MANAKULA VINAYAGAR INSTITUTE OF TECHNOLOGY
KALITHEERTHAL KUPPAM, PUDUCHERRY – 605 107

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOME

M.TECH (COMPUTER SCIENCE AND ENGINEERING)

Course Outcome for M.Tech [CSE]

FIRST SEMESTER		
Sl. No.	Subject Code	Subject Name
1.	CS901	Advanced Data Structures and Algorithms
2.	CS902	Design of Distributed Systems
3.	CS903	Advanced Computer Architecture
4.	CSE001	Elective – I
5.	CSE002	Elective – II
6.	CSE003	Elective – III
7.	CS9008	Seminar

SECOND SEMESTER		
Sl.	Subject	Subject Name
1.	CS904	High Performance Networks
2.	CS905	Advances in Database Systems
3.	CS 906	Advanced Software Engineering
4.	CSE004	Elective – IV
5.	CSE005	Elective –V
6	CSE006	Elective – VI
7.	CS 907	Advanced Software Laboratory

THIRD SEMESTER		
Sl.	Subject Code	Subject Name
1.	CS 909	Project Phase-I
2.	CSE007	Elective – VII

Fourth Semester		
Sl.	Subject Code	Subject Name
1.	CS 910	Project Phase II

First semester

CS 901 - Advanced Data Structures and Algorithms

CO No	Descriptions	Blooms Taxonomy Level
CO1	Summarize Mathematical Induction with Asymptotic Notations and Algorithm Analysis with examples of NP Hard and NP Completeness with Recurrence Equations and Solving Recurrence Equations with Memory Representation of Multi-dimensional Arrays and Time-Space Tradeoff.	Comprehension Summarize
CO2	Discuss Heapsort, Quicksort and Topological sort with Sorting in Linear Time with Elementary Data Structures and Hash Tables Binary Search Trees and AVL Trees. Describe Red-Black trees with Multi-way Search Trees and B-Trees. Fibonacci Heaps and van Emde Boas Trees with Data Structures for Disjoint Sets.	Comprehension Discuss
CO3	Discuss Algorithm Design Techniques: Divide-and-Conquer in Greedy method and Dynamic Programming Analysis of Amortized Analysis model with Backtracking Branch-and-Bound technique	Analysis analyze
CO4	Summarize the Elementary graph Algorithms with Minimum Spanning Trees and Single-Source Shortest Paths Algorithm with All Pairs Shortest Paths. Describe Maximum Flow method with Multithreaded Algorithms and Matrix Operations	Comprehension analyze
CO5	Compute Linear programming with Polynomials and FFT model for Number-Theoretic Algorithms with Computational Geometry and NP-Completeness with Approximation Algorithms.	Application Compute

CS 902 DESIGN OF DISTRIBUTED SYSTEMS

CO No	Descriptions	Blooms Taxonomy Level
CO1	Recognize the examples of Distributed Systems with Resource Sharing and the Web Challenges with the System Models and Introduction of the Architectural Models with Functional Models and Distributed Objects and Remote Invocation Communication Between Distributed Objects	Comprehension Recognize
CO2	Summarize the functionalities of Distributed Operating Systems and its Introduction with Algorithms their Issues with Centralized Deadlock-Detection Algorithms and Distributed Deadlock	Comprehension Summarize

CO		Descriptions	Blooms Taxonomy Level
		Detection Algorithms with Agreement Protocols	
CO3		Demonstrate Distributed Resource Management with Distributed File systems and Architecture Design Issues with Distributed Scheduling	Application Demonstrate
CO4		Discuss the Kinds of Distributed Algorithm. Timing Models. Synchronous Network Algorithms: Synchronous Network Model. Leader Election in a synchronous Ring. Describe Distributed Consensus with Link Failures, Distributed Consensus with Process failures, More Consensus problems	Comprehension Discuss
CO5		Compute Resource Security and Protection with Implementation of Access Matrix Model and Safety in the Access Matrix Model with Data Security.	Application Compute

