### M.TECH.(CSE) COURSE STRUCTURE

#### I SEMESTER

<table>
<thead>
<tr>
<th>Subject code</th>
<th>Name of the Subject</th>
<th>Contact hours/week</th>
<th>Credits</th>
<th>Scheme of Valuation</th>
<th>Total Marks</th>
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<tr>
<td>MTCS101</td>
<td>Advanced Data Structures</td>
<td>4+1</td>
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### III & IV SEMESTERS

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I SEMESTER
MTCS101 - ADVANCED DATA STRUCTURES

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<td>External Examination : 3 hrs.</td>
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UNIT-I

Data Structures: Linear Datastructures The List ADT: Singly Linked, Doubly Linked, Circular Linked List. Stacks ADT, Queue ADT
Binary trees, Binary Tree traversal and iterators, Threaded Binary trees, Heaps, Binary Search trees, Selection trees, Forests.

UNIT-II

Searches in Graphs: Depth First Search, Breadth First Search

UNIT-III

Internal Sorting: Insertion Sort, Heap Sort, Merge Sort, Quick Sort

UNIT-IV

Greedy Methods: Container Loading, Knapsack Problem, Minimum Cost Spanning trees.
Dynamic Programming: 0/1 Knapsack, Travelling Salesperson Problem, Optimal Binary Search Trees

UNIT-V

Branch and Bound: The general methods LC search and FIFO Branch and Bound, 0/1 Knapsack, Travelling Salesperson Problem.
Backtracking: N-Queens Problem, Hamilton cycle, Sum of Subsets Problem

TEXT BOOKS:

REFERENCES:
MTCS102 - ADVANCED DATABASE MANAGEMENT SYSTEMS

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits  : 3  External Examination : 3 hrs.

UNIT - I
RELATIONAL MODEL ISSUES

UNIT - II
DISTRIBUTED DATABASES

UNIT - III
OBJECT ORIENTED DATABASES

UNIT - IV
EMERGING SYSTEMS
Enhanced Data Models - Client/Server Model - Data Warehousing and Data Mining - Web Databases – Mobile Databases- XML and Web Databases.

UNIT – V
CURRENT ISSUES

TEXT BOOKS:

REFERENCES:
MTCS103 - DATA MINING

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits : 3  External Examination : 3 hrs.

Unit - I
**Introduction to Data Mining:** Types of Data, Data Quality, Data Processing, Measures of Similarity and Dissimilarity **Exploring Data:** Data Set, Summary Statistics, Visualization, OLAP and multi dimensional data Analysis.

Unit - II
**Classification:**
Basic Concepts, Decision Trees, and model evaluation: General approach for solving a classification problem, Decision Tree induction, Model over fitting: Due to presence of noise, due to lack of representation samples, Evaluating the performance of classifier. **Classification-Alternative techniques:** Nearest Neighbourhood classifier, Bayesian Classifier, Support Vector Machines: Linear SVM, Separable and Non Separable case.

Unit – III
**Association Analysis:**
Problem Definition, Frequent Item-set generation, Rule generation, compact representation of frequent item sets, FP-Growth Algorithms, Handling categorical, continuous attributes, concept hierarchy, sequential, sub-graph patterns

Unit – IV
**Clustering:** Overview, K-means, Agglomerative Hierarchical clustering, DBSCANCluster **Evaluation:** Overview, Unsupervised Cluster evaluation using cohesion and separation, using the proximity matrix, Scalable clustering algorithms.

Unit - V
**Web Data mining:**
Introduction, Web terminology and characteristics, web content mining, web usage mining, web structure mining, Search Engines: Characteristics, Functionality, Architecture, Ranking of web pages, Enterprise search

**TEXT BOOKS:**
1. Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, PEA.
2. Introduction to Data Mining with Case Studies, GK Gupta , Prentice Hall.

**REFERENCES:**
2. Fundamentals of data warehouses, 2/e, Jarke, Lenzerini, Vassiliou, Vassiliadi, Springer.
4. Data Mining, Concepts and Techniques, 2/e, Jiawei Han , Micheline Kamber , Elsevier,2006.
MTCS104 - ADVANCED COMPUTER NETWORKS

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week   External Marks : 60
Credits : 3                  External Examination : 3 hrs.

