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UNIVERSITY OF CALICUT

(Abstract)

Scheme and Syllabus of II and III semesters of M. Sc Computer Science of affiliated colleges under Credit Semester System (CUCSS-PG-2010) implemented with effect from 2010 admission-orders issued.

GENERAL & ACADEMIC BRANCH-IV 'J' SECTION

No. GA IV/J1/4639/10

Dated, Calicut University PO, 10.06.2011

Read: 1. U.O.No.GAIV/J1/1373/08 dated 23.07.2010.

2. U.O. No. GAIV/J1/4639/10 dated 14.09.2010.

3. Item No.2 of the Minutes of the meeting of Board of studies in Computer Science held on 20.10.2010.

3. Orders of the Vice-Chancellor in the file of even No. dated 18.05.2011.

ORDER

As per paper read as (1) above, Credit Semester System at post graduate level in affiliated colleges (CUCSS-PG-2010) has been implemented from the academic year 2010 onwards.

Vide paper read as (2) above, the syllabus of I semester of M.Sc.Computer Science was implemented in the affiliated colleges of the University.

The Board of studies at its meeting, vide paper read as (3) above, resolved to implement the syllabus for the II and III semester of M Sc. Computer Science.

The Vice-Chancellor, in view of exigency, exercising the powers of Academic Council has approved the minutes of the meeting of the Board, subject to ratification by the Academic Council.

Sanction has, therefore, been accorded to implement the scheme and syllabus of the II and III semester M.Sc.Computer Science programme of affiliated colleges under Credit Semester System with effect from 2010 admission.

Orders are issued accordingly. Scheme and Syllabus appended.

Sd/-

**ASSISTANT REGISTRAR(G&A -IV)
For REGISTRAR**


To

1. The Principals of all affiliated Colleges offering M.Sc.Computer Science.
2. Self financing centres of the University of Calicut offering M.Sc.Computer Science.

Copy to:

PS to VC/PA to Registrar/CE/Digital wing (with a request to upload in the University website)/Enquiry/Information Centres/ GA I 'F' 'A' sections/GAII/GAIII/DDLFA/SF/FC

Forwarded/By Order


SECTION OFFICER

University Of Calicut
MSc Computer Science
Course Structure, Scheme & Syllabus :
(Credit Semester System 2010 Admission Onwards)

Semester I

Subject Code	Subject Title	Instructional Hours/week			Marks		
		Theory	Practical	Total	Internal	Final	Credit
CSC1C01	Discrete Mathematics	4	0	4	25	75	4
CSC1C02	Advanced Data Structures	3	1	4	25	75	4
CSC1C03	Object oriented Concepts & C++	2	2	4	25	75	4
CSC1C04	Theoretical Computer Science	4	0	4	25	75	4
CSC1C05	Advanced Microprocessor	3	2	5	25	75	4
CSC1P06	Lab I: 1. Data structures using C++. 2. Microprocessor	0	4	4	25	75	0

Total Credit

20

Semester II

Subject Code	Subject Title	Instructional Hours/week			Marks		
		Theory	Practical	Total	Internal	Final	Credit
CSC2C01	Advanced Computer Graphics	4	0	4	25	75	4
CSC2C02	Database Management Systems	4	0	4	25	75	4
CSC2C03	Software Engineering	4	0	4	25	75	4
CSC2C04	Advanced Java programming	4	0	4	25	75	4
CSC2E05	Elective I	4	0	4	25	75	4
CSC2P06	Lab II: 1. Java Programming 2. Computer Graphics	0	4	4	25	75	4

Total Credit

24

Semester III

Subject Code	Subject Title	Instructional Hours/week			Marks		
		Theory	Practical	Total	Internal	Final	Credit
CSC3C01	Operating System	4	0	4	25	75	4
CSC3C02	.Net Technology	2	2	4	25	75	4
CSC3C03	Network programming & administration	3	1	4	25	75	4
CSC3C04	Artificial Intelligence	4	0	4	25	75	4
CSC3E05	Elective II	4	0	4	25	75	4
CSC3P06	Lab III: 1.ASP.Net 2. Network programming & Administration	0	4	4	25	75	4

Total Credit

24

Evaluation and Grading (as done in B.Sc CCSS):

All gradings starting from the evaluation of papers is done on 5 point scale (A, B, C, D, E) and SGPA and CGPA – between 0 to 4 and in two decimal points.

CGPA in 7 point scale

3.8 to 4.0 → A+ , 3.5 to 3.79 → A, 3.0 to 3.49 → B+, 2.5 to 2.99 → B, 2.2 to 2.49 → C+, 1.5 to 2.19 → C, below 1.5 → D

Internal – weightage (wt) =1 (25%) and External – wt=3 (75%)

1. Internal evaluation (must be transparent and fair):

Theory: (a) Tests – wt=2 (at least 2 tests with 50% Problems)
 (b) Tutorial on assignments and Exercises – wt=1
 (c) Seminars and Viva Voce – wt=1
 1. Attendance – wt=1

Practicals: (a) Tests – wt=2
 (b) Lab. skill/quality of their results – wt=1
 (c) Viva Voce – wt=1

Project: (a) Monthly progress – wt=2
 (b) Regularity and attendance – wt=1
 (c) Seminar and Viva Voce – wt=1

2. External evaluation:

Theory: Every semester

Pattern of question Papers:

Part A: Short answer type - 12 questions (No choice) – wt=1 (12x1=12)

Part B: Short Essay type -Answer any 6 out of 9 –wt =2 (6 x2=12)

Part C Essay type /Prorams/psuecode/problems type – 3 out of 6 – wt=4 (3x4=12)

Answer to each question may be evaluated based on

- (a) Idea/knowledge – wt=1
- (b) Logic/steps – wt=1
- (c) Analytic skill – wt=1
- (d) Correctness – wt=1

1. Directions for question paper setters:

Part A: Set each questions to be answered in 7 minutes duration and should extract the critical knowledge acquired by the candidate in the subject.

Part B: 30 minutes answerable questions each. May be asked as a single question or parts. Derivation type questions can be also asked.

CSC1C01 Discrete Mathematics

Unit I

Sets & Proposition - Introduction, Combinations Of Sets, Finite And Infinite Sets, Unacceptable Indefinite Sets, Principles Of Inclusion And Exclusion, Propositions. Relations And Functions– Introduction. A Relation Model For Database . Properties Of Binary Relations. Equivalence Relations And Lattices, Partial Ordering Relations And Lattices . Chain And Antichains, A Job Scheduling Problems And The Pigeonhole Principles.

