overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management.
UNIT IV Protection: Goals and Principles of Protection, Access matrix implementation, Access control, Revocation of access rights. Case study: LINUX, Windows Operating Systems.

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Syllabusfor the Year: 2017-18

Department: MCA Paper: Wireless and Adhoc Networks
Class: III-MCA Semester: I

UNIT I Introduction: Introduction to Wireless Networks, Various Generations of Wireless Networks, Virtual Private Networks- Wireless Data Services, Common Channel Signaling, Various Networks for Connecting to the Internet,
Blue tooth Technology, Wifi-WiMax- Radio Propagation mechanism, Path loss Modeling and Signal Coverage **Wireless Local Area Networks:** Introduction-WLAN topologies-IEEE 802.11 Standards, MAC Protocols,Comparision of 802.11 a,b,g and n Standards, HIPER LAN , ZigBee 802.15.4, Wireless Local Loop.
UNIT II Wireless Adhoc Networks: Basics of Wireless Networks, Infrastructured Versus Infrastructureless Networks – Properties of Wireless, Ad hoc Networks, Types of Ad hoc Networks, Challenges in Ad hoc Networks –Applications of Wireless Ad Hoc Networks **Routing Protcols for Ad hoc Networks:** Introduction-Proactive Routing Protocols- Reactive Routing protocols-Hybrid Routing Protocols-QoS Metrics-Energy impact issues in Routing.
UNIT III Mobile Ad hoc Networks (MANETs): Overview, Properties of A MANET, Spectrum of MANET Applications, Routing and Various Routing Algorithms. **Other Wireless Technologies:** Introduction, IEEE 802.15.4 and Zigbee, General Architecture, Physical Layer, MAC layer, Zigbee, WiMAX and IEEE 802.16, Layers and Architecture, Physical Layer, OFDM Physical layer.
UNIT IV Security in Ad hoc Networks: Introduction- Security Attacks, Intrusion Detection System, Intrusion Prevention system, Intrusion Response system, Wired Equivalent Privacy (WEP) -A Security Protocol for Wireless Local Area Networks (WLANs), Security in MANETs.

Dantuluri Narayana Raju College PG Courses

(A College with Potential for Excellence)

Bhimavaram, W.G.DIST.A.P

Syllabusfor the Year:2017-18

Department: M.C.A Paper: Web Technologies

Class: III M.C.A Semester: I

UNIT I

Networking Protocols and OSI Model: Protocols in Computer Communications, the OSI Model, OSI Layer Functions

Internetworking Concepts, Devices, Basics, History and Architecture: Internet working, Problems in Internetworking, Dealing with Incompatibility Issues, A Virtual Network, Internetworking Devices, Repeaters, Bridges, Routers, Gateways, A Brief History of the Internet, Growth of the Internet, Internet topology, Internal Architecture of an ISP

TCP/IP Part I (Introduction to TCP/IP, IP, ARP, RARP, ICMP):TCP/IP Basics, Why IP Addresses?, Logical Addresses,TCP/IP Example The Concept of IP Address, Address Resolution Protocol (ARP),Reverse ARP, Internet Control Message Protocol (ICMP), Datagram, Fragmentation and Reassembly

UNIT II

TCP/IP Part II (TCP, UDP):Basics of TCP, Features of TCP, Relationship between TCP and IP, Ports and Sockets, Connections-Passive Open and Active Open, TCP connections, What Makes TCP Reliable?TCP Packet Format, Persistent TCP Connections, User Datagram Protocol , UDP Packet, Difference between UDP and TCP

TCP/IP Part III (DNS, Email, FTP, TFTP): Domain Name System (DNS), Electronic Mail (Email), File Transfer Protocol (FTP)**,** Trivial File Transfer Protocol (TFTP)

TCP/IP Part IV (WWW, HTTP, TELNET): A Brief History of WWW, Basics of WWW and Browsing, Locating Information on the Internet, HTML , Web Browser Architecture, Web Pages and Multimedia, Remote Login (TELNET).

An Introduction to Electronic Commerce: Aspects of Electronic Commerce, Types of E Commerce, Approaches for Developing E Commerce Solutions, Electronic Procurement, Phases in a Procurement Process, E-Procurement Models, E-Procurement Solutions, Trading Models, Buyer Side Purchasing,Supply Chain Management (SCM) and Customer Relationship Management (CRM)

UNIT III

Introduction to Web Technology: Features Required for Enabling e-commerce, Web pages-Types and Issues, Tiers, The Concept of a Tier, A Concept of Microsoft and Java Technologies, Web Pages,Static Web Pages, Plug-ins, Introduction to Frames and Forms

Dynamic Web Pages: Need for Dynamic Web Pages,Magic of Dynamic Web Pages, Overview of Dynamic Web Page Technologies,Overview of Dynamic HTML (DHTML), Common Gateway Interface (CGI),

Microsoft's Active Server Pages (ASP), Basics of ASP Technology, ASP Example, Modern Trends in ASP, Java and the Concept a Virtual Machine, Java Servlets and Java Sever pages(JSP), Java Servlets, Java Sever pages (JSP).

Active Web pages: Active Web pages is a Better Solution, Java Applets, Why are Active Web Pages Powerful? When not to use Active Web Pages, Lifecycle of Java Applets, Java Beans, Active X Controls.

UNIT IV

Middleware and Component-based E-commerce Architectures:CORBA, Java Remote Method Invocation (RMI), Microsoft's Distributed Component Object Model

Electronic Data Interchange (EDI): An Overview of EDI, the Origins of EDI, Understanding EDI, Data Exchange Standards, EDI Architecture, The Significance of EDI in International Trade, Financial EDI, EDI and the Internet.

Extensible Markup Language (XML):Standard Generalized Markup Language (SGML), Basics of XML, XML parsers, The Need for a Standard.

Wireless Application Protocol (WAP):Limitations of Mobile Devices, The emergence of WAP, WAP Architecture, The WAP Stack, Concerns about WAP and its Future, Alternatives to WAP.