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: M.Sc(CS)   Paper: Artificial intelligence   Class: I YEAR
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

DantuluriNarayanaRaju College, PG Courses
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Bhimavaram, W.G.DIST.A.P
Syllabus for the Year: 2013-14

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

DantuluriNarayanaRaju College PG Courses
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Bhimavaram, W.G.DIST.A.P
Syllabus for the Year:2013-14

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.

DantuluriNarayanaRaju College PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year: 2013-2014

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.

Syllabusfor the Year: **2013-14**

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

DantuluriNarayanaRaju College PG Courses
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Bhimavaram, W.G.DIST.A.P
Syllabus for the Year:2013-14

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

Dantuluri Narayana Raju College PG Courses
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Bhimavaram, W.G.DIST.A.P
Syllabus for the Year:2013-2014

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 M e t h o d , 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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Syllabus for the Year: 2013-14

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: **2013-14**

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:2014-2015

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

DantuluriNarayanaRaju College, PG Courses

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Bhimavaram, W.G.DIST.A.P

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

DantuluriNarayanaRaju College PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for 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 NarayanaRaju 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.

Syllabusfor the Year: **2014-15**

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

DantuluriNarayanaRaju 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

Dantuluri Narayana Raju College PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2014-2015

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.

DantuluriNarayanaRaju 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

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: **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

(A College with Potential for Excellance)

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

DantuluriNarayanaRaju College, PG Courses
(A College with Potential for Excellence)
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 Hierachy 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

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.

DantuluriNarayanaRaju 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.

Syllabusfor 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 є-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

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

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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

Dantuluri Narayana Raju College PG Courses

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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

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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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

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

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 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

DantuluriNarayanaRaju College, PG Courses
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Bhimavaram, W.G.DIST.A.P
Syllabus for the Year: 2016-17

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

DantuluriNarayanaRaju College PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2016-17

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.

DantuluriNarayanaRaju College PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year: 2016-2017

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: **2016-17**

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

DantuluriNarayanaRaju College PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabusfor the Year:2016-17

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

Dantuluri Narayana Raju College PG Courses

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2016-17

Department: M.Sc.(CS)   Paper: Advanced Computer Networks   Class: I
M.Sc. (CS)   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.

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Bhimavaram, W.G.DIST.A.P

Syllabus for the Year:2016-17

Department: M.Sc(CS)   Paper: Information Security And Cryptography   Class: II
M.Sc(CS)   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.

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.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.

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Syllabus for the Year:2017-2018

Department: M.Sc. (Computer Science**)**   Paper: Artificial intelligence   Class: II year   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.Sc. (Computer Science)**　Paper: **Object Oriented Software Engineering**　Class: **II Year**　Semester: **III**

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, Waterfall Model, The Opportunistic Model, Phased Released, Spiral, Evolutionary, Concurrent Engineering Models, Requirements Engineering**:** Domain Analysis, Problem Definition And Scope, Requirements Definition.
Types Of Requirements, Techniques For Gathering And Analyzing Requirements, Requirement Documents, Reviewing, Managing Change In Requirements.   **Unit-II :**Introduction To UML, Modeling 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 Behavioural 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**: Overview Of Testing, Testing Concepts, Testing Activities, Unit Testing, Integration Testing, Function Testing, Structural Testing, Class Based Testing Strategies.
Use Case/Scenario Based Testing, Regression Testing, Performance Testing, System Testing, Acceptance Testing, Installation Testing, OO Test Design Issues, Test Case Design, Quality Assurance, Root Cause Analysis, Post-Mortem Analysis,   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, CASE STUDY**:** Simple Chat Instant Messaging System, GPS Based Automobile Navigation System,   Waste Management Inspection Tracking System (WMITS), Geographical Information System.

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Syllabus for the Year: 2017-2018

Department: I M.Sc(CS)   Paper: Data Structures& File Structure   Class: I year
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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Bhimavaram, W.G.Dist., A.P.

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

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

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Syllabus for the Year:2017-18

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.

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Syllabus for the Year: 2017-18

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

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Syllabus for the Year:2017-18

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: **2017-18**

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

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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.

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Syllabus for the Year:2017-18

Department: M.Sc.(CS)   Paper: Advanced Computer Networks   Class: I

M.Sc. (CS)   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

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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.

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Syllabus for the Year:2017-18

Department: M.Sc(CS)   Paper: Information Security And Cryptography   Class: II
M.Sc(CS)   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.