UNIT II

Recurrence relations and recursive algorithm-Introduction, Recurrence, Relations, Linear Recurrence With Coefficient Solutions, particular solutions, Total Solutions

UNIT III

Groups and ring-Groups and Subgroups, Generators and Evaluations of Powers, Cosets and Lagrange Theorem, Permutation, Groups and Codes, Isomorphism and Automorphisms, Homomorphism and Normal Groups, Rings, Integral Domains and Fields, Polynomial Ring and Cyclic Codes.

UNIT IV

Boolean algebra's-Lattices and Algebraic System. Principles of Duality, Basic Properties of Algebra's of System. Defined by Lattices, Distributive and Complemented Lattices, Boolean Lattices and Boolean Algebra's . Uniqueness Finite Boolean Algebra's . Boolean Functions and Boolean Expressions, Propositional Calculus.

UNIT V

Finite state machines-Introduction, Finite State Machines, Finite State Machine as Model of Physical System, Equivalent Machines, Finite State Machine as Language Recognizers.

REFERENCES:

2. Elements Of Discrete Mathematics By C.L.Liu–Mcgraw–Hills P
3. Applied Discrete Structure For Computer Science By Alan Doerr And Kenneth Levassur-
Galgotia Publication
3. Discrete Mathematics by J.K. Sharma ,Macmillan India Ltd

CSC1C02 Advanced Data Structures

Unit I

Overview :Arrays - Stacks - Queues - Linked lists - Trees - Graphs.

Unit II

Generalized Linked Lists :Representation - Recursive Algorithms - Reference Counts - Shared and Recursive Lists; Heterogeneous Lists - Deterministic Skip Lists.

Unit III

Hashing : Separate Chaining; Open Addressing - Linear Probing - Quadratic Probing; Double Hashing - Rehashing - Extendible Hashing.

Unit IV

Search Structures : 2-3 Trees - 2-3-4 Trees Rd-Black Trees - B-Trees - Splay Trees - Digital Search Trees Tries - Differential Files - AA-Trees - Treaps - K Trees K-d Trees - Kd Tries.

Unit V

Heap Structures :Min-Max Heaps - Deaps - Leftist Heaps - Binomial Heaps - Fibonacci Heaps - Binary Heaps - Skew Heaps # Pairing Heaps - Applications; Amortized Analysis - An unrelated Puzzle - Binomial Queues - Skew Heaps - Fibonacci Heaps - Splay Trees.

References :

1. Ellis Horowitz, Sartaj Sahni, Dinesh Mehta, Fundamentals of Data Structures in C++, Galgotia, 1999.
2. Mark Allen Weiss, Data Structures & Algorithm Analysis in C++, 2nd Ed., Pearson Education Asia

CSC1C03 Theoretical Computer Science

Unit I

Preliminaries: Review of proof techniques - Mathematical induction - Countable and uncountable sets – Basic concepts of languages – automata and grammar. Regular languages: Regular expressions - Finite deterministic and non-deterministic automata – regular grammar. Equivalence between various models (Kleene's Theorem). Boolean closure properties, homomorphism, substitution- decision algorithms - Myhill Nerode and DFA state minimization – Pumping lemma and proof for existence of non regular languages.

Unit II

Context free Languages: Equivalence of CFG and PDA – Normal forms(CNF and GNF) – Closure properties of CFL's – DCFL's and their properties – Decision procedures - CYK algorithm – Pumping lemma and proof for existence of non context-free languages – Context sensitive languages: Equivalence of LBA and CSG.

Unit III

Turing machines: TM computations – Equivalence of standard TM with multitape and non deterministic TM's – Turing acceptable, Turing decidable and Turing enumerable language classes - Equivalence of type 0 grammars with TM's – Church' thesis – Chomsky hierarchy.

Unit IV

Computability: Closure properties of recursive and recursively enumerable languages – Undecidability – halting problem – reductions – post correspondence problem – unsolvable problems about CFL's – Computational complexity: Time and space bounded simulations – Classes P and NP – NP completeness – Cook's theorem – bounded tiling problem - integer programming – traveling salesman problem.

Unit V

Propositional Calculus: Validity and satisfiability – Normal forms – Compactness theorem – Resolution – NP – Completeness of satisfiability – Predicate calculus : Normal forms and Herbrand's expansion theorem - Skolem theorem – Skolem Loweheim theorem – Unsolvability of Satisfiability – resolution.

References:

1. H.R Lewis and C.H Papadimirou Elements of Theory of Computation , Prentice Hall 1996.
2. J.E Hopcroft and J.D Ullman Introduction to Automata Theory , Languages of Computation , Narosa 1998.
3. Linz P An Introduction to formal Languages and Automata, Narosa 1998.
4. Marin J.C Introduction to Languages and Theory of Computation , Tata McGraw Hill 1997.

CSC1C04 Object Oriented Concepts and C++

UNIT I

Concepts :Objects , Attributes and Methods, Encapsulation and Information Hiding, State Retention, Object Identity, Messages, Class Hierarchy, Inheritance, Polymorphism, Genericity. Object Oriented System Development, Methodology, Modeling.

Unit II

Introduction to programming: Concept of programming, concept of an algorithm, Introduction to object oriented concepts, Features of OOPS, C++ programming basics, Data types, precedence of operators, loops and decisions, functions, objects and classes, constructors, destructors, objects as function arguments, inline functions, friend functions. Arrays, arrays as class member data, arrays of objects, strings, string as class members. operator overloading, overloading unary operators, overloading binary operators, function overloading, data conversion. Inheritance : Derived class and base class, derived class constructors. class hierarchies, private and public hierarchies, levels of

inheritance, multiple inheritance, classes within classes, friend functions, inline functions. Pointers: Memory management, new and delete, pointers to objects, pointers to pointers, Polymorphism, virtual functions, Late Binding, Early Binding, static functions, the this pointer.

Unit III

Files and streams :Streams, string I/O, character I/O, object I/O, I/O with multiple objects, file pointers, Disk I/O with member functions, redirection, command line arguments. Templates: Introduction, class templates, Function templates, member function templates, Non-Type template argument. Introduction to standard template library, Components of STL, Containers, Iterators , Application of container classes, function objects. Exception Handling: Introduction, Exception Handling mechanism, Throwing mechanism, Catching mechanism.

UNIT IV

Unified Modeling Language : Introduction, UML diagrams, Class diagrams, Attributes and Operations, Generalizations constructs, Association constructs, Object interaction diagrams, State and Activity diagrams, Model management and Extensibility.

