

Semester: I

Credits: 4

Category: MC

No. of hrs/week: 5

CS- 1816 DATA MINING

Objective: To study the basic and advanced concepts in Data Mining Techniques. To understand the various algorithms involved in data mining and its applications.

UNIT I

Introduction: Basic Data Mining Tasks- Data Mining Versus Knowledge Discovery in Databases. Data Mining Techniques: Introduction-A Statistical Perspective on Data Mining-Similarity Measures- Decision Trees-Neural Networks-Genetic Algorithms

UNIT II

Classification: Introduction- Statistical Based Algorithms-Distance Based Algorithms-Decision Tree Based Algorithms-Neural Network Based Algorithms- Rule Based Algorithms-Combining Techniques.

UNIT III

Clustering: Introduction-Similarity and Distance Measures-Outliers Hierarchical Algorithms- Partitional Algorithms.

UNIT IV

Association Rules: Introduction-Large Item sets-Basic Algorithms-Parallel and Distributed Algorithms-Comparing Approaches-Incremental Rules-Advanced Association Rule Techniques- Measuring the Quality of Rules.

UNIT V

Web Mining: Introduction-Web Content Mining-Web Structure Mining-Web Usage Mining. Spatial Mining: Introduction- Spatial Data Overview- Spatial Data Mining Primitives-Generalization and Specialization-Spatial Rules- Spatial Classification Algorithms-Spatial Clustering Algorithms.

TEXT BOOK:

1. Margaret H. Dunham, "Data Mining Introductory and Advanced Topics", Pearson publications, Ninth Impression.

REFERENCE BOOKS:

1. K. P. Soman, Shyam Divakar, V. Ajay "Insight in to Data Mining Theory and Practice", PHI Learning Pvt. Ltd, 2006.

2. Jiawei Han, Micheline Kamber, Jian Pei " Data Mining Concepts and Techniques", Morgan Kaufmann Publishers, Third Edition

Semester: I

Credits: 3

Category: MC

No.of.hrs/Week: 5

CS-1817- OBJECT ORIENTED SOFTWARE ENGINEERING

Objective: To understand about object oriented analysis and design and apply the concept in software engineering .To understands the fundamentals of software engineering based OOAD.

UNIT I

Introduction- Systems Development as an industrial process – A useful analogy-System development characteristics- – Object Oriented Systems development Life Cycle-Object Orientation-Object Oriented System development-object oriented programming

UNIT II

Object Oriented Concept: Architecture-Analysis-Construction –Real time specialization – database specialization –database specialization-Components-testing.

UNIT III

Identifying use cases – Object Analysis – Classification – Identifying Object relationships – Attributes and Methods.

UNIT IV

Manage object oriented Software Engineering- introduction-project selection and preparation- product development organization-project organization and management-project staffing-software quality assurance-software metrics.

UNIT V

Object oriented methods: introduction- summary of object oriented methods-object oriented analysis(OOA/Coad-Yourdon) –Object Oriented Design(OOD-Booch)-Hierarchical object oriented design(HOOD)-object modeling Technique(OMT) case study:telecom.

TEXT BOOKS:

1. Ivar Jacobson, Magnus Christerson, Patrik Jonson, Gunnar Overgaard “Object Oriented Software Engineering: A Use Case Driven Approach” Pearson Education, 2012.
2. Ali Bahrami, “Object Oriented Systems Development”, Tata McGraw Hill, 1999.(UNIT-III only)

REFEENCE BOOKS:

1. Stephen R. Schach, “Introduction to Object Oriented Analysis and Design”, Tata McGraw Hill, 2003.
2. Roger.S.pressman, “Software Engineering: A Practioner’s Approach”, 6th edition Tata McGraw Hill, 2005

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CS-1818 - ADVANCED JAVA PROGRAMMING

Objectives:

To understand the advanced concept of internet programming and also developing web based application using java programming

UNIT I

Fundamentals of java: Introduction to java- Features of java- basic fundamentals- Access controls-Static and fixed methods-Inner classes-String class-Inheritance-Overriding methods- Using Super- Abstract classes-Packages-Interfaces-Exception Handling-Threads.

UNIT II

Applet and Swing :Applets-Events-Drawing Images-graphics using applets-Swing Components-Lists-Tress- Tables –Styled Text Components-Progress Indicators- Component Organizers

UNIT III

JDBC and Java networking: Database Drivers-SQL package-Networking in java-Sockets-Creating RMI server-Client-Interface-Networking using RMI-JDBC.

UNIT IV

Servlet and JSP programming: Servlet API-Servlet Life cycle-Html to Servlet Communication-Introduction to JSP-JSP tags-Sessions.

UNIT V

Enterprise java Beans (EJB): Introduction to EJB-Deployment Descriptors-Session java Bean-Entity java bean-Message-Driven Beans.

TEXT BOOKS:

- 1.P.Naughton and H.Schildt, “Java 2(Complete Reference)”, Fourth Edition.(UNIT-I,II,III)
2. Kathy Sierra & Bert Bates,“Head First Servlets & JSP”, O’REILLY publications.(UNIT-IV)
3. S. Padmapriya “Advanced Java Programming”, Sree Magnus Publications, 2010(UNIT-V)

REFERENCE BOOKS:

1. Jim Keogh, J2EE (Complete Reference)–Tata Mcraw Hill
2. Kathy Sierra & Bert Bates, ”Head First Ejb”, O’REILLY publications.

Semester: I

Credits: 4

Category: MC

No.of.hrs/Week: 4

CS- 1819 ADVANCED JAVA PROGRAMMING – LAB

1. Write a Java Program for temperature conversion.
2. Write a Java Program that will display Factorial of the given number.
3. Write a java program to perform all basic arithmetic operation
4. Write a Java Program that will display 25 Prime nos.
5. Write a Java Program that will accept command-line arguments and display the same.
6. Write a Java Program to sort the elements of an array in ascending order.
7. Write a Java Program which will read a text and count all occurrences of a particular word.
8. Write a Java Program which will read a string and display it in reverse.
9. Make an Applet that create two buttons named “Red” and “Blue” change the background color of the applets according to the selection of the button.
10. Write a Java Applet that create some text fields and text areas to demonstrate features of each..
11. Use a Grid layout class to arrange a few instance of circle canvas.
12. Write any Java Program using new operator.
13. Write a Program to create a List Box and a Text Area. Fill up the List Box with some file names. When user double clicks on any filename of the list box, the file should be opened and its contents should be displayed in the text Area.
14. Create an applet with three text Fields and two buttons add and subtract. User will enter two values in the Text Fields. When the button add is pressed, the addition of the two values should be displayed in the third Text Fields. Same the Subtract button should perform the subtraction operation.
15. Develop suitable GUI for the program using proper AWT controls and Layout Manager.
16. Read and Write operations on files using Java.

17. Write Java program to perform database connectivity.
18. Write a Java program to establish network connectivity
19. Write a Servlet program to display your profile in the webpage
20. Write a Java program to perform remote method invocation
21. Write a JSP program to create college application form
22. Create a simple application using EJB.

Semester: I

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No.Of.Hrs/Week: 5

CS – 1820 -LINUX PROGRAMMING

Objective: This course aims to understand the Linux platform and provide knowledge in implementation various operating system concepts through Shell and various System calls.

UNIT I

Introduction to Linux, Shell , Pipes and redirections, Creating and executing shell scripts - Shell syntax, Variables -conditions-Control structures - User defined Functions.

UNIT II

Shell Commands – dialog utility - Linux file structure – System calls and device drivers – Library functions - Low level file access - standard I/O library- Formatted I/O – File and directory maintenance-scanning directories.

UNIT III

Program argument – Environment variables – Time and date – Temporary files – Managing memory – Simple memory allocation – Allocating lots of memory – Abusing memory – Freeing memory.

UNIT IV

File locking – Process structure – Starting new process – Pipe - Process pipes - Pipe call- Parent and child Process - Named pipes- Client server using FIFO.

UNIT V

Semaphores - shared memory - message queues – Sockets - socket types - Creating sockets - Socket Communications- Host and network byte ordering – Network information.

TEXT BOOK:

1. Neil Matthew, Richard stones “Beginning Linux Programming”, Wrox Publications, 4 th Edition , 2008.

REFERENCE BOOKS :

1. Jon Masters, Richard Blum “Professional Linux Programming” , Wrox publications , 2007.
2. Kurt wall ,”Linux Programming unleashed” , Sams publications, 2001.

Semester: I

Credits: 3

Category: MC

No. Of Hrs/Week: 5

CS – 1821 -LINUX PROGRAMMING - LAB

1. Create a script to redirect your input to file.
2. Program to manipulate parameter and environment variables.
3. Program using control structures.
4. Program to demonstrate lists.
5. Program to demonstrate functions.
6. Program to execute commands from script.
7. Program to create simple dialog box.
8. Program to copy file.
9. Program to examine its arguments.
10. Program using curses.
11. Memory allocation.
12. Processes and signals.
13. Client-server socket program.
14. Client & Server program to chat
15. Encryption and decryption program.

Semester: II

Credits: 4

Category: MC

No.of hrs/week: 4

CS – 2817 CRYPTOGRAPHY AND NETWORK SECURITY

Objective: To learn the security issues in Computer Networks and to master the Cryptographic algorithms.

UNIT I

Services, mechanisms and attacks-The OSI security architecture-A model for network security-Symmetric Cipher model- Substitution techniques- Transposition techniques- Simplified DES-Block Cipher principles- the strength of DES block- Cipher design principles and modes of operation.

UNIT II

Triple DES-Blow fish-RC5- Advanced Symmetric Block Ciphers- RC4 -Stream Cipher-Confidentiality using symmetric encryption. Introduction to Number theory- Public _Key cryptography and RSA.

UNIT III

Key Management - Diffie Hellmann key exchange-Message authentication and hash functions - Hash algorithms - Digital signatures and authentication protocols – Digital signature standard.

UNIT IV

Authentication applications - Pretty good privacy - S/MIME - IP security – Web security considerations - Secure sockets Layer Transport layer security- Secure Electronic transaction.

UNIT V

Intruders-intrusion detection- password management- viruses and Related threats-virus counter-measures- Fire wall design principles-Trusted systems.

TEXT BOOK:

1. William Stallings, “Cryptography and Network Security Principles and Practices”, Fifth edition.

REFERENCE BOOKS:

1. William Stallings, “SNMP, SNMPV2, SNMPV3 and RMON1 and 2”, Addison Wesley, 1999.
2. Uyles Black, “Network Management Standards”, McGraw Hill, 1995.
3. Atul Kahate, “Cryptography and Network Security”, Tata McGraw – Hill, 2003
4. Roberta Bragg, Mark Rhodes-Ousley, Keith Strassberg, “Network Security”, Tata McGraw-Hill, 2004
5. Behrouz A.Forouzan, Debdeep Mukhopadhyaya, “Cryptography and Network Security”, Tata McGraw Hill, second edition, 2010

Semester: II

Credits: 4

Category: MC

No. of Hrs/week: 5

CS- 2818 DESIGN AND ANALYSIS OF ALGORITHMS

Objectives: To introduce the classic algorithms in various domains of data structures. Also provides different programming paradigms for solving problems.

UNIT I

Fundamentals of algorithmic problem solving – Important problem types – Fundamentals of the analysis of algorithm efficiency – analysis frame work – Asymptotic notations – Mathematical analysis for recursive and non-recursive algorithms – Example Fibonacci Numbers

UNIT II

Divide and conquer methodology – Merge sort – Quick sort – Binary search – Binary tree traversal – Multiplication of large integers – Strassen's matrix multiplication – Greedy method – Prim's algorithm – Kruskal's algorithm – Dijkstra's algorithm.

UNIT III

Decrease And Conquer Method: Selection sort, Bubble sort, Sequential search, Insertion sort, Depth-First Search and Breadth-First search. Dynamic Programming : Computing a binomial coefficient – Warshall's and Floyd' algorithm – Optimal binary search tree – Knapsack problem – Memory functions.

UNIT IV

Backtracking – N-Queens problem – Hamiltonian circuit problem – Subset sum problem – Branch and bound – Assignment problem – Knapsack problem – Traveling salesman problem.

UNIT V

P & NP problems – NP-complete problems – Approximation algorithms for NP-hard problems – Traveling salesman problem – Knapsack problem.

TEXT BOOK:

1. Anany Levitin "Introduction to the Design and Analysis of Algorithms", Pearson Education 2003.

REFERENCE BOOKS:

1. Thomas H.Cormen, Charles E.Leiserson, Ronald L.Rivest, "Introduction to algorithms" ,Prentice Hall 1990.

2.A.A.Puntambekar, "Design And Analysis Of Algorithms", Technical Publications, 2010.

SEMESTER: II

CREDIT: 4

Category: MC

No. of hrs/week: 5

CS – 2819 ALGORITHM IMPLEMENTATION THROUGH JAVA – LAB

1. Find-Biggest & Smallest in a set of numbers
2. Arrange the given set in Ascending & Descending Order
3. Find the Greatest Common Divisor
4. Find the greatest common divisor using Consecutive Integer Checking
5. Binary Search
6. Sequential Search
7. Merge Sort
8. Quick Sort
9. Binary Tree Traversal
10. Strassen's Matrix Multiplication
11. Prim's Algorithm-Greedy Method
12. Kruskals Algorithm-Greedy Technique
13. Binomial Coefficient-Dynamic Programming
14. Warshalls algorithm- Dynamic Programming
15. Floyd's Algorithm- Dynamic Programming
16. Optimal BinarySearch Tree- Dynamic Programming
17. Implemet the Knapsack problem
18. Implement the Dijkstra Algorithm

Semester: II

Credits: 4

Category: MC

No. of. Hrs/Week: 4

CS- 2820 WEB PROGRAMMING USING ASP.NET & C#

Objective: To study about the basics of .Net Frame work, Asp.net web form controls, Ado.net to develop web applications.

UNIT I

Introducing .NET, .NET Frame work-Common Language Runtime, .Net Class Library, C# Language-basics, variables and data types, Variable Operations, Conditional logic, Loops, Methods, Building a Basic Class, Value types and reference types, understanding Namespaces and Assemblies.

UNIT II

Anatomy of a Web Form, Writing Code, Debugging, Anatomy of an ASP.NET Application, server controls, HTML control Classes, Page Class, Application Events, Web Control Classes, List controls, Table controls, Web Control Events and AutoPost back.

UNIT III

Exception Handling, Page Tracing, State Management-View state, Transferring information between Pages ,Cookies, Session State, Session State Configuration, Application state, Validation- Understanding validation, Validation controls, Rich Controls- Calendar, AdRotator and Pages with multiple views, User controls.

UNIT IV

ADO.NET-Data Provider model, Direct Access model, Disconnected Data Access model, Data Binding-Single value data binding, Repeated value data binding, Data Controls- GridView, Formatting, GridView – Selecting, editing, Sorting and Paging, Files and streams-File system information, Reading and writing with streams, Allowing file uploads.

UNIT V

XML– XML classes, Website Security- Authentication and Authorization, Forms Authentication , Windows Authentication ,Creating a Component, Properties and state, Data access component, Object data source, Caching- Output Caching, Data Caching, Caching with dependencies

TEXT BOOK:

1. Matthew MacDonald , “Beginning ASP.NET 4 in C# 2010”, APRESS , 2010.

REFERENCE BOOKS :

1. Matthew MacDonald , “Pro ASP.NET 4 in C# 2010”, APRESS , 2010.
2. Bill Evjen, Scott Hanselman “Professional ASP.NET 3.5 in C# and VB”, Wrox Publication , 2011.
3. Imar Spaanjaars, “Beginning ASP.NET 4 in C# and VB”, Wrox Publications, 2010.

Semester: II

Credits: 3

Category: MC

No. of. Hrs/Week: 4

CS – 2821 WEB PROGRAMMING USING ASP.NET & C# - LAB

1. Program to display Dates in different formats.
2. Exception Handling
3. File Handling
4. Working with Array list
5. Fetch data from database using connected architecture
6. Fetch data from database using disconnected architecture
7. Login page in ASP.Net
8. Validate user input using validation controls.
9. Output caching
10. Fragment caching
11. Fetch data from XML
12. Web service to perform calculations
13. Client application connected