CS 903 - ADVANCED COMPUTER ARCHITECTURE

CO No	Descriptions	Blooms Taxonomy Level
CO1	Recognize The State of Computing, Multiprocessors and Multicomputer, Multivector and SIMD Computers, PRAM and VLSI Models with Program Partitioning and Scheduling, Program Flow mechanisms. System Interconnection Architectures	Comprehension Recognize
CO2	Summarize the functionalities of Performance Metrics and Measures, Parallel Processing Applications, Speedup Performance Laws, Scalability Analysis and Approaches	Comprehension Summarize
CO3	Demonstrate Bus, Cache, and Shared Memory - Backplane Bus Systems, Cache Memory Organizations, Shared-Memory Organizations, Sequential and Weak Consistency Models	Application Demonstrate
CO4	Discuss Multiprocessor System Interconnects, Cache Coherence and Synchronization mechanisms, Three Generations of Multicomputer, Message-Passing Mechanisms. Describe SIMD Computer organizations, The Connection Machine CM-5. Scalable, Multithreaded, and Dataflow Architect architectures	Comprehension Discuss
CO5	Compute Dependence Analysis of Data Arrays, Code Optimization and Scheduling, Loop Parallelization and Pipelining	Application Compute

CSE 934- Trusted Internet

CO No	Descriptions	Blooms Taxonomy Level
CO1	Summarize the Internet's underlying architecture, connecting to the internet, Internet Service Providers (ISP), Summarize TCP/IP Suite and Internet Stack Protocols, Web Client Server Architecture, Internet Security Evolution	Comprehension Summarize
CO2	Discuss the Security Issues, Real Threats that Impact Security, Securing the Web Client. Describe Protecting Your Web Browser, Enhancing Web server security, Controlling Access, Extended Web Site Security Functionality, Securing Web Communications with SSL, VPNS.	Comprehension Discuss
CO3	Discuss Trusted Systems and Security Policies: Trusted System Design, Trusted OS, Secure System Models, Security in Networks: Network Security Controls Analyze IDS, Firewalls, Secure E-Mail. Internet Security Policies: Web Server and Web Browser policies.	Analysis analyze
CO4	Describe SET for E-Commerce Transactions, Business requirements for SET, SET System Participants Analyze Dual Signature and Signature, Authentication and Message Integrity, Payment Processing.	Comprehension analyze
CO5	Discuss the Securing of Internet Programming, Security development life cycle, Internet Security Standards and Internet Security Products, Trusted Internet Security services.	Comprehension Summarize

CS E 922 DATA WAREHOUSING AND DATA MINING

CO No	Descriptions	Blooms Taxonomy Level
CO1	Recognize the examples of Data Warehousing and Business Analysis with Data warehousing Components and Building a Data warehouse for Mapping the Data Warehouse to a Multiprocessor Architecture	Comprehension Recognize
CO2	Summarize the functionalities of Data Discretization and Concept Hierarchy Generation. Association Rule Mining with Efficient and Scalable Frequent Item set Mining Methods	Comprehension Summarize
CO3	Demonstrate the Issues Regarding Classification and Prediction with the Classification by Decision Tree with Bayesian Classification and Rule Based Classification	Application Demonstrate
CO4	Discuss the Cluster Analysis with types of Data in Cluster Analysis and a Categorization of Major Clustering Methods for Partitioning Methods using Hierarchical methods Describe Constraint-Based Cluster Analysis – Outlier Analysis	Comprehension Discuss
CO5	Compute Mining about the functional properties of Mining Object, Spatial, Multimedia, Text and Web Data	Application Compute

CS 932 AD HOC AND SENSOR NETWORKS

CO No	Descriptions	Blooms Taxonomy Level
CO1	Recognize Wireless Networks and the Evolution of 3G Mobile Systems with Wireless LANs and Bluetooth with Types of Ad hoc Mobile Communications – Types of Mobility – Challenges in Ad hoc Mobile Networks	Comprehension Recognize
CO2	Summarize the functionalities of CGSR with On-Demand protocols and DSR with AODV and TORA Routing Protocol with Power Aware Routing protocols	Comprehension Summarize
CO3	Demonstrate Multicast Routing with Preferred Link based Multicast and Mesh-based protocols with Core-Assisted Mesh protocol and Issues in Transport layer protocols	Application Demonstrate
CO4	Discuss Wireless Sensor Networks with Unique constraints and challenges with Applications in Collaborative processing and Architecture in Data Dissemination and MAC protocols Describe Attribute-based routing with Directed Diffusion and Rumor Routing and Geographic Hash Tables with GHT and Data Gathering	Comprehension Discuss
CO5	Compute Sensor Selection and IDSQ with Cluster Leader-based Protocol and Joint Routing and Information Aggregation	Application Compute

CS 9008 – SEMINAR

CO No	Descriptions	Blooms Taxonomy Level
CO1	Analyze critically chosen seminar topic for substantiated conclusions	Comprehension Recognize
CO2	Apply the concepts of design and modelling learnt to be seminar topic chosen and explore possible new ideas.	Comprehension Summarize
CO3	Use the appropriate techniques, resources and modern engineering tools necessary for conducting seminar work.	Comprehension Discuss
CO4	Explore possible avenues where computer science and engineering solutions may yield social benefit.	Comprehension Discuss
CO5	Communicate clearly, fluently, and cogently both in written and spoke contexts.	Comprehension Discuss

SECOND SEMESTER

CS 904 HIGH PERFORMANCE NETWORKS

CO No	Descriptions	Blooms Taxonomy Level
CO1	Summarize the functionalities of Introduction to high speed networks with High speed LANs with operations and layers.	Comprehension Summarize
CO2	Discuss the functional properties of SONET and SONET/SDH Layers. Describe the TCP/IP protocol Suite with the IP Packet Header and User services with Protocol Operation and Connection Establishment in UDP.	Comprehension Discuss
CO3	Discuss Congestion Control in Packet Switched Networks and Frame relay Congestion Control in Traffic rate Management Analysis of TCP Traffic Control in Flow Control and TCP Congestion Control with Timer Management and Window Management	Analysis analyze
CO4	Summarize Integrated Services with Differentiated Services and Protocols for QoS support with Resource Reservation Describe Wavelength division multiplexing (WDM) – Introduction to broadcast-and-select networks	Comprehension analyze
CO5	Discuss the Wavelength division multiplexing to broadcast and select networks with Switch architectures in channel accessing.	Comprehension Summarize

CS 905 ADVANCES IN DATABASE SYSTEMS

CO No	Descriptions	Blooms Taxonomy Level
CO1	Summarize the functionalities of Introduction to commercial and open source database systems with for Special databases like multimedia, embedded, web, spatial, temporal databases with JDBC and ODBC.	Comprehension Summarize
CO2	Discuss the functional properties Heuristic Optimization with Cost, Size Estimation and Models of Transactions. Properties of Transactions and Concurrency Control. Describe the Indexing and Hashing and ISAM with B-Trees and Kd Trees in X Trees and Dynamic Hashing. .	Comprehension Discuss
CO3	Discuss Distributed Databases and Principles with Design Queries and Translation of Queries with Optimization Access Strategies Management of Distributed Transactions and Concurrency Control with Reliability	Analysis analyze
CO4	Summarize Object Oriented Concepts with Data Object Models in Object Based Databases and Object Oriented Databases. Describe Access Interface Technologies of ADO, RDO and CORBA	Comprehension analyze
CO5	Discuss the Enhanced data models for Advanced applications -	Comprehension

	Multimedia Databases and Parallel Databases with Scripting Language: PHP and Ruby	Summarize

CS 906 ADVANCED SOFTWARE ENGINEERING

CO No	Descriptions	Blooms Taxonomy Level
CO1	Discuss about the Software Engineering Process Paradigms Project management Process and Project Metrics Software estimation Empirical estimation models planning Risk analysis Software project scheduling and Tracking	Analysis Analyze
CO2	Conclude about the System, Process and Product Engineering Hierarchies Requirement Engineering and its phases, Building the Analysis Models	Analysis Conclude
CO3	Explain about Architecture for distributed applications with Case study for Instrumentation Software, Mobile Robotics, and Crusise control.	Comprehension Explain
CO4	Summarize about the White-Box Testing Techniques and its Variants, Black Box Testing Techniques and its Variants, Integration, Validation and System Testing, Debugging.	Comprehension Summarize
CO5	Practice using Software Quality Assurance Quality Metrics and Models, Software Reliability Theory Software Maintenance Software Configuration Management	Comprehension Generalize

CSE 924 KNOWLEDGE MANAGEMENT

CO No	Descriptions	Blooms Taxonomy Level
CO1	Recognize The value of Knowledge with Knowledge Engineering Basics of Knowledge Economy	Comprehension Recognize
CO2	Summarize the functionalities of Knowledge Model Components with Template Knowledge Models and Reflective Knowledge Models	Comprehension Summarize
CO3	Demonstrate Knowledge Elicitation Techniques with Modeling Communication Aspects and Knowledge Management and Organizational Learning.	Application Demonstrate
CO4	Discuss Case Studies of Designing Knowledge Systems with Knowledge Codification and Testing and Deployment Describe Knowledge System Implementation	Comprehension Discuss
CO5	Compute Advanced Knowledge Modeling with Value Networks and Business Models for Knowledge Economy in UML Notations and Project Management	Application Compute

CSE 936 CRYPTOGRAPHY

CO No	Descriptions	Blooms Taxonomy Level
CO1	Recognize the Beginning with a simple communication game with Wrestling between safeguard and attack and Encryption symmetric techniques	Comprehension Recognize
CO2	Summarize the functionalities of Encryption – Asymmetric techniques –Bit security of the basic public key cryptographic functions	Comprehension Summarize
CO3	Demonstrate Data Integrity Techniques –Authentication framework for public key cryptography.	Application Demonstrate
CO4	Discuss the data integrity and security bleaches for public key crypto system and probably secure Describe optimal asymmetric encryption padding.	Comprehension Discuss
CO5	Compute the Practical digital signatures with secure and strong public key cryptosystems	Application Compute

CS 938-MOBILE AND PERVASIVE COMPUTING

CO No	Descriptions	Blooms Taxonomy Level
CO1	Summarize Wireless networks- emerging technologies- Blue tooth, WiFi, WiMAX, 3G ,WATM.-Mobile IP protocols WAP push architecture-Wml scripts and applications.	Comprehension Summarize
CO2	Discuss Mobile computing environment—functions-architecture-design considerations, content architecture -CC/PP exchange protocol, context manager. Describe Data management in WAE-Coda file system- caching schemes- Mobility QOS. Security in mobile computing.	Comprehension Discuss
CO3	Discuss Handoff in wireless mobile networks and handoff schemes. Location management in cellular networks Analysis of Mobility model, time, movement, profile and distance based update strategies. ALI technologies.	Analysis analyze
CO4	Summarize the Principles, Characteristics, transparency, context aware, automated experience capture. Architecture for pervasive computing- Describe Pervasive devices embedded controls.- smart sensors and actuators -Context communication and access services	Comprehension analyze
CO5	Discuss the Open protocols- Service discovery technologies, Context aware sensor networks, addressing and communications. Context aware security.	Comprehension Summarize

THIRD SEMESTER

CS 927 SERVICE ORIENTED ARCHITECTURE

| CO No	Descriptions	Blooms Taxonomy Level
CO1	Recognize Software Architecture with its Types of IT Architecture with Patterns for SOA and Architectural Patterns with The Unified Process and its Use Case	Comprehension Recognize
CO2	Summarize the functionalities of Service-oriented Analysis and Design of Activity, Data, Client and business process services with Technologies	Comprehension Summarize
CO3	Demonstrate SOA implementation and Governance with the strategy and SOA development with its SOA governance and its trends in SOA with event-driven architecture	Application Demonstrate
CO4	Discuss Meta data management in XML security and XML signature functions of XML Encryption with SAML and XACML Describe about the Security in web service framework - advanced messaging	Comprehension Discuss
CO5	Compute Transaction processing with paradigm and its protocols and coordination with transaction	Application Compute

CS 909- PROJECT PHASE-I

CO No	Descriptions	Blooms Taxonomy Level
CO1	Motivate the students to select projects with various domain.	Application Compute
CO2	Student study the reference papers from various domain and select the domain of their project	Application Compute
CO3	Student have a detailed survey on the selected domain and identify the base paper and give the presentation on their survey	Application Compute
CO4	Student identified the problem formulation of their existing work and gave the presentation	Application Compute
CO5	Student submitted phase I project work which was reviewed by a committee consisting of Project coordinator	Application Compute

CO No	Descriptions	Blooms Taxonomy Level
CO1	Describe the concepts involved in Object-Oriented modeling and their benefits	Comprehension Recognize
CO2	Demonstrate concept of use-case model, sequence model and state chart model for a given problem.	Comprehension Summarize
CO3	Analyze the application Domain and Prepare models from different viewpoints	Application Demonstrate
CO4	Translate the requirements into implementation for Object Oriented design.	Comprehension Discuss
CO5	Choose an appropriate design pattern to facilitate development procedure	Application Compute

FOURTH SEMESTER

CS910- PROJECT PHASE - II

CO No	Descriptions	Blooms Taxonomy Level
CO1	Student installed and learnt the software simulation tool	Application Compute
CO2	System architecture is designed and Implementation of two modules done	Application Compute
CO3	Review-1 conducted	Application Compute
CO4	Implementation of remaining modules and proposed work of the project done and review 2 conducted	Application Compute
CO5	Demonstration of project and performance analysis is shown to the review committee in final viva. Presentation and publication of research project is also done in conference / Journal	Application Compute
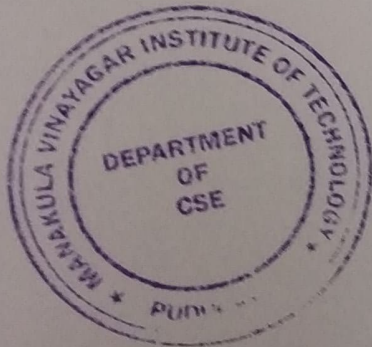
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