IV YEAR **I SEMESTER**

S. No.	Subject	T	P	Credits
1	Cryptography and Network Security	4	-	4
2	Design Patterns	4	-	4
3	Data Ware Housing and Data Mining	4	-	4
4	Mobile Computing	4	-	4
5	**Open Elective** i. MATLAB (except CSE, IT, ECE, EEE) ii. Web Services (except CSE, IT) iii. Open Source Software iv. Cyber Laws	4	-	4
6	**Elective –I:** i. Information Retrieval Systems ii. Parallel Computing iii. Distributed Systems iv. Artificial Intelligence v. Computer Architecture	4	-	4
7	UML & Design Patterns Lab	-	3	2
8	Mobile Application Development Lab	-	3	2
	Total			**28**

IV YEAR **II SEMESTER**

S. No.	Subject	T	P	Credits
1	**Elective –II** i) Human Computer Interaction ii) Advanced Operating Systems iii) Mobile Adhoc & Sensor Networks iv)Pattern Recognition v) Digital Image Processing	4	-	4
2	**Elective –III** i) Embedded and Real time Systems ii) Simulation and Modeling iii) Computer Forensics iv)Machine Learning v) Multimedia & Application Development	4	-	4
3	**Elective –IV** i) Software Testing Methodologies ii) Neural Networks & Soft Computing iii)Social Networks and the Semantic Web iv) Cloud Computing v) E- Commerce	4	-	4
4	Software Project Management	4	-	4
5	Project			12
	Total			**28**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B.Tech. IT. II-Sem.

INTELLECTUAL PROPERTY RIGHTS AND PATENTS – II

UNIT I

Intellectual Property Law Basics – Types of Intellectual Property – Agencies responsible for Intellectual Property Regristration - Cyber crime and E-commerce – International Aspects of Computer and Online Crime

UNIT II

Introduction to Patent Law – Rights and Limitations – Rights under Patent Law – Patent requirements - Ownership - Transfer - Patents Application Process – Patent Infringement - Patent Litigation - International Patent Law – Double Patenting – Patent Searching – Patent Law Treaty - New developments in Patent Law - Invention Developers and Promoters

UNIT III

Introduction to Transactional Law: Creating Wealth and Managing Risk – The Employment Relationship in the Internet and Tech Sector – Contact for the Internet and Tech Sector - Business Assets in Information Age – Symbol and Trademark – Trolls and Landmines and other Metaphors

Unit IV

Regulatory, Compliance and Liability Issues – State Privacy Law - Date Security – Privacy issues - Controlling Over use or Misuse of 1 Intellectual Property Rights

BOOKS:

1. Deborah E.Bouchoux: "Intellectual Property". Cengage learning , New Delhi
2. Kompal Bansal & Parishit Bansal "Fundamentals of IPR for Engineers", BS Publications (Press)
3. Cyber Law. Texts & Cases, South-Western's Special Topics Collections
4. Prabhuddha Ganguli: ' Intellectual Property Rights" Tata Mc-Graw – Hill, New Delhi
5. Richard Stim: "Intellectual Property", Cengage Learning, New Delhi.
6. R. Radha Krishnan, S. Balasubramanian: "Intellectual Property Rights", Excel Books. New Delhi.
7. M.Ashok Kumar and Mohd.Iqbal Ali: "Intellectual Property Right" Serials Pub.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

CRYPTOGRAPHY AND NETWORK SECURITY

UNIT-I:

Introduction: Security Attacks, Security Services, Security Mechanisms, and a Model for Network Security, Non-Cryptographic Protocol Vulnerabilities - DoS, DDoS, Session Hijacking and Spoofing, Software Vulnerabilities - Phishing, Buffer Overflow, Format String Attacks, SQL Injection, Basics of Cryptography - Symmetric Cipher Model, Substitution Techniques, Transportation Techniques, Other Cipher Properties - Confusion, Diffusion, Block and Stream Ciphers.

UNIT-II:

Secret Key Cryptography: Data Encryption Standard(DES), Strength of DES, Block Cipher Design Principles and Modes of Operations, Triple DES, International Data Encryption algorithm, Blowfish, CAST-128, AES

UNIT-III:

Number Theory: Prime and Relatively Prime Numbers, Modular Arithmetic, Fermat's and Euler's Theorems, the Chinese Remainder Theorem, Discrete Logarithms.

UNIT-IV:

Public Key Cryptography: Principles of Public Key Cryptosystems, RSA Algorithm, Diffie-Hellman Key Exchange, Introduction to Elliptic Curve Cryptography.

UNIT-V:

Cryptographic Hash Functions: Applications of Cryptographic Hash Functions, Secure Hash Algorithm, Message Authentication Codes - Message Authentication Requirements and Functions, HMAC, Digital signatures, Digital Signature Scffemes, Authentication Protocols, Digital Signature Standards.

UNIT-VI:

Authentication Applications: Kerberos, Key Management and Distribution, X.509 Directory Authentication service, Public Key Infrastructure, Electronic Mail Security: Pretty Good Privacy, S/MIME.

UNIT-VII:

IP Security: Overview, Architecture, Authentication Header, Encapsulating Security Payload, Combining security Associations. Internet Key Exchange, Web Security: Web Security Considerations, Secure Sockets Layer and Transport Layer Security, Electronic Payment.

UNIT-VIII:

System Security: Intruders, Intrusion Detection, Password Management, Malicious Software - Types, Viruses, Virus Countermeasures, Worms, Firewalls - Characteristics, Types of Firewalls, Placement of Firewalls, Firewall Configuration, Trusted systems.

TEXT BOOKS:

1. Cryptography and Network Security: Principles and Practice, 5th Edition, William Stallings, Pearson Education, 2011.
2. Network Security and Cryptography, Bernard Menezes, Cengage Learning, 2011.
3. Cryptography and Network, 2nd Edition, Behrouz A. Fourouzan and Debdeep Mukhopadhyay, McGraw-Hill, 2010.

REFERENCE BOOKS:

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Principles of Information Security, Whitman, Thomson.
3. Introduction to Cryptography, Buchmann, Springer.
4. Applied Cryptography, 2nd Edition, Bruce Schneier, Johnwiley & Sons.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

DESIGN PATTERNS

UNIT –I

Introduction: What Is a Design Pattern?, Design Patterns in Smalltalk MVC, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, How to Select a Design Pattern, How to Use a Design Pattern.

UNIT-II

A Case Study: Designing a Document Editor: Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards, Supporting Multiple Window Systems, User Operations Spelling Checking and Hyphenation, Summary.

UNIT-III

Creational Patterns: Abstract Factory, Builder, Factory Method, Prototype, Singleton, Discussion of Creational Patterns.

UNIT-IV

Structural Pattern Part-I: Adapter, Bridge, Composite.

UNIT-V

Structural Pattern Part-II: Decorator, açade, Flyweight, Proxy.

UNIT-VI

Behavioral Patterns Part-I : Chain of Responsibility, Command, Interpreter, Iterator.

UNIT-VII

Behavioral Patterns Part-II: Mediator, Memento, Observer, State, Strategy, Template Method,, Visitor, Discussion of Behavioral Patterns.

UNIT-VIII

What to Expect from Design Patterns, A Brief History, The Pattern Community An Invitation, A Parting Thought.

TEXT BOOK:

1. Design Patterns By Erich Gamma, Pearson Education

REFERENCE BOOKS:

1. Pattern's in JAVA Vol-I By Mark Grand ,Wiley DreamTech.
2. Pattern's in JAVA Vol-II By Mark Grand ,Wiley DreamTech.
3. JAVA Enterprise Design Patterns Vol-III By Mark Grand ,Wiley DreamTech.
4. Head First Design Patterns By Eric Freeman-Oreilly-spd
5. Design Patterns Explained By Alan Shalloway,Pearson Education.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

DATA WAREHOUSING AND DATA MINING

Unit-I:

Introduction to Data Mining: What is data mining, motivating challenges, origins of data mining, data mining tasks, Types of Data-attributes and measurements, types of data sets, Data Quality (Tan)

Unit-II:

Data preprocessing, Measures of Similarity and Dissimilarity: Basics, similarity and dissimilarity between simple attributes, dissimilarities between data objects, similarities between data objects, examples of proximity measures: similarity measures for binary data, Jaccard coefficient, Cosine similarity, Extended Jaccard coefficient, Correlation, Exploring Data : Data Set, Summary Statistics (Tan)

Unit-III:

Data Warehouse: basic concepts:, Data Warehousing Modeling: Data Cube and OLAP, Data Warehouse implementation : efficient data cube computation, partial materialization, indexing OLAP data, efficient processing of OLAP queries. (H & C)

Unit-IV:

Classification: Basic Concepts, General approach to solving a classification problem, Decision Tree induction: working of decision tree, building a decision tree, methods for expressing attribute test conditions, measures for selecting the best split, Algorithm for decision tree induction.

Model over fitting: Due to presence of noise, due to lack of representation samples, evaluating the performance of classifier: holdout method, random sub sampling, cross-validation, bootstrap. (Tan)

Unit-V:

Classification-Alternative techniques: Bayesian Classifier: Bayes theorem, using bayes theorm for classification, Naïve Bayes classifier, Bayes error rate, Bayesian Belief Networks: Model representation, model building (Tan)

Unit-VI:

Association Analysis: Problem Definition, Frequent Item-set generation- The

Apriori principle , Frequent Item set generation in the Apriori algorithm, candidate generation and pruning, support counting (eluding support counting using a Hash tree) , Rule generation, compact representation of frequent item sets, FP-Growth Algorithms. (Tan)

Unit-VII:

Overview- types of clustering, Basic K-means, K –means - additional issues, Bisecting k-means, k-means and different types of clusters, strengths and weaknesses, k-means as an optimization problem.

Unit-VIII:

Agglomerative Hierarchical clustering, basic agglomerative hierarchical clustering algorithm, specific techniques, DBSCAN: Traditional density: center-based approach, strengths and weaknesses (Tan)

TEXT BOOKS:

1. Introduction to Data Mining : Pang-Ning tan, Michael Steinbach, Vipin Kumar, Pearson
2. Data Mining ,Concepts and Techniques, 3/e, Jiawei Han , Micheline Kamber , Elsevier

REFERENCE BOOKS:

1. Introduction to Data Mining with Case Studies 2nd ed: GK Gupta; PHI.
2. Data Mining : Introductory and Advanced Topics : Dunham, Sridhar, Pearson.
3. Data Warehousing, Data Mining & OLAP, Alex Berson, Stephen J Smith, TMH
4. Data Mining Theory and Practice, Soman, Diwakar, Ajay, PHI, 2006.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

MOBILE COMPUTING

UNIT-I:

Introduction: Mobile Communications : An Overview - Mobile Communication - guided transmission, unguided transmission - signal propagation frequencies, antennae, modulation, modulation methods and standards for voice-oriented data communication standards, modulation methods and standards for data and voice communication, mobile computing - novel applications and limitations, mobile computing architecture, mobile system networks.

UNIT-II:

Mobile devices and systems : Cellular networks and frequency reuse, Mobile smart phones, Smart mobiles and systems, Handheld pocket computers, Handheld devices, Smart systems, Limitations of mobile devices.

UNIT-III:

GSM and other 2G Architectures : GSM - services and system architecture, Radio interfaces of GSM, Protocols of GSM, Localization, Call handling, GPRS system architecture.

UNIT-IV:

Wireless medium access control, CDMA, 3G and 4G communication : Modulation, Multiplexing, Controlling the medium access, Spread spectrum, Coding methods, IMT-20003G wireless communication standards, WCDMA 3 G communication standards, CDMA 3G communication standards, Broadband wireless access, 4Gnetworks.

UNIT-V:

Mobile IP Network layer: IP and Mobile IP network layers: OSI layer functions, TCP/IP and Internet protocol, Mobile internet protocol; Packet delivery and Handover Management; Location Management: Agent Discovery; Mobile TCP.

UNIT-VI:

Synchronization: Synchronization in mobile computing systems, Usage models for Synchronization in mobile application, Domain-dependant specific

rules for data synchronization, Personal information manager, synchronization and conflict resolution strategies, synchronizer; Mobile agent: mobile agent design, aglets; Application Server.

UNIT-VII:

Introduction to Mobile Adhoc network: fixed infrastructure architecture, MANET infrastructure architecture; MANET: properties, spectrum, applications; Security in Ad-hoc network; Wireless sensor networks; sensor network applications.

UNIT-VIII:

Mobile Wireless Short Range Networks and Mobile Internet : Wireless networking and wireless LAN, Wireless LAN (WLAN) architecture, IEEE 802.11 protocol layers, Wireless application protocol (WP)-WAP1.1 architecture, wireless datagram protocol (WDP), Wireless Transport Layer Security (WTLS), wireless transaction and session layers, wireless application environment.

TEXT BOOK:

1. RAJ KAMAL, "Mobile Computing," second edition, Oxford.
2. ASOKE K TALUKDER, HASAN AHMED, ROOPA R YAVAGAL, "Mobile Computing, Technology Applications and Service Creation" Second Edition, Mc Graw Hill.

REFERENCE BOOKS:

1. UWE Hansmann, Lother Merk, Martin S. Nocklous, Thomas Stober, "Principles of Mobile Computing," Second Edition, Springer.
2. Jochen Schiller, "Mobile Communications," second edition, Pearson

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

INFORMATION RETRIEVAL SYSTEMS

UNIT-I:

Introduction: Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses.

UNIT-II:

Information Retrieval System Capabilities: Search, Browse, Miscellaneous

Cataloging and Indexing: Objectives, Indexing Process, Automatic Indexing, Information Extraction.

UNIT-III:

Data Structures: Introduction, Stemming Algorithms, Inverted file structures, N-gram data structure, PAT data structure, Signature file structure, Hypertext data structure.

UNIT-IV:

Automatic Indexing: Classes of automatic indexing, Statistical indexing, Natural language, Concept indexing, Hypertext linkages

UNIT-V:

Document and Term Clustering: Introduction, Thesaurus generation, Item clustering, Hierarchy of clusters.

UNIT-VI:

User Search Techniques: Search statements and binding, Similarity measures and ranking, Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext.

UNIT-VII:

Information Visualization: Introduction, Cognition and perception, Information visualization technologies.

UNIT-VIII:

Text Search Algorithms: Introduction, Software text search algorithms,

Hardware text search systems.

Information System Evaluation: Introduction, Measures used in system evaluation, Measurement example – TREC results.

TEXT BOOKS:

1. Kowalski, Gerald, Mark T Maybury: Information Retrieval Systems: Theory and Implementation, Kluwer Academic Press, 1997.

REFERENCE BOOKS:

1. Frakes, W.B., Ricardo Baeza-Yates: Information Retrieval Data Structures and Algorithms, Prentice Hall, 1992.
2. Modern Information Retrival By Yates Pearson Education.
3. Information Storage & Retieval By Robert Korfhage – John Wiley & Sons.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

IV Year B.Tech. IT. I-Sem.

PARALLEL COMPUTING

UNIT I:

Introduction: Computational demand in various application areas, advent of parallel processing, terminology-pipelining, Data parallelism and control parallelism-Amdahl's law. Basic parallel random access Machine Algorithms-definitions of P, NP and NP-Hard, NP-complete classes of sequential algorithms; NC–class for parallel algorithms.

UNIT II:

Scheduling: Organizational features of Processor Arrays, Multi processors and multi-computers. Mapping and scheduling aspects of algorithms. Coffman-graham scheduling algorithm for parallel processors.

UNIT III:

Algorithms-1: Elementary Parallel algorithms on SIMD and MIMD machines, Analysis of these algorithms. Matrix Multiplication algorithms on SIMD and MIMD models.

UNIT IV:

Algorithms-2: Fast Fourier Transform algorithms. Implementation on Hyper cube architectures. Solving linear file -system of equations, parallelizing aspects of sequential methods back substitution and Tri diagonal.

UNIT V: Array processors: Array processors, 2D-Mesh processor and Hypercube Processor Array.

UNIT VI:

Sorting: Parallel sorting methods, Odd-even transposition Sorting on processor arrays, Parallel Quick-sort on Multi processors. Hyper Quick sort on hypercube multi computers, merge sort on shuffle-exchange ID.

UNIT VII:

Searching-1: Parallel search operations. Ellis algorithm and Manber and ladner's Algorithms for dictionary operations.

UNIT VIII:

Searching-2: Parallel algorithms for Graph searching, All Pairs shortest paths and minimum cost spanning tree.

TEXT BOOKS:

1. Parallel Computing Theory and Practice, Michel J.Quinn
2. Programming Parallel Algorithms, Guy E. Blelloch, Communications of the ACM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

DISTRIBUTED SYSTEMS

UNIT I:

Characterization of Distributed Systems: Introduction, Examples of Distributed Systems, Resource Sharing and The Web, Challenges.

UNIT II:

System Models: Introduction, Architectural Models- Software Layers, System Architecture, Variations, Interface and Objects, Design Requirements for Distributed Architectures, Fundamental Models- Interaction Model, Failure Model, Security Model.

UNIT III:

Interprocess Communication: Introduction, The API for the Internet Protocols- The Characteristics of Interprocess communication, Sockets, UDP Datagram Communication, TCP Stream Communication; External Data Representation and Marshalling; Client Server Communication; Group Communication- IP Multicast- an implementation of group communication, Reliability and Ordering of Multicast.

UNIT IV:

Distributed Objects and Remote Invocation: Introduction, Communication between Distributed Objects- Object Model, Distributed Object Modal, Design Issues for RMI, Implementation of RMI, Distributed Garbage Collection; Remote Procedure Call, Events and Notifications, Case Study: JAVA RMI

UNIT V:

Operating System Support: Introduction, The Operating System Layer, Protection, Processes and Threads -Address Space, Creation of a New Process, Threads.

UNIT VI:

Distributed File Systems: Introduction, File Service Architecture; Peer-to-Peer Systems: Introduction, Napster and its Legacy, Peer-to-Peer Middleware, Routing Overlays.

UNIT VII:

Coordination and Agreement: Introduction, Distributed Mutual Exclusion, Elections, Multicast Communication.

UNIT VIII:

Transactions & Replications: Introduction, System Model and Group Communication, Concurrency Control in Distributed Transactions, Distributed Dead Locks, Transaction Recovery; Replication-Introduction, Passive (Primary) Replication, Active Replication.

TEXT BOOKS:

1. Ajay D Kshemkalyani, Mukesh Sighal, "Distributed Computing, Principles, Algorithms and Systems", Cambridge
2. George Coulouris, Jean Dollimore, Tim Kindberg, "Distributed Systems-Concepts and Design", Fourth Edition, Pearson Publication

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

ARTIFICIAL INTELLIGENCE

UNIT I:

Introduction to artificial intelligence: Introduction ,history, intelligent systems, foundations of AI, applications, tic-tac-tie game playing, development of ai languages, current trends in AI

UNIT II:

Problem solving: state-space search and control strategies: Introduction, general problem solving, characteristics of problem, exhaustive searches, heuristic search techniques, iterative-deepening a*, constraint satisfaction

Problem reduction and game playing: Introduction, problem reduction, game playing, alpha-beta pruning, two-player perfect information games

UNIT III:

Logic concepts: Introduction, propositional calculus, proportional logic, natural deduction system, axiomatic system, semantic tableau system in proportional logic, resolution refutation in proportional logic, predicate logic.

UNIT IV:

Knowledge representation: Introduction, approaches to knowledge representation, knowledge representation using semantic network, extended semantic networks for KR, knowledge representation using frames **advanced knowledge representation techniques:** Introduction, conceptual dependency theory, script structure, cyc theory, case grammars, semantic web

UNIT V:

Expert system and applications: Introduction phases in building expert systems, expert system versus traditional systems, rule-based expert systems blackboard systems truth maintenance systems, application of expert systems, list of shells and tools

UNIT VI:

Uncertainty measure: probability theory: Introduction, probability theory, Bayesian belief networks, certainty factor theory, dempster-shafer theory

Fuzzy sets and fuzzy logic: Introduction, fuzzy sets, fuzzy set operations,

types of membership functions, multi valued logic, fuzzy logic, linguistic variables and hedges, fuzzy propositions, inference rules for fuzzy propositions, fuzzy systems.

UNIT VII:

machine learning paradigms: Introduction, machine learning systems, supervised and unsupervised learnings, inductive learning, deductive learning, clustering, support vector machines, case based reasoning and learning

UNIT VIII:

Artificial neural networks: Introduction, artificial networks, single layer feed forward networks, multi layered forward networks, design issuesof artificial neural networks

TEXT BOOKS:

1. Artificial Intelligence- Saroj Kaushik, CENGAGE Learning.
2. Artificial Intelligence, A modern Approach , 2nd ed, Stuart Russel, Peter Norvig, PEA
3. Artificial Intelligence- Rich, Kevin Knight,Shiv Shankar B Nair, 3rd ed, TMH
4. Introduction to Artificial Intelligence, Patterson, PHI.

REFERNCE BOOKS:

1. Artificial Intelligence, structures and Strategies for Complex problem solving, -George F Lugar, 5th ed, PEA
2. Introduction to Artificial Intelligence, Ertel, Wolf Gang, Springer
3. Artificial Intelligence, A new Synthesis, Nils J Nilsson, Elsevier

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

COMPUTERARCHITECTURE

UNIT I:

Parallel Computer: The state of computing- Computer Development Milestones, Elements of Modern Computers, Evolution of Computer Architecture, System Attributes to performance; Multiprocessors and Multicomputers-Shared Memory Multiprocessors, Distributed Memory Multiprocessors, A Taxonomy of MIMD Computers; Multivector and SIMD Computers-Vector Super computers, SIMD Supercomputers.

UNIT II:

Memory Hierarchy Design: Introduction- Basic Memory Hierarchy, Optimization of Cache Performance- Small and Simple First-Level Caches to Reduce Hit Time and Power, Way Prediction to Reduce Hit Time, Pipelined Cache Access to Increase Cache Bandwidth, Non blocking Caches to Increase Cache Bandwidth; Virtual Memory and Virtual Machines- Protection Via Virtual Memory, Protection via Virtual Machines .

UNIT III:

Design space of processors, Instruction-set Architectures, Characteristics of typical CISC and RISC Architecture, Hierarchical Memory Technology, Inclusion, Coherence and Locality.

UNIT IV:

Linear and Nonlinear Pipeline Processors: Asynchronous and Synchronous models, Clocking and Timing control, Speedup, Efficiency and Throughput; Nonlinear pipeline processors: Reservation and Latency analysis-Problems, Collision Free Scheduling-problems, Instruction Execution Phases.

UNIT V:

Multiprocessor and Multivector Computers- Hierarchical Bus Systems, Crossbar Switch and Multiport Memory; Multistage and Combining Networks- Routing, The Hot-Spot Problem, Applications and Drawbacks, Multistage Networks in Real Systems; Multivector Computers: Vector Processing Principles- Vector Instruction Types, Vector Access Memory Schemes, Cray Y-MP Multivector Multiprocessors- Cray Y-MP 816 System Organization, Multistage Crossbar Network in the Cray Y-MP 816.

UNIT VI:

Cache Coherence and Message Passing Mechanisms- Cache Coherence problem-Two protocol approaches, Snoopy Bus Protocols, Directory based Protocols; Message Passing Mechanisms- Message-Routing Schemes, Deadlock Virtual Channels, Flow Control Strategies, Multicast Routing Algorithms.

UNIT VII:

VSIMD and MIMD Computer Organizations- Implementation models, The CM-2 Architecture: A Synchronized MIMD Machine, Control Processors and Processing Nodes, Interprocessor Communications.

UNIT VIII: Trends in Parallel Systems: Forms of Parallelism- Structural Prallelism versus Instruction Level Parallelism, A Simple Parallel Computation, Parallel Algorithms, Stream Processing; Cray Line of Computer Systems;

TEXT BOOKS:

1. KAI HWANG & NARESH JOTWANI "Advanced Computer Architecture- Parallelism, Scalability, Programmability" Second Edition, Mc Graw Hill Publishing.
2. HENNESSY PATTERSON, "Computer Architecture- A Quantitative Approach" Fifth Edition, Elsevier

REFERENCE BOOKS:

1. http://www.google.co.in/search?q=nptel+computer+a rchitecture&hl = en&sa = X&gbv = 2&prmd = ivns&source = univ&tbm = vid&tbo = u&ei=n-leT-quOcvjrAej1e2MBg&oi = video_result_group&ct =title&resnum = 6&ved = 0CCcQqwQwBQ&gs_sm =12&gs_upl = 3121913121910l32141111110l0l0l0l0l203120312 -11110&oq = NPTEL + Comp&aq = 6&aqi = g10&aql =
2. Computer Architecture, Concepts and Evolutions, Garrit A Blaauw, PEA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

UML & Design Patterns Lab

1. To create a UML diagram of ATM APPLICATION.
2. To create a UML diagram of LIBRARY MANAGEMENT SYSTEM.
3. To create a UML diagram of ONLINE BOOK SHOP
4. To create a UML diagram of RAILWAY RESERVATION SYSTEM
5. To create a UML diagram for BANKING SYSTEM
6. To design a Document Editor
7. Using UML design Abstract factory design pattern
8. Using UML design Builder Design pattern
9. Using UML design Facade Design pattern
10. Using UML design Bridge Design pattern
11. Using UML design Decorator Design pattern
12. User gives a print command from a word document. Design to represent this chain of responsibility design pattern

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

MOBILE APPLICATION DEVELOPMENT LAB

1. Write a J2ME program to show how to change the font size and colour.
2. Write a J2ME program which creates the following kind of menu.
   * cut
   * copy
   * past
   * delete
   * select all
   * unselect all
3. Create a J2ME menu which has the following options (Event Handling):
   - cut - can be on/off
   - copy - can be on/off
   - paste - can be on/off
   - delete - can be on/off
   - select all - put all 4 options on
   - unselect all - put all
4. Create a MIDP application, which draws a bar graph to the display. Data values can be given at int[] array. You can enter four data (integer) values to the input text field.
5. Create an MIDP application which examine, that a phone number, which a user has entered is in the given format (Input checking):
   * Area code should be one of the following: 040, 041, 050, 0400, 044
   * There should 6-8 numbers in telephone number (+ area code)
6. Write a sample program to show how to make a SOCKET Connection from J2ME phone. This J2ME sample program shows how to how to make a SOCKET Connection from a J2ME Phone. Many a times there is a need to connect backend HTTP server from the J2ME application. Show how to make a SOCKET connection from the phone to port 80.
7. Login to HTTP Server from a J2ME Program. This J2ME sample program shows how to display a simple LOGIN SCREEN on the J2ME phone and how to authenticate to a HTTP server. Many J2ME applications for security reasons require the authentication of the user. This free J2ME sample program, shows how a J2ME application can do authentication to the backend server. Note: Use Apache Tomcat Server as Web Server and MySQL as Database Server.
8. The following should be carried out with respect to the given set of application domains: (Assume that the Server is connected to the well-maintained database of the given domain. Mobile Client is to be connected to the Server and fetch the required data value/information)
   - Students Marks Enquiry
   - Town/City Movie Enquiry
   - Railway/Road/Air (For example PNR) Enquiry/Status
   - Sports (say, Cricket) Update
   - Town/City Weather Update
   - Public Exams (say Intermediate or SSC)/ Entrance (Say EAMCET) Results Enquiry

   Divide Student into Batches and suggest them to design database according to their domains and render information according the requests.
9. Write an Android application program that displays Hello World using Terminal.
10. Write an Android application program that displays Hello World using Eclipse.
11. Write an Android application program that accepts a name from the user and displays the hello name to the user in response as output using Eclipse.

12. Write an Android application program that demonstrates the following:
    (i) LinearLayout
    (ii) RelativeLayout
    (iii) TableLayout
    (iv) GridView layout
13. Write an Android application program that converts the temperature in Celsius to Fahrenheit.
14. Write an Android application program that demonstrates intent in mobile application development.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

MATLAB

UNIT I:

Introduction: What is MATLAB, Basics of MATLAB, MATLAB windows, on-line help, input-output, file types.

UNIT II:

MATLAB Basics: A Minimum MATLAB Session, Creating and Working with Arrays of Numbers, Creating and Printing Simple Plots, Creating, Saving, and Executing a Script File, Creating and Executing a Function File.

UNIT III:

Arrays and matrices: Matrices and Vectors, Input, Indexing, Matrix manipulation, Creating vectors, Matrix and Array Operations, Arithmetic operations, Relational operations, Logical operations, Elementary math functions, Matrix functions.

UNIT IV:

Programming basics: Relational and logical operators, if-end structure, if-else-end structure, if-elseif-else-end structure, switch-case statement, for-end loop, while-end loop, break and continue commands.

UNIT V:

Scripts and Functions: Script Files, Function Files, Executing a function, Subfunctions, Nested functions.

UNIT VI:

Graphics: Basic 2-D Plots, Style options, Labels, title, legend, and other text objects, Modifying plots with the plot editor, 3-D Plots, Mesh and surface plots.

UNIT VII:

Handle graphics: The object hierarchy, Object handles, Object properties, modifying an existing plot.

UNIT VIII:

Graphical user interface (GUI): how a GUI works, creating and displaying a GUI.

TEXT BOOKS:

1. Getting started with MATLAB by Rudra Pratap,Nov 2009. PHI
2. Programming in MATLAB for Engineers by Stephen J.Chapman, Cengage Learning.

REFERENCE BOOKS:

1. MATLAB: An introduction with Applications by Amos Gilat, Wiley Student edition.
2. MATLAB for Engineering Explained, Gusfafsson, Fredrik, Bergmam, Niclas

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

IV Year B.Tech. IT. I-Sem.

WEB SERVICES

UNIT I:

Evolution and Emergence of Web Services - Evolution of distributed computing, Core distributed computing technologies – client/server, CORBA, JAVA RMI, Micro Soft DCOM, MOM, Challenges in Distributed Computing, role of J2EE and XML in distributed computing, emergence of Web Services and Service Oriented Architecture (SOA).

UNIT II:

Introduction to Web Services – The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits and challenges of using web services.

UNIT III:

Web Services Architecture – Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication, basic steps of implementing web services, developing web services enabled applications.

UNIT IV:

Describing Web Services – WSDL – WSDL in the world of Web Services. Web Services life cycle, anatomy of WSDL definition document, WSDL bindings, WSDL Tools, limitations of WSDL.

UNIT V:

Core fundamentals of SOAP – SOAP Message Structure, SOAP encoding , SOAP message exchange models, SOAP communication and messaging, SOAP security.

Developing Web Services using SOAP – Building SOAP Web Services, developing SOAP Web Services using Java, limitations of SOAP.

UNIT VI:

Discovering Web Services – Service discovery, role of service discovery in a SOA, service discovery mechanisms, UDDI – UDDI Registries, uses of

UDDI Registry, Programming with UDDI, UDDI data structures, support for categorization in UDDI Registries, Publishing API, Publishing information to a UDDI Registry, searching information in a UDDI Registry, deleting information in a UDDI Registry, limitations of UDDI.

UNIT VII:

Web Services Interoperability – Means of ensuring Interoperability, Overview of .NET and J2EE.

UNIT VIII:

Web Services Security – XML security frame work, XML encryption, XML digital signature, XKMS structure, guidelines for signing XML documents.

TEXT BOOKS:

1. Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India.
2. Java Web Services Architectures, Mc Goven , Tyagi, Stevens, Mathew, Elsevier
3. XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.
4. Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education.

REFERENCE BOOKS:

1. Building Web Services with Java, 2nd Edition, S. Graham and others, Pearson Education.
2. Java Web Services, D.A. Chappell & T. Jewell, O'Reilly,SPD.
3. McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers, 2005.
4. J2EE Web Services, Richard Monson-Haefel, Pearson Education.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, KAKINADA

IV Year B.Tech. IT. I-Sem.

OPEN SOURCE SOFTWARE

UNIT I:

INTRODUCTION: Introduction to Open sources – Need of Open Sources – Advantages of Open Sources– Application of Open Sources. Open source operating systems: LINUX: Introduction – General Overview – Kernel Mode and user mode

UNIT II:

LINUX: Process – Advanced Concepts – Scheduling – Personalities – Cloning – Signals – Development with Linux.

UNIT III:

OPEN SOURCE DATA BASE: MySQL: Introduction – Setting up account – Starting, terminating and writing your own SQL programs – Record selection Technology – Working with strings – Date and Time– Sorting Query Results – Generating Summary – Working with metadata – Usings equences – MySQL and Web.

UNIT IV:

OPEN SOURCE PROGRAMMING LANGUAGES : PHP: Introduction – Programming in web environment – variables – constants – data types – operators – Statements – Functions – Arrays – OOP – String Manipulation and regular expression – File handling and data storage

UNIT V:

PHP and SQL database –PHP and LDAP – PHP Connectivity – Sending and receiving E-mails – Debugging and error handling – Security – Templates.

UNIT VI:

PYTHON : Syntax and Style – Python Objects – Numbers – Sequences – Strings – Lists and Tuples – Dictionaries – Conditionals and Loops

UNIT VII:

Files – Input and Output – Errors and Exceptions – Functions – Modules – Classes and OOP – Execution Environment.

UNIT VIII:

PERL : Perl backgrounder – Perl overview – Perl parsing rules – Variables and Data – Statements and Control structures – Subroutines, Packages, and Modules- Working with Files –Data Manipulation.

TEXT BOOKS:

1. Remy Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications, 2003
2. Steve Suchring, "MySQL Bible", John Wiley, 2002

REFERENCES:

1. Rasmus Lerdorf and Levin Tatroe, "Programming PHP", O'Reilly, 2002
2. Wesley J. Chun, "Core Phython Programming", Prentice Hall, 2001
3. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
4. Steven Holzner, "PHP: The Complete Reference", 2nd Edition, Tata McGraw-Hill Publishing Company Limited, Indian Reprint 2009.
5. Vikram Vaswani, "MYSQL: The Complete Reference", 2nd Edition, Tata McGraw - Hill Publishing Company Limited, Indian Reprint 2009.

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IV Year B.Tech. IT. I-Sem.

CYBER LAWS

UNIT I:

The IT Act, 2000: A Critique: Crimes in this Millennium, Section 80 of the IT Act, 2000 – A Weapon or a Farce?, Forgetting the Line between Cognizable and Non- Cognizable Officers, Arrest for "About to Commit" an Offence Under the IT Act, A Tribute to Darco, Arrest, But No Punishment.

UNIT II:

Cyber Crime and Criminal Justice: Penalties, Adjudication and Appeals Under the IT Act, 2000: Concept of Cyber Crime and the IT Act, 2000, Hacking, Teenage Web Vandals, Cyber fraud and Cyber Cheating, Virus on Internet Deformation, Harassment and E-mail Abuse

UNIT III:

Cyber Pornography, Other IT Offences, Monetary Penalties, Adjudication and Appeals Under IT Act 2000, Network Service Providers, Jurisdiction and Cyber Crimes, Nature of Cyber Criminality Strategies to Tackle Cyber Crime and Trends, Criminal Justice in India and Implications.

UNIT IV:

Digital Signatures, Certifying Authorities and E-Governance: Digital Signatures, Digital Signature Certificate, Certifying Authorities and Liability in the Event of Digital Signature compromise, E-Governance in the India. A Warming to Babudom, Are Cyber Consumers Covered under the Consumer Protection, Goods and Services, Consumer Complaint Defect in Goods and Deficiency in Services Restrictive and Unfair Trade Practices

UNIT V:

Traditional Computer Crime: Early Hacker and Theft of Components

Traditional problems, Recognizing and Defining Computer Crime. Phreakers: Yesterday's Hackers, Hacking, Computers as Commodities, Theft of intellectual Property

UNIT VI:

Web Based Criminal Activity, Interference with Lawful Use of Computers, Malware, DoS (Denial of Service) and DDoS (Distributed Denial of Service)

Attacks, Spam , Ransomware and Kidnapping of Information, Theft of Information, Data Manipulation, and Web Encroachment , Dissemination of Contraband or Offensive materials, Online Gambling Online Fraud, Securities Fraud and stock Manipulation, Ancillary crimes

UNIT VII:

IDEBTITY THEFT AND IDENTITY FRAUD: Typologies of Internet Theft/ Fraud, Prevalence and Victimology, Physical Methods of Identity Theft, Virtual and Internet Facilitated methods, Crimes facilitated by Identity theft/fraud, Organized Crime and Technology

UNIT VIII:

Protection of Cyber consumers in India Cyber-consumer act Consumer, Goods and service, consumer compliant, restricted and unfair trade practices

TEXTBOOKS:

1. Vivek Sood, " Cyber Law Simplefied", Tata McGraw Hill
2. Marjie T. Britz, "Computer Forensics and Cyber Crime", Pearson.
3. Cyber Laws Texts and Cases, Ferrera, CENGAGE