UNIT V

Analysis Object Oriented System Analysis, Use-case driven approach, Requirements Capture, Analysis and Refinement. Object Analysis, Classification, Approaches for identifying classes, Object Interaction and Collaboration, CRC cards, Interaction Sequence diagrams, Collaboration diagrams, Asynchronous messages and Concurrent execution, State and Activity diagrams, Architecture and User Interface diagrams. Design: The Principles of Object Oriented Design, Encapsulation Structure, Connascence, Domains of Object classes, Encumbrance. Designing classes, Class Cohesion, State space and behaviour of a class, State space and behaviour of a subclass, Type conformance and closed behaviour, Techniques for organizing operations. Design of Interface objects, State and behaviour support in a class interface, Operation cohesion in a class interface. Designing a S/W component, Comparison of components and objects, Data Management design, Designing for Object Database Management systems, Designing data management classes. Implementation S/W Implementation, Component diagrams, Deployment diagrams, S/W Testing and Maintenance.

References

1. Bahrami, A., Object Oriented System Development using the Unified Modeling Language, McGraw-Hill, 1999.
2. Page-Johns, Meilir., Fundamentals of Object oriented Design in UML, Pearson Education Asia, 2000.
3. Bennet, McRobb and Farmer, Object Oriented System Analysis and Design using UML, McGraw-Hill, 1999.
Rumbaugh, Jacobson and Booch, The Unified Modeling Language Reference Manual, Pearson Education Asia, 1999.
4. Robert Lafore, Object Oriented Programming in C++, Golgotia, 1994.
5. E. Balaguruswamy, Object Oriented Programming with C++. 2nd Ed.
6. Tony Gaddis, Starting Out with C++, dreamtech press
7. Stroustrup, The C++ programming Language 3rd Ed.

CSC 1C05 Advanced Microprocessor

Unit I

Computer Architecture Block diagram, Bus, Clock signals, Microprocessor, Memory, Input/Output organization and programming. Intel 8085 : Register structure, Addressing modes, Instruction set, Programmed I/O, Interrupt system, DMA. Intel 8086 :Architecture, Addressing modes, Instruction set, Instruction execution timing, Programmed I/O, Input Output Processor.(IOP), Interrupts, DMA, 8088.

Unit II

Fundamentals of Assembly Language Assembling, Linking, and Executing programs, Assembler directives, Symbolic instructions and addressing. Segments. Data transfer, arithmetic, and program control instructions. .Data Manipulation :String operations. MOVS, LODS, STOS, CMPS, SCAS instructions. Addition, subtraction, multiplication, and division of binary data. Processing ASCII and BCD data. Defining and processing tables.

Unit III

Video and Keyboard Operations :INT 21H operations for screen display and keyboard input. Video modes and attributes. INT 10H operations, Direct video display, BIOS keyboard areas, INT 21H & 16H operations, extended function keys and scan codes, INT 09H and the keyboard buffer.

Unit IV

Advanced Input / Output Mouse operations, Disk organization, boot record, directories, file allocation tables. Writing and reading disk files. INT 21H & 13H functions. INT 21H & 17H functions for printing. Defining and using Macros. Linking to Subprograms. Program loading and overlays.

UNIT V

Advanced Microprocessors Intel 80286, 80386, 80486, Pentium, Pentium II, III & IV microprocessors. Motorola series of microprocessors. Power PC microprocessor.

References :

1. Abel P., IBM PC Assembly Language and Programming, 5th Ed., Pearson Education, Asia, 2001.
2. Rafiqzaman M., Microprocessors - Theory and Applications: Intel and Motorola, Revised Edition, Prentice Hall of India, 1992.
3. Antonakos J L., The Pentium Microprocessor, Prentice-Hall International Inc., 1997.
4. Liu Y. & Gibson G A., Microcomputer Systems: The 8086/8088 Family - Architecture, Programming, and Design, Second Edition, Prentice-Hall of India, 1990.
5. Sargent M. & Shoemaker R L, The Personal Computer from Inside Out - The Programmer's Guide to Low-level PC Hardware and Software, 3rd Ed., Addison-Wesley Pub. Co., 1995.

CSC2C01 Advanced Computer Graphics

Unit I

Introduction: Three-dimensional Concepts, Display Methods, Introduction to OpenGL.

Unit II

Transformations: 3D Geometric transformations- Translation, Scaling, Rotation, Reflection, Shear, Composite Transformations, Modeling and Co-ordinate transformations, Implementation of transformations in OpenGL.

Unit III

Representations of 3D Objects :Polygon surfaces, Representation of curves and surfaces, Representing solids- Sweep representations, Boundary representations, Spatial-partitioning representations, Constructive solid geometry. Visible surface detection methods. Shading and Illumination, Representation of curves and surfaces in OpenGL.

Unit IV

Viewing: Projections, Projection Matrices, Projections in OpenGL.

Unit V

Discrete Techniques : Texture mapping, Bit and Pixel operations, Compositing, Sampling and Aliasing Techniques.

References:

1. Hearn D., Baker M, P., Computer Graphics, 2nd Ed., Prentice-Hall of India, 1995.
2. Foley J.D. , Andries van Dam, Computer Graphics - Principles and Practice, 2nd Ed., Addison-Wesley, 1995.
3. Angel, Edward., Interactive Computer Graphics- A Top-down Approach with OpenGL, Addison-Wesley, 1996.

CSC2C02 – Database Management Systems

Unit I

Introduction to Database Systems Data: Types, Organization, and Applications, Database: Definition, Evolution, Database Management: Structure, Limitations of traditional file processing systems, Advantages and disadvantages of DBMS Users of DBMS. Database Architecture and Environment: Components of DBMS: functions Architecture: Physical, Logical, and View Data Languages: DDL, DML Schemas Life cycle of Database System Development Functions of DBMS Conceptual Database Modeling Data Model: Concept, Applications Types of Data models: Hierarchical, Network, Relational, Object-oriented. Entity Relationship model: concepts of entity, entity set, attributes, domains Existence dependency Keys: candidate, primary, composite, Strong and weak entities Cardinality E-R Model: symbols, Specialization, Generalization, Aggregation.

Unit II

Relational data structure-A Review of Set Theory, Relations, Domains and Attributes, Tuples, Keys. Integrity Rules Extensions And Intensions, Base Tables, Indexes Relational Algebra and Operations, Retrieval Operations, Relational Calculus and Domain Calculus. Relational database design-Universal Relation, Anomalies in a Database, Normalization Theory, Functional Dependencies. Closure of a Set of F.D Covers, Non Redundant and Minimum Cover, Canonical Cover, First, Second and Third Normal Forms, Relations with more than one Candidate Key, Good and Bad Decompositions, Boyce Codd Normal Form, Multivalued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form. SQL- basic structure, set operations, subqueries, join relation, DDL, DML integrity and security, domain constraints, referential integrity, assertions, authorization

Unit III

Transaction Management : Transaction Management and Concurrency Control Transaction: Properties (ACID), states, Commit, Rollback Concurrency: Control, Lost update problems, Locks, two phase locking, serialization .Query processing : Query Processing Stages, Query Interpretation, Equivalence of Expression, Query Execution Statistics, Query Execution Plan, Query Estimation, Query Evaluation, View Processing, Integrity & Security, Need for Integrity and Security constraints.

Unit IV

Object Oriented Databases Need for OODBMS, Object structure: Class, polymorphism, encapsulation, inheritance, Object modeling techniques, UML.

Unit V

The distributed databases -Motivation for Distributed Database . Distributed Database concepts, Types of Distribution Architecture of Distributed Databases, The Design of Distributed Databases, Distributed Query Processing, Recovery In Distributed Systems, Commit Protocols for Distributed Databases, Multi Database System. Distributed Databases feature in Contemporary Database Management System. Case Study : PostgreSQL.

References :

1. Database Management Systems Ramkrishnan McGraw Hill
2. Fundamentals of Database Systems Elmasari, Navathe Addison Wesley
3. Introduction to Database Systems Date Addison Wesley
4. Database System Concepts Korth McGraw Hill
5. SQL Essentials. Franklin, Beedle & Associates, 2005

CSC2C03 Software Engineering

Unit I

The product and process: The evolving Role of Software, Software, Characteristics, Software Application, and Software: A Crisis on the Horizon Software Myths, Software Engineering: A Layered Technology, Process, Methods, and Tools A generic View At Software Engineering, The Software Process, Software Process Models, The linear Sequential Model, The Incremental Model, The Spiral Model, The WINWIN Spiral Model, The Concurrent Development Model, Component-Based Development, The Formal Methods Model, Fourth Generation Techniques, Process Technology.

Unit II

Software Project Planning: Observations on Estimating, Project Planning Objectives, Software Scope, Obtaining Information, Necessary for Scope, Feasibility Resources, Human Resources, Reusable Software Resources, Environmental Resources, Software Project Estimation, Decomposition Techniques, Software Sizing, Problem-Based Estimation, Process-Based Estimation, Empirical Estimation Models, The Structure of Estimation Models, The COCOMO Model, The Software Equation, The Make/Buy Decision, Creating A Decision Tree.

Unit III

Risk Analysis and Management: Reactive versus Proactive Risk Strategies, Software Risks, Risk Identification, Assessing Overall Project, Risk Components and Drivers, Risk Projection, Developing a Risk Table, Assessing Risk Impact, Risk Assessment, Risk Refinement, Risk Mitigation, Monitoring, and Management, Softy Risks and Hazards, The RMMM Plan Project Scheduling and Tracking : Basic Concepts, Comments on "lateness", Basic Principles, The Relationship Between People and Effort, An Empirical Relationship, Effort Distribution, Defining a Task Set far The Software Project, Degree of Rigor, Defining Adaptation Criteria, Computing a Task Set Selector Value Interpreting the TSS Value and Selecting the Task Set, Selecting Software Engineering Tasks, Refinement of Major Tasks, Defining a Task Network, Scheduling, Time Line Charts, Tracking the Schedule, Earned Value Analysis, The Project Plan.

Unit IV

Software are Quality Assurance: Quality Concepts, Quality, Quality Control, Quality Assurance, Cost of quality, The Quality Movement, Software Quality Assurance, Background Issues, SQA Activities, Software Reviews, Cost Impact of Software Defects, Defect Amplification and Removal, Formal Technical Reviews, Meeting Review Reporting and Record Keeping, Review Guidelines, Formal Approaches to SQA Statistical Software Quality Assurance, Software Reliability, Measures of Reliability and Availability, Software Safety. System Computer -Based Systems, The System Engineering Hierarchy, System Modeling, System Simulation, Business Process Engineering: Product Engineering, Requirements Engineering, Requirements Elicitation, Requirements Analysis and Negotiation, Requirements, Specification, System Modeling, Requirements, Validation, Requirements Management.

Unit V

System Modeling . Analysis Concepts and Principles : Requirements Analysis, Requirements Elicitation for Software, Initiating the Process, Facilitated, Application Specification Techniques, Quality Function Deployment, Use Cases, Analysis Principles, The Information Domain, Modeling, Partitioning, Essential and Implementation Views, Software Prototyping, Selecting The Prototyping Approach, Prototyping Methods and Tools, Specification, Specification Principles, Representation, The Software Requirements Specification, Specification Review. Software Testing Techniques: Software Testing Fundamentals, Testing Objectives, Testing Principles, Testability, Test Case Design, White-Box Testing, Basis Path Testing, Flow Graph Notation, Cyclomatic Complexity, Deriving Test Cases Graph Matrices, Control Structure Testing, Condition Testing, Data Flow Testing, Loop Testing, Black-Box Testing, Graph-Based Testing Methods, Equivalence Partitioning, Boundary Value Analysis, Comparison Testing, Orthogonal Array Testing, Testing for Specialized Environments, Architectures, and Application, Testing GUI, Testing of Client/Server Architectures, Testing Documentation and Help Facilities, Testing for real-time Systems.

References:-

1. Software Engineering A Practical Approach By Roger S. Pressman 5th McGraw Hill - International Ed.
2. An Integrated Approach to Software Engineering By Pankaj Jalote II Edition Narosa Pub.

CSC2C04 Advance Java Programming**Unit I**

Swing: JApplet, Icons and Labels, Text fields, Buttons, Combo Boxes, Tabbed Panes, Scroll, Panes, Tables, JDBC:Jdbc Architecture, Drivers, Database connections, statements, ResultSets, Transactions, metadata, stored procedures, error handling.

Unit II

Java Networking: RMI Introduction, Architecture, defining remote objects, creating stubs and skeletons, serializable classes, Accessing remote objects, factory classes, dynamically loaded classes, RMI activation, registering remote objects. ching

Unit III

Servlets, generic servlet, servlets that access request headers, Develop servlets that manipulate response headers, Hypertext Transfer Protocol (HTTP) Develop and Deploy a simple HTTP servlet., Forms ,Simple Servlet that Use HTML, structure of HTML FORM tags HTML forms using Common GatewayInterface (CGI) Configuring Servlets, Servlet Context, servlet context listener.

Unit IV

JNDI : Architecture, context initial context class, objects in a context, naming shell application, listing the children of a context binding objects, accessing directory services, attributes and attribute interface modifying directory entities, creating directories entities, sear

Unit V

Java Archive file and Jar utility, EJB: roles,EJB client object container Transaction Management , Implementing a basic EJB object , Implementing session beans, implementing Entity bean, Deploying an enterprise bean object. Java Server Pages: Developing JSP Pages, technology, syntax using scripting elements, syntax using the courier page directive, Create and use JSP error pages, Building Reusable Web Presentation, Components Describe how to build Web page layouts from reusable presentation components, JSP technology syntax using the include directive, JSP technology syntax using the jsp:include standard action ,Developing JSP Pages Using Custom Tags ,problem with JSP technology scriptlet code, Given an existing custom tag library, develop a JSP page using the library , developing a Simple Custom Tag , structure and execution of a custom tag in a JSP page, tag handler class for a simple empty custom tag ,custom tag that includes its body in the contour of the HTTP response, tag library description for a simple, empty custom tag .

References:

1. Java Servlets - Tata McGraw Hill JSP - Java Server Pages - IDG Books
2. Java 2 The Complete Reference - Galgotia Publications
3. Java Beans Developers Resource – PHI

CSC3C01 Operating Systems**Unit I**

Introduction Characteristics of Modern Operating Systems, Windows 2000 Overview, Modern Unix Systems, Linux.

Unit II

Processes Process Description and Control, UNIX SVR4 Process Management, Threads, Symmetric Multiprocessing and Microkernels, Windows 2000 Thread and SMP Management, Solaris Thread and SMP Management, Linux Process and Thread Management, Unix Concurrency Mechanisms, Solaris 5 Thread Synchronization Primitives, Windows 2000 Concurrency Mechanism.

Unit III

Memory UNIX and Solaris Memory Management, Linux Memory Management, Windows 2000 Memory Management.

Unit IV

Scheduling Multiprocessor Scheduling, Real-time Scheduling, Linux Scheduling, UNIX SVR4 Scheduling, Windows 2000 Scheduling.

Unit V

Input / Output and Files UNIX SVR4 I/O, Windows 2000 I/O, Unix File Management, Windows 2000 File System.

References :

1. William Stallings, Operating Systems: Internals and Design Principles, 4th Ed, Prentice-Hall .
2. Abraham Silberschatz, Peter Baer Galvin, Operating System Concepts, 5th Ed, John Wiley and Sons, Inc. Unit I - Introduction Characteristics of Modern Operating Systems, Windows 2000 Overview, Modern Unix Systems, Linux.

CSC3C02 .Net Technology

Unit I

Basic of the .net framework: .net architecture, managed code, assemblies, clr, execution of assemblies code, il, jit, net framework class library, common type system, common language specification, interoperability with unmanaged code.

Unit II

Introducing ASP.NET:Creating Web Forms,Adding ASP.NET Code to a Page Handling Page Events,Discussion: ASP vs. ASP.NET :working model of architecture of server Controls, Add an HTML server control to a page, Access the properties and methods of server controls in code, Add event handlers for page events, use the IsPostBack property to handle postback forms.Using Web Controls: Web Controls, using Intrinsic Controls, Using Input Validation Controls, Selecting Controls for Applications,Bind two controls together.

Unit III

Using Microsoft ADO.NET to Access Data : Overview of ADO.NET, Connecting to a Data Source, Accessing Data with DateSets, Using Stored Procedures, Accessing Data with DataReaders , Binding to Extensible Markup Language (XML) Data

Unit IV

Separating Code from Content:Advantages of Partitioning an ASP.NET Page, Creating and Using Code-Behind Pages, Creating and Using User Controls,Creating and Using Components.

Unit V

Using Trace in Microsoft ASP.NET Pages:Overview of Tracing, Trace Information, Page-Level Trace, Application-Level Trace

References:

1. G Buezek ASP.NET Developers Guide , TMH 2002
2. Richard Anderson , Professional ASP.NET Wrox Press Ltd
3. .NET Framework Essentials, 3rd Edition (O'Reilly)
4. Sams Teach yourself ASP Lupez

CSC3C03 Networks Programming & Administration

Unit I

Introduction : TCP/IP Architecture, TCP/IP addressing, services, FTP, SMTP, TFTP, SNMP, Network file system, domain name system, transport layer protocols, user datagram protocol, transmission control protocol.

Unit II

Interprocess communications : File and record locking, pipes, FIFO's, stream and messages, message queues, samphorers.

Unit III

Sockets : Sockets system calls, reserved parts, stream pipes, socket option, asynchronous I/O, Sockets and signals

Unit IV

Transport Lay Interface : Elementary TLI functions, stream and stream pipes, asynchronous I/O I/O multiplexing

Unit V

Remote Procedure calls : Remote login, remote command execution, external data representation.

References:

1. R. Stevens, "Unix Network Programming", PHI 1998
2. J. Martin, "TCP/IP Networking – Architecture, Administration and programming", Prentice Hall, 1994.
3. D.E. Comer, "Internetworking with TCP/IP, Vol. 1, Vol. 2, Vol. 3 Principles, Protocols, and architecture, PHI, 2000
4. Feit, "TCP/IP", McGraw Hill, 1996
5. Stevens, "TCP/IP Illustrated", Vol. 1-3, Addison Wesley, 1998

CSC3C04 Artificial Intelligence

UNIT I

General issues and overview of AI, AI Techniques, AI problems, AI Techniques, importance and areas of AI, problem solving state space search-DLF, BFS Production system, problem characteristics. Heuristic Search Techniques: Generate and Test, Hill Climbing, Best First Search, Problem reduction, Constraint satisfaction- Cryptarithmic and problems.

UNIT II

Knowledge representation & mapping, approaches to knowledge to representation, issues in knowledge representation, Representing simple facts in logic, representing instance and relationships, Resolution and natural deduction Representing knowledge using rules, Procedural v/s Declarative knowledge, Logic programming, Forward v/s Backward chaining, Matching & control knowledge.

UNIT III

AI programming language: Prolog- objects, relationships, facts, rules and variables, Prolog: Syntax and data structures, representing objects & relationships by using “trees” and “lists”, use of cut, I/O of characters and structures. Symbolic reasoning under uncertainty: Introduction to monotonic reasoning, Logics for Nonmonotonic reasoning, implementation issues, implementation: DFS & BFS.

UNIT IV

Slot and filler structures: Semantic nets, frames, conceptual dependency, scripts, CYC Natural languages and NLP, Syntactic processing parsing techniques, semantic analysis case grammar, augmented transition net, discourse & pragmatic processing, translation.

UNIT V

Definition and characteristics of Expert System, representing and using domain knowledge, Expert system shells . Knowledge Engineering, knowledge acquisition, expert system life cycle & expert system tools, CYCIN & DENDRAL examples of expert system

REFERENCES:

1. Artificial Intelligence _ *Rich & Knight*
2. Programming In Prolog- *Cloksin & Mellish*
3. Introduction To Artificial Intelligence & Expert System
4. Principles Of Artificial Intelligence – *Nillson*
5. Foundation Of Artificial Intelligence & Expert System _ *Janakiraman, Surukesi & Gopal Krishman*

CSC2E05 Principles of Compiler Designing

Unit I

Introduction to Compiling :Compilers, Analysis of the source program, The phases of a compiler, Compiler Construction tools.

Unit II

Lexical Analysis :Specification and Recognition of tokens, Regular Expressions and Finite Automata, From a Regular Expression to an NFA, Design of a Lexical Analyser Generator.

Unit III

Syntax Analysis :Parsing, Context Free Grammars, Top-down and Bottom-up Parsing, Operator precedence parsing, Predictive parsing, LR parsing, Parser Generators, Using Ambiguous Grammars, Abstract Syntax- Semantic Actions, Abstract Parsing, Syntax Directed Translation. Semantic Analysis :Type Checking- Specification of a Simple type checker, equivalence of type expressions, Type conversions, Overloading of functions and operators, Polymorphic functions, An algorithm for Unification. Run-time Environments- Source Language issues, Storage organization, Storage Allocation Strategies, Access to nonlocal names, Parameter passing, Symbol tables, Dynamic storage allocation techniques.

Unit IV

Code Generation :Translation to Intermediate Code- Declarations, Assignment statements, Boolean expressions, Control statements. Issues in the Design of a code generator- The target machine, Run-time storage management, Basic blocks and flow graphs, A simple code generator, Register allocation and Assignment, The dag representation of basic blocks, Peephole optimization, Generating code from dags, Dynamic programming code -generation algorithm, Code-generator generators.

Unit V

Code Optimization :The principal sources of optimization, Optimization of basic blocks, Loops in flow graphs, Global data flow analysis, Code improving transformations, Efficient data flow algorithms, A tool for data flow analysis, Estimation of types, Symbolic debugging of optimized code. Case study- Design and Development of a Compiler for a simple language.

References:

1. V Aho , A.,Ravi Sethi, D Ullman,J. Compilers Principles,Techniques and Tools, Pearson education,2002.
2. W.Appel,Andrew, Modern Compiler Implementation in C, Cambridge University Press,1997.

CSC2E06 Parallel Processing

Unit I

Fundamentals :Computational Models; Computer Architecture; Parallel Processing.

Unit II

Instruction Level Parallel Processing :Introduction to ILP Processors; Pipelined Processors; VLIW Architectures - Principles - Architecture - Case Study;

Unit III

Super Scalar Processors :Introduction - Parallel Decoding - Shelving - Register Renaming - Parallel Execution - Implementation of Super Scalar CISC Processors Using a Super Scalar RISC Core - Case Studies. Code Scheduling For ILP Processors : Introduction - Basic block Scheduling - Case Study - Loop Scheduling - Global Scheduling;

Unit IV

Instruction Level Data-Parallel Architecture : Introduction- Connectivity; SIMD Architecture - Design Space - Fine-grained SIMD Architectures - Coarse-grained SIMD Architecture; Associative and Neural Architectures - Associative Processing - An Example - Application Array Mapping - Neural Computers; Vector Architectures - Pipelining - Vectorisation - Parallel Computing Streams - The Cray Family.

Unit V

Thread and Process Level Parallel Architectures : Introduction to MIMD Architecture; Multithreaded Architectures - Computational Models, Von-Neumann Based Architectures - Hybrid Multithreaded Architectures; Distributed Memory MIMD Architecture; Introduction to Direct Interconnection Networks - Fine-grain Systems - Medium-grain Systems - Coarse-grain Multi Computers; Shared Memory MIMD Architecture - An Introduction.

References :

1. Dezsó Sima, Terence Fountain, Peter Kacsuk, Advanced Computer Architectures - A Design Space Approach, Addison-Wesley, 1997.
2. Richard.Y.Kain, Advanced Computer Architecture , A Systems Design Approach, Prentice-Hall India,1996.

CSC2E07 Simulation and Modeling

Unit I

System models and role of simulation Basic concepts and nomenclature –types of system Deterministic , Stochastic, continues and Discrete systems, System simulation- use simulation and it's limitation – steps in simulation studies – Statistical tools: Generation and testing of Pseudorandom numbers Random variate for uniform exponential , normal and Poisson distributions- Sampling and Estimation – Maximum likelihood estimation – Confidence interval estimation.

Unit II

Discrete event simulation Representation of time – Approaches to discrete event simulation – Queuing models – Single and multiserver queues. Steady state behavior queues. Network queues – inventory system simulation – Programming languages for discrete event system simulation – GPSS, SIMSCRIPT, SIMULA.

Unit III

Modeling and performance evaluation of computer systems : Behavioral, dataflow and structural modeling – overview of hardware modeling and simulation using VHDL – VHDL description design reuse, test generation and fault simulation for behavioral model – single service center models, central server models, models for interactive systems – Use of VHDL in front end and back end systems development – evolution of microprocessor systems – workload characterization and benchmarks.

Unit IV

Continues System Simulation : Continues system models – open and closed loop systems – Models described by differential equations – system dynamics – Growth and decay models – System dynamics diagram – Simulation of aircraft models - Biological and sociological system simulation – simulation language overview – CSMP. *

Unit V

Virtual reality modeling : Overview of virtual reality – modeling languages VRML – Creating dynamic words – Integrating Java Scripts with VRML Verification and validation of simulation model : Goals of model verification and validation – input data analysis – output analysis – Sensitivity analysis – Hypothesis testing – performance measures and their estimation.

References:

1. J.E Banks Discrete System Simulation.
2. D. Ferrari Computer System Performance Evaluation.
3. G Gordon System Simulation Prentice Hall of India.
4. J Bhaskar A VHDL Primer revised Edition
5. Glenn Vanderburg tricks of the Java Programming
6. Deo N System Simulation and Digital Computer Prentice Hall of India
7. Law A.M and Ketton W.D Simulation Modeling and Analysis McGraw Hill.

CSC2E08 Numerical and Statistical Methods

UNIT I

Approximation And Errors In Computing: Introduction, Significant Digits - Inherent Errors - Numerical Error - Modeling Errors - Blunders - Absolute and Relative Errors - Conditioning and Stability. Roots Of Non-Linear Equations: Introduction - Iterative methods – Bisection - False position - Newton-Raphson's, Secant and Bairstow's methods.

UNIT II

Solution Of Linear Equations: Gauss Elimination - Gauss-Jordan method - Jacobi Iteration method - Gauss-Seidal methods. Interpolation: Linear Interpolation - Newton's forward backward & divided difference interpolation methods – Lagrange's method.

UNIT III

Integration: trapezoidal rule, simpson's 1/3, & 3/8 rules. Differential equations: heunn's polygon, range-kutta fourth order, milne-simpson and adams-base forth-moulton methods.

UNIT IV

Classical definition of probability – statistical definition of probability – axiomatic approach to probability – addition and multiplication theorem on probability - compound and conditional probability – independence of events – Bayes theorem Random variables – Discrete and continues – pmf, pdf and distribution functions.

UNIT V

Linear programming – Mathematical formulation – graphical method of solution – Simplex method – duality – Dual Simlex – Transportation – Assignment problems.

REFERENCES:

1. E. Balagurusamy, Numerical Methods, 1999 Tata McGraw-Hill.
2. S.G. GUPTA AND V.K. KAPOOR, FUNDAMENTALS OF MATHEMATICAL
3. STATISTICS, 9TH EDITION, SULTAN CHAND & SONS. (REPRINT 1999)
4. COMPUTER ORIENTED NUMERICAL METHODS – V.RAJARAMAN, 3RD EDITION, PRENTICE HALL OF INDIA, 1993
5. GUPTA S.C KAPOOR V.K FUNDAMENTAL OF MATHEMATICAL STATISTICS SULTAN CHAND & SONS
6. MITAL SETHI, LINEAR PROGRAMMING PRAGATHI PRAKASHAN

CSC3E05 Image Processing

Unit I

Introduction And Digital Image Fundamentals: Digital Image Representation, Fundamental Steps in Image Processing, Elements of Digital image processing systems, Sampling and quantization, some basic relationships like neighbors, connectivity, Distance measure between pixels, Imaging Geometry.

Unit II

Image Transforms: Discrete Fourier Transform, Some properties of the two-dimensional fourier transform, Fast fourier transform, Inverse FFT. Image Enhancement: Spatial domain methods, Frequency domain methods, Enhancement by point processing, Spatial filtering, Lowpass filtering, Highpass filtering, Homomorphic filtering, Colour Image Processing.

Unit III

Image Restoration: Degradation model, Diagonalization of Circulant and Block-Circulant Matrices, Algebraic Approach to Restoration, Inverse filtering, Wiener filter, Constrained Least Square Restoration, Interactive Restoration, Restoration in Spatial Domain Image Compression: Coding, Interpixel and Psychovisual Redundancy, Image Compression models, Error free comparison, Lossy compression, Image compression standards.

Unit IV

Image Segmentation: Detection of Discontinuities, Edge linking and boundary detection, Thresholding, Region Oriented Segmentation, Motion based segmentation. Representation and Description: Representation schemes like chain coding, Polygonal Approximation, Signatures, Boundary Segments, Skeleton of region, Boundary description, Regional descriptors, Morphology.

Unit V

Recognition and Interpretation: Elements of Image Analysis, Pattern and Pattern Classes, Decision-Theoretic Methods, Structural Methods, Interpretation.

References:

1. Rafael C. Conzalez & Richard E. Woods, "Digital Image Processing", AWL.
2. A.K. Jain, "Fundamental of Digital Image Processing", PHI.
3. Rosefield Kak, "Digital Picture Processing",
4. W.K. Pratt, "Digital Image Processing"

CSC3E06 Multimedia Systems

UNIT I

Multimedia: introduction, text, images & tools : needs and area to use and develop multimedia software ? Multimedia development team and skills, mac v/s windows platform, basic tools for development multimedia application multimedia building blocks, making simple multimedia with popular applications. Stages of multimedia design : planning, content analysis, instructional design, preparation of media elements, integration of media elements authoring, evolution ., text-plain text and formatted text, hyper text, text markup language (html), conversion of text formats, object linking and embedding concept and text preparation tools . Fonts editing and design tools, text effects, image –types of graphics-vector and raster, attributes of image-resolution, images, pixel depth, color, color palates, compression of images and its affects to quality and storage size, various files formats – bmp, dib, eps, cif, pex, pic, tga and tif formats the windows meta files formats, file formats conversion, compression techniques-rel compression, lzw compression, jpeg fractal compression and wavelet compression processing tools –techniques of capturing image and converting image, software tools for processing images techniques of special text effects using various software.

UNIT II

Digital sound - its capturing and editing tools :sound and its attributes-sound and its effects in multimedia, sampling of sound, frequency, sound depth, channels in sound and third effects on quality and storage size estimation of space of a sound file, sound card standard – fm synthesis cards, waves table cards, midi and mp3 files and devices, 3d sounds, capturing and editing sound wave for indo

UNIT III

Computer animation - its techniques and development tools : animation and its basic – principals of animation and its use in multimedia computer system configuration and peripherals requirements, software for animation, effects of resolution pixel depth image size on quality and storage size types of animation, step for creating and generic animation

Animation Techniques – Concept Of Key Frame, Tracing And Path, 2D Animation Techniques : Tweaking, Morphing, Color Cycling, Walk Cycle Wrap, Rotation, 3D Animation Techniques : Lofting, Lighting Revolving Inverse Kinematics Morphing Key Framing Various Tools For Creating Animation Like Animation Pro 3D Studio Paint Shop Pro Animation.

UNIT IV

Digital video and video making tools : basic of video – analog and digital video type of video computer system configuration and peripherals required digitization of analog video type of video problems due to interlacing or non interlacing, video standard – ntsc, pal, secma, hdtv, video capturing media /instruments videodisk camcorder compression techniques, file formats avi, mjpg, mpeg, move real video, video editing and movie making tools quick time video for window adobe premier.

UNIT V

Multimedia, authoring and virtual reality :selecting and using and authoring tool factor for selecting and authoring tool multimedia and internet tools pro web multimedia various plug ins for web . Html and multimedia designing tips text and image pro web planning and distribution of a multimedia project, virtual reality terminology head mounts display (hmd), boom, cave, input devices and sensual technology, characteristic if immersive vr shared virtual environments, non immersive vr,vrml, vr - related technology application

REFERENCES:

1. Multimedia Making It Work (4th Edition)-By Vaughan Tata Megraw Hill
2. Multimedia In Action By James E Shuman, Vikas Publishing
3. Multimedia On The Pc By – Norman Desmarasis Tata Megraw Hill

CSC3E07 Web Technology

Unit I

Overview of HTML. Dynamic HTML: Introduction to Dynamic HTML; the Dynamic HTML object model; Dynamically changing text & styles; JavaScript style sheets; dynamically changing control & placement.

Unit II

Apache :Introduction to Apache Web Server : Apache Web Server Evolution ,Apache Architecture and Features ,Apache's Role in the Internet. Installation and Configuration :Build and Install Apache Web Server Verify Initial Configuration Start, Stop, and Status the Apache Server Process ,Configure Apache Core Modules Security: Basic Security with Apache ,Host-based Authentication ,User-based Authentication ,Secure Sockets Layer (SSL) Delivering Dynamic Web Content :Apache's Role in the Dynamic Web ,Server Side Includes (SSIs) ,Configure Apache Web Server to Support CGI ,Write CGI Programs ,CGI Alternative Technologies. Virtual Hosts, Redirection, and Indexing: Virtual Hosting with Apache ,Virtual Host Configuration Redirection ,Directory Indexing .Proxy Servers and Firewalls: Apache Proxy Configuring ,Proxy Services Firewalls and Apache ,Firewall Architecture Models Monitoring Apache Web Server: Error Logs, Logging HTTP Access ,Web Server Status and Server information ,User Tracking. Improving Performance: Improve System Performance Apache Performance Strategies,Process Improvements and Directives ,Proxy Caching.

Unit III

Java Scripts Introduction, Identifiers, Operators, Functions, Event handling, Classes, objects, Array, math, string, window object, Navigator DHTML Font, Text, Image change, Table expansion.JavaScript's object model; Strengths and weaknesses of JavaScript; Building and extending objects in JavaScript; Events in JavaScript; Event-handlers; Creating interactive forms; Introduction to cookies; using cookies in JavaScript & storing users choices in cookies. Encoding cookies; Browser objects: Object hierarchy, Creating Browser objects, Working with window, Document, History & location; Browser detection, Java to JavaScript communication.

Unit IV

Overview of XML technologies, XML fundamentals, DTD, XML Schema, Namespaces, Internationalization, Xlink and Xpointer, XPath XSL, XSLT, XSL-FOXML as a Document Format TEI, DocBook, XML on the Web, XHTML, CSS RDF and Semantic Web.

Unit V

XML Programming in Java, SAX, APIs DOM, JDOM JAXP, JAXB, JAXM, Emerging Java APIs for XML, XML in Enterprise Application XML with JSP/ Servlet, XML and Messaging Service, JMS, XML and database.

References :

1. Thomas A. Powell, "The Complete Reference HTML" E. Stephen Mack & Janan Platt, "HTML 4.0 - No experience required".
2. Laura Lemay, "Teach yourself web publishing with HTML 4 in 14 days"
3. Edward Farrar & Norman E. Smith, "The HTML Example book" Bruce Campbell & Rick Darnell, "Teach yourself Dynamic HTML in a week" David Flanagan, "JavaScript the definitive guide", O' Reilly & Associates, Inc
4. Javascript from SAMS written by Wagner and R. Allen Wyke
5. Arman Danesh, "JavaScript Interacting Course"
6. Ye Huda Shiran & Tomer Shiran, "Learn Advanced JavaScript Programming"
7. Michael Moncur, "Teach yourself JavaScript in 24 hours"
8. Lee Purcell & May Jane Mara, "The ABC's of JavaScript"
9. Chuch Musciano & Bill Kennedy, "HTML & XHTML the definitive guide", O' Reilly & Associates, Inc.
10. XML Bible
11. "XML in a Nutshell" written by Elliotte Rusty Harold & W. Scott
12. "Java and XML" written by Brett McLaughlin
13. Professional XML from Wrox press
14. "Applied XML Solutions" from SAMS, written by Benoit Marchal
15. "Learning XML" written by Erik Ray from O'Reilly
16. Apache Server Unleashed Richard Bowen Ken Coar, Ken A. Coar Matthew Marlowe
17. SAMS teach yourself Apache Lupez

CSC3E08 Data Warehousing and Mining

Unit I

Data Warehouse: An overview, Architectural Perspective, & Modeling Data warehouse, Functional Requirements, Data Mart, Possible Approach, Usage Survey, Characteristics, Software Architecture: Three Layers, Design, Non functional Architecture Requirements, Functional Dimension, Data Dimension, Basic Principles of Data warehousing Modeling, User Requirements, Requirements Modeling, Temporal Data Modeling, Temporal Data Modeling Styles.

Unit II

Multidimensional Data modeling An overview, Usage Survey, Metadata : Business Intelligence Implementation Project, Requirement Analysis Using MDDM, MDDM Base Concepts, Requirement Modeling, Geographical Information System and Relational Database, DB2 Spatial Extender, Data Analysis Processing and Techniques, OLAP, Metadata: Types of Metadata, Sources of Metadata, Metadata Standards

Unit III

Data Mining: An Overview : Data Mining, Data Mining Functionalities, Classification of Data Mining Systems, Discovery Vs. Verification Node Analysis, Data Mining Process, Application Domains, Data Mining Techniques: Classification, Association Detection, Sequential Pattern Detection, Automatic Cluster Detection, Similar Time Sequence Detection, Data Mining Scenario.

Unit IV

Characterization and Comparison & Applications and Trends in Data Mining : Characterization and Comparison: Data Generalization and Summarization, Based Characterization, Analytical Characterization: Analysis of attribute relevance, Mining Class Comparisons: Discriminating Between Different Classes, Mining Descriptive Statistical Measures in Large Database.

Unit V

Data Mining Applications: Data Mining System Products and Research Prototypes, Additional Themes of Data Mining, Social Impacts of Data Mining, Trends in Data Mining.

References:

1. IBM An Introduction to Building the Data Warehouse By PHI Publication.
2. Data Mining: Concept and Techniques By Jiawei Han and Micheline Kamber Morgan Kaufmann Publishers
3. Principles of Data Mining By David Hand, Heikki Mannila, and Padhraic Smyth By PHI Publication.