UNIT-I

UNIT-II
**Data link layer:** TCP/IP Protocol Architecture, Framing, Reliable Transmission, Ethernet (802.3) and Token Ring (802.5)

UNIT-III
**Network Layer:** Connecting Devices. ARP, RARP. IP Address – Sub netting / Super netting, Packet Forwarding with Classful / Classless Addressing, Datagram Fragmentation, Components in IP software, Private IP and NAT. ICMP. Routing Protocols - Distance Vector Routing-RIP, Link-State Routing-OSPF

UNIT-IV
**Transport Layer:** UDP- Port Addressing, UDP datagram, UDP operation. TCP- TCP services and features, TCP segment, TCP connection, TCP state transitions, TCP module’s algorithm, Flow and Error control, Congestion control. SCTP- SCTP services and features, Packet format, SCTP connection, State Transitions, Flow and Error control.

UNIT-V
**Application Layer:** DNS- Distribution of Name Space, Name Resolution, DNS messages, HTTP Architecture, HTTP Transaction, DHCP - Address allocation, Packet format. SNMP-SMI, MIB, SNMP PDUs, Real Time Data Transfer- RTP, RTCP, Voice over IP-Session Initiation Protocol.

TEXT BOOKS:

REFERENCES:
MTCS1051 - SIMULATION AND MODELLING

Lecture : 4 Periods / Week Internal Marks : 40
Tutorial : 1 Period / Week External Marks : 60
Credits : 3 External Examination : 3 hrs.

UNIT - I
Introduction to Simulation

UNIT - II
Statistical Models in Simulation

UNIT - III
Random Number Generation

UNIT - IV
Input Modeling

UNIT - V

TEXT BOOKS:
MTCS1052 - OBJECT ORIENTED SOFTWARE DESIGN

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits : 3  External Examination : 3 hrs.

UNIT – I
INTRODUCTION TO CLASSICAL SOFTWARE ENGINEERING:
Introduction to OO Paradigm. Different phases in structured paradigm and OO Paradigm.
Software Process and different life cycle models and corresponding strengths and weaknesses.

UNIT – II
PLANNING AND ESTIMATION:
Estimation of Duration and Cost – COCOMO components of software. Project
Management plan – one case Study.

UNIT - III
MODULES TO OBJECTS:
Cohesion and Coupling, Data Encapsulation and Information hiding aspects of Objects.
Inheritance, polymorphism and Dynamic Binding aspects. Cohesion and coupling of objects.
Reusability, Portability and Interoperability aspects.

UNIT - IV
REQUIREMENT PHASE:
Rapid Prototyping method, Specification phase - Specification Document- Formal methods of
developing specification document
ANALYSIS PHASE:

UNIT – V
DESIGN PHASE:
Data oriented design – Object Oriented design – Formal techniques for detailed design. One
case study. Challenges in design phase.

TEXT BOOKS:
1. Object oriented and Classical Software Engineering, 7/e, Stephen R. Schach, TMH
2. Object oriented and classical software Engineering, Timothy Lethbridge, Robert
Laganiere, TMH.
MTCS1053 - HIGH PERFORMANCE COMPUTING

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits : 3  External Examination : 3 hrs.

UNIT - I
The need for parallel computers - models of computation - analyzing algorithms - expressing algorithms.

UNIT - II
Basic Communication Operations: One-to-all broadcast and all-to-one reduction – all-to-all broadcast reduction – all-reduce and prefix-sum operations – scatter and gather – all-to-all personalized communication – circular shift – improving the speed of some communication operations.

UNIT - III
Analytical Modeling of Parallel Programs: Sources of overhead in parallel programs – performance metrics for parallel systems – scalability of parallel systems – minimum execution time and minimum cost-optimal execution time.
Programming using the Message-Passing Paradigm: principles of message-passing programming – the building blocks – MPI – topologies and embedding – overlapping communication with computation – collective communication and computation operations – groups and communicators.
Programming Shared Address Space Platforms: Thread basics – synchronization primitives in Pthreads – controlling thread and synchronization attributes – composite synchronization constructs – tips for designing asynchronous programs – Open MP.

UNIT - IV

UNIT - V
Dynamic Programming: Overview.
TEXT BOOKS:

REFERENCES:
UNIT - I

UNIT - II

UNIT - III

UNIT - IV

UNIT - V

TEXT BOOK:

REFERENCES:
2. Software Project Management, Joel Henry, Pearson Education.
UNIT - I

UNIT - II

UNIT - III
Searching, Merging, and Sorting: Searching, Merging, Sorting, Sorting Networks, Selection.

UNIT - IV

UNIT - V
Realistic Models of Parallel Computation: Bulk Synchronous Parallel (BSP), LogP, Shared-Memory (SMP), Clusters of SMPs, Communication Primitives, Sorting, 2D FFT.

TEXT BOOK:

REFERENCES:
MTCS1062 - EMBEDDED SYSTEMS

Lecture : 4 Periods / Week Internal Marks : 40
Tutorial : 1 Period / Week External Marks : 60
Credits : 3 External Examination : 3 hrs.

UNIT - I
Introduction to Embedded System: Components of Embedded System – Classification - Characteristic of embedded system- Microprocessors & Micro controllers- Introduction to embedded processors - Embedded software architectures: Simple control loop - Interrupt controlled system - Cooperative multitasking - Preemptive multitasking or multi-threading - Micro kernels and exokernels - Monolithic kernels - Exotic custom operating systems.

UNIT - II
Embedded Hardware Architecture – 32 Bit Microcontrollers: ARM 2 TDMI core based 32 Bit microcontrollers and family of processors, Register, Memory and Data transfer, Arithmetic and Logic instructions, Assembly Language, I/O operations interrupt structure, ARM cache. ARM Bus, Embedded systems with ARM. Networks for Embedded systems: Serial bus protocols: The CAN bus, and the USB bus, Parallel bus protocols: The PCI Bus and GPIB bus.

UNIT - III

UNIT - IV

UNIT - V
Study of Micro C/OS-II or Vx Works: RTOS System Level Functions – Task Service Functions – Time Delay Functions – Memory Allocation Related Functions – Semaphore Related Functions – Mailbox Related Functions – Queue Related Functions – Case Studies of Programming with RTOS.

TEXT BOOKS:
MTCS1063 - ARTIFICIAL INTELLIGENCE

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits : 3  External Examination : 3 hrs.

UNIT - I

UNIT - II
Knowledge Representation: Approaches and issues in knowledge representation-Knowledge - Based Agent- Propositional Logic – Predicate logic – Unification – Resolution - Weak slot – filler structure – Strong slot – filler structure.

UNIT - III

UNIT - IV
Planning and Learning: Planning with state space search - conditional planning-continuous planning - Multi-Agent planning. Forms of learning - inductive learning - Reinforcement Learning - learning decision trees - Neural Net learning and Genetic learning.

UNIT - V

TEXT BOOKS:

REFERENCES:
MTCS1064 - COMPUTER GRAPHICS

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits : 3  External Examination : 3 hrs.

UNIT – I

UNIT – II

UNIT – III

UNIT – IV

UNIT – V

TEXT BOOK:

REFERENCES:
1. David F. Rogers; “Procedural Elements for Computer Graphics”; TMH
### MTCS151 - ADVANCED DATA STRUCTURES LAB

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#### LIST OF EXPERIMENTS:

1. Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.

2. Write a C program to merge two circular linked lists.

3. Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular linked lists. a. Count the number of nodes. Write a C program to implement Polynomial ADT.

4. Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list. Also write a function to display the contents of the list.

5. Write a C program to implement a queue in which insertions, deletions and display can be performed.

6. Write a program for evaluating post fixed expressions using array and linked list implementation of list ADT.

7. Write a C program to construct a binary tree and do inorder, preorder and postorder traversals, printing the sequence of vertices visited in each case.

8. Sort a sequence of n integers using Quick sort technique and then search for a key in the sorted array using Binary search technique.

9. Write a C Program for Checking balanced parenthesis using array implementation of stack ADT

10. Write a program for Checking balanced paranthesis using linked list implementation of Stack ADT

11. Write a C program to Search tree ADT-Binary search ADT

12. Write a C program to Heap sort

13. Write a C program to Quick sort

14. Write a C Program to implement Merge Sort

15. Write a C Program to implement Shell Sort

16. Write a C Program to implement Multiway Merge Sort

17. Write a C Program to implement hashing methods.
### MTCS201 - BIG DATA

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### UNIT - I

**INTRODUCTION:** OVERVIEW OF Big Data Characteristics, Cloud Vs Big Data, issues and challenges of Big Data, stages of analytical evolution, State of the Practice in Analytics, the Data Scientist, Big data Technological approaches and Potential use cases for Big Data.

**Big Data Analytics:** Big data Analytics in Industry Verticals, Data Analytics Lifecycle, Discovery, Data preparation, Model Planning and building, communicating Results, Operational zing Unstructured Data Analytics – Test Analytics Essentials; Big Data Visualization Techniques; Advanced system Approaches for Analytics – In Database Analytics, In-memory Databases.

### UNIT - II

**Technologies and Tools for Big Data Analytics:** Basic Data Analytics Methods using R, and spreadsheet- like analytics, Stream Computing, Machine learning with Mahout.

### UNIT - III

**The Hadoop Ecosystem:** advantages of Hadoop, Query languages for Hadoop, Hadoop Distributed file System, HDFS, Overview of HBase, Hive and PIG, MapReduce Framework and MapReduce Programming.

### UNIT - IV

**NoSQL Data bases:** Review of traditional Databases, Columnar Databases, Failover and reliability principles, Working mechanisms of NoSQL Databases: HBase, Cassandra, Couch DB, Mango DB.

### UNIT - V

**Challenges for Big Data:** Data models for managing big data, Real – time streaming data analytics, Scalable analytics on larger data sets, Systems architecture for big data management, Main memory data management techniques, energy-efficient data processing, Benchmarking big data systems, Security and Privacy of Big Data, Failover and reliability for big data systems, importance of Cloud in Big Data Analytics.

### TEXT BOOKS:

2. Big Data: A Revolution That Will Transform How We Live, Work, and Think (Hardcover) by Viktor Mayer-Schönberger
3. Hadoop: The Definitive Guide (Paperback) by Tom White

### REFERENCES:

1. Map Reduce Design Patterns: Building Effective Algorithms and Analytics for Hadoop and Other Systems (Paperback) by Donald Miner.
2. Big Data Analytics: Turning Big Data into Big Money (English) By Frank T. Olhson.
MTCS202 - COMPUTER VISION

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<td>External Examination</td>
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UNIT – I


UNIT – II


UNIT – III


UNIT – IV


UNIT – V


TEXT BOOK:
MTCS203 - SOFT COMPUTING

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits    : 3                         External Examination : 3 hrs.

UNIT - I
Introduction:
Uncertainty and Evidence, Shafer Dumpster belief and possibility Theory, Random sets and mass assignments, Dumpsters Rule, Fuzzy Measures and aggregation operators, Bayesian Networks. Graphical methods.

UNIT – II
Automated Learning-1 and 2:
Automated Learning-1: Supervise vs. unsupervised learning, Decision Tree induction, rule induction algorithms.
Automated Learning-2: Bayesian network learning algorithms, Evolutionary algorithms.

UNIT – III
Neural Networks and Fuzzy Methods:
Neural Networks: Adaptive Networks, Supervised Learning NN, Reinforcement Learning, Unsupervised Learning. Fuzzy set theory, fuzzy control (including model based control), and Fuzzy Decision trees.

UNIT – IV
Hybrid systems:
Neuro Fuzzy Systems, Back propagation Network supported by Fuzzy, GA based weight determination applications.

UNIT – V
Genetic Algorithms and Applications:
Encoding, Fitness functions, reproduction, Fuzzy Genetic Algorithms.
Applications: Practical Examples from areas such as Medical, Management, and control, GA in fuzzy logic controller design.

TEXT BOOKS:
1. Neuro Fuzzy and Soft Computing, A Computational approach to learning and Machine, Jyh-Shing Roger Jang, Cuen Tsai Sun, Eiji Mizurani, PEA.

REFERENCES:
2. Neural Networks, Fuzzy logic and genetic algorithms, S Rakasekharan, GA Vijayalakshmi, PHI.
MTCS204 - ADVANCED OPERATING SYSTEMS

Lecture : 4 Periods/week  Internal Marks : 40
Tutorial : 1  External Marks : 60
Credits : 3  External Examinations : 3 Hrs

UNIT – I : Processes:

UNIT – II : Naming Systems:
NAMING ENTITIES: Names, Identifiers, and Addresses, Name Resolution, The Implementation of a Name Space, Example: DNS, X.500
LOCATING MOBILE ENTITIES: Naming versus Locating Entities, Simple Solutions, Home-Based Approaches, Hierarchical Approaches

UNIT – III : Synchronization
Clock synchronization, logical clocks, global state, election algorithms, mutual exclusion, distributed transactions

UNIT – IV : Consistency and Replication
Introduction, Data-Centric Consistency Models, Client-Centric Consistency Models, Distribution Protocols, Consistency Protocols, Examples: Orca and Causally-Consistent Lazy Replication

UNIT – V : Fault Tolerance
Introduction to Fault Tolerance, Process Resilience, Reliable Client-Server Communication, Reliable Group Communication, Distributed Commit, Recovery

TEXT BOOKS:
1. Distributed Systems, Principles and Paradigms, 2/e, Tanenbaum, Maarten Van Steen, PHI.

REFERENCES
1. Distributed Operating Systems and Algorithm Analysis, Chow, Johnson, PEA
2. Distributed Systems Concepts and Design, 4/e, George Coulouris, Dollimore, Kindberg, PEA.
5. Distributed Systems Computing over Networks, Joel M. Crichlow, PHI.
MTCS2051 - SOFTWARE TESTING AND QUALITY ASSURANCE

Lecture : 4 Periods/week
Tutorial : 1
Credits : 3

Internal Marks : 40
External Marks : 60
External Examinations : 3 Hrs

UNIT - I

UNIT - II
Testing Strategies: White box testing techniques - Statement coverage - Branch Coverage - Condition coverage - Decision/Condition coverage - Multiple condition coverage - Dataflow coverage - Mutation tests - Automated code coverage analysis - Black box testing techniques - Boundary value analysis - Robustness testing - Equivalence partitioning - Syntax testing - Finite state testing.

UNIT - III

UNIT - IV

UNIT - V

TEXT BOOKS:

REFERENCES:
1. Software testing and quality assurance: theory and practice By Kshirasagar naik, priyadarshi tripathy, WILEY INDIA PVT. LTD
2. Software Quality Assurance: Principles and Practice Nina S. Godbole
MTCS2052 - NETWORK SECURITY

Lecture: 4 Periods / Week  Internal Marks: 40
Tutorial: 1 Period / Week  External Marks: 60
Credits: 3  External Examination: 3 hrs.

UNIT - I
Introduction to Network Security:
Attacks, services, Security. A model of Inter network Security, Principles of Symmetric and public key cryptography, Steganography, One time PADS.

UNIT - II
Crypto Graphic Algorithms (Block Cipher):
RC2, GOST, CAST, BLOW FISH, SAFEER, RC5, NEWDES, CRAB, Theory of Block Cipher design.

UNIT - III
Key Management and digital Signature Algorithms:

UNIT – IV
IP and Web security:

UNIT – V
Mail Security:

TEXT BOOKS:
1. Applied Cryptography, 7/e, Bruce SCHNEIER John Wiley & Sons Inc.
2. Cryptography and Network Security, William Stallings, PHI.

REFERENCES:
1. Introduction to cryptography with coding Theory, 7/e, Wade Trappe, C. Washington, PEA.
2. Cryptography and Information Security, V.K. Pachghare, PHI.
4. Cryptography and Network Security, 2/e, Kahate, TMH.
5. Modern Cryptography, Wenbo Mao, PEA
MTCS2053 - DISTRIBUTED COMPUTING

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits  : 3  External Examination : 3 hrs.

UNIT - I
Introduction to distributed programming:
Anatomy of a Distributed Application, Requirements for Developing Distributed Applications, What Does Java Provide?
Introduction to sockets programming: Sockets and Streams, URLs, URL Connections, and Content Handlers, The Class Loader

UNIT - II
Distributing Objects:
Why Distribute Objects?, What's So Tough About Distributing Objects?, Features of Distributed Object Systems, Distributed Object Schemes for Java, CORBA, Java RMI, RMI vs. CORBA
Threads: Thread and Runnable, Making a Thread, Managing Threads at Runtime, Networked Threads

UNIT - III
Message-Passing Systems:
Messages Defined, Why Do We Need Messages?, Message Processing, Fixed Protocols, Adaptable Protocols, Message Passing with Java Events, Using Remote Objects
Databases: An Overview of JDBC, Remote Database Applications, Multi-Database Applications

UNIT - IV
The RMI Registry: Why Use a Naming Service? The RMI Registry, The RMI Registry Is an RMI Server, Examining the Registry, Limitations of the RMI Registry, Security Issues
The RMI Runtime: Reviewing the Mechanics of a Remote Method Call, Distributed Garbage Collection, RMI's Logging Facilities, Other JVM Parameters

UNIT - V

TEXT BOOKS:
Java-Distributed Computing, Jim Farley, O'Reilly.
REFERENCES:
4. Distributed Programming with Java, Qusay H. Mahmoud, Manning Publisher 2000.
8. Sun SL 301 Distributed Programming with Java.
MTCS2054 - ADVANCED COMPUTER ARCHITECTURE

Lecture : 4 Periods / Week  Internal Marks : 40
Tutorial : 1 Period / Week  External Marks : 60
Credits : 3  External Examination : 3 hrs.

UNIT - I
Parallel Computer Models, Program and Network Properties:
Parallel Computer Models: Multiprocessors and Multicomputers, Multivector and SIMD
Computers, Program and Network Properties: Conditions of Parallelism, Program Partitioning
and Scheduling, Program Flow Mechanisms, System Interconnect Architectures

UNIT - II
Principles of Scalable Performance:
Performance Metrics and Measures, Parallel Processing Applications, Speedup Performance
Laws, Scalability Analysis and Approaches

UNIT – III
Processors and Memory Hierarchy:
Advanced Processor Technology, Superscalar and Vector Processors, Memory Hierarchy
Technology, Virtual Memory Technology

UNIT – IV
Bus, Cache, and Shared Memory:
Backplane Bus Systems, Cache Memory Organizations, Shared-Memory Organizations,
Sequential and Weak Consistency Models

UNIT - V
Pipelining and Superscalar Techniques:
Linear Pipeline Processors, Nonlinear Pipeline Processors, Instruction Pipeline Design,
Arithmetic Pipeline Design, Superscalar and Super pipeline Design

Multiprocessors and Multicomputers:
Multiprocessor System Interconnects, Cache Coherence and Synchronization Mechanisms,
Three Generations of Multicomputers, Message-Passing Mechanisms

TEXT BOOKS:
2. Computer Architecture – A quantitative approach, 4/e, John L. Hennessey , David A.

REFERENCES:
1. Parallel Computing Architecture: A hardware/ software approach , David E. Culler,
2. Computer Organization and Architecture – Designing for Performance, 7/e, William
Stillings, PEa, 2006.
4. Computer Architecture & Parallel Processing, Kai Hwang, Faye A. Briggs, TMH
MTCS2061 - CLOUD COMPUTING

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UNIT - I
Foundations: Introduction to Cloud Computing, Migrating into a Cloud Enriching the 'Integration as a Service’ Paradigm for the Cloud Era, Cloud Computing for Enterprise Applications

UNIT – II

UNIT - III
Platform and Software as a Service (PaaS/IaaS): Aneka – Integration of Private and Public Clouds, CometCloud: An Autonomic Cloud Engine, T-Systems’ Cloud-Based Solutions for Business Applications,

UNIT – IV
Software as a Service(SaaS):
Workflow Engine for Clouds, Understanding Scientific Applications for Cloud Environments, The MapReduce Programming Model and Implementations

UNIT - V

TEXT BOOK:

MTCS2062 - INTERNET OF TECHNOLOGIES

Lecture : 4 Periods / Week  
Internal Marks : 40

Tutorial : 1 Period / Week  
External Marks : 60

Credits : 3  
External Examination : 3 hrs.

UNIT - I


UNIT - II


UNIT - III


UNIT - IV

Transport Control protocols for WSN: Traditional transport control protocols, Transport Protocol Design Issues, Examples of Existing transport control protocols, Performance of Transport control protocols

UNIT - V

Middleware for WSN: Introduction, WSN Middleware principles, Existing middleware. Network Management for WSN: Network management design Requirements, Traditional network management models, Networks management design issues, MANNA

TEXT BOOK:


REFERENCES:

UNIT- I
Overview of Electronic Commerce (EC), Electronic Commerce-Frame work, anatomy of E-Commerce applications, features and functions of e-commerce, e-commerce practices v/s traditional practices, scope and limitations of e-commerce

UNIT- II

UNIT- III

UNIT - IV
Electronic payment systems - Digital Token-Based, Smart Cards, Credit Cards, Risks in Electronic Payment systems. Security of e-commerce: Setting up Internet security, maintaining secure information, encryption, digital signature and other security measures.

UNIT- V

TEXT BOOKS:

REFERENCES:
UNIT – I
Introduction to Mobile Communications and Computing:
(Wireless) Medium Access Control:
Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA.

UNIT - II
Mobile Network Layer:
Mobile IP (Goals, assumptions, entities and terminology, IP packet delivery, agent advertisement and discovery, registration, tunneling and encapsulation, optimizations), Dynamic Host Configuration Protocol (DHCP).
Mobile Ad hoc Networks (MANETs):
Overview, Properties of a MANET, spectrum of MANET applications, routing and various routing algorithms, security in MANETs

UNIT - III
Mobile Transport Layer:
Traditional TCP, Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit/fast recovery, Transmission /time-out freezing, Selective retransmission, Transaction oriented TCP.

UNIT - IV
Database Issues:
Hoarding techniques, caching invalidation mechanisms, client server computing with adaptation, power-aware and context-aware computing, transactional models, query processing, recovery, and quality of service issues.
Data Dissemination: Communications asymmetry, classification of new data delivery mechanisms, push-based mechanisms, pull-based mechanisms, hybrid mechanisms, selective tuning (indexing) techniques.

UNIT - V
Protocols and Tools:
Wireless Application Protocol-WAP. (Introduction, protocol architecture, and treatment of protocols of all layers), Bluetooth (User scenarios, physical layer, MAC layer, networking, security, link management) and J2ME.
REFERENCES:

8. Adhoc Wireless Networks, 2/e, Sivaram murthy, manoj, PEA, 2009
MTCS251 - HADOOP LAB

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<th>Lab/Practical</th>
<th>3 Periods / Week</th>
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EXPERIMENTS

Week: 1
1. Downloading and installing Hadoop
2. Understanding different Hadoop modes
3. Startup scripts
4. Configuration files

Week: 2
1. Setting up Hadoop on a single node cluster
   - Starting a Single node cluster
   - Stopping a Single node cluster
2. Setting up Hadoop on a large node cluster
   - Starting up a larger cluster
   - Stopping the cluster

Week 3:
Standard word count example implemented in Java

Week 4:
First we write a program to fetch titles from one or more web pages in java Using Hadoop Streaming.

Week 5:
Practice Importing and Exporting Data from Various DBs.

Week 6:
Practice Big Data Analysis with Machine Learning
   1) Supervised machine-learning algorithms
      - Linear regression
      - Logistic regression

Week 7:
Practice Big Data Analysis with Machine Learning
   1) Unsupervised machine learning algorithm

Week 8:
Understanding Hive 197
   1) Installing Hive
   2) Setting up Hive configurations
   3) Practice Hive with example

Week 9:
1) Installing HBase
2) Installing thrift
3) Practice HBase with example

Week 10:
Practice large-data-logistic-regression-with-example
Big Data Analytics with R and Hadoop--Vignesh Prajapati--2013 Packt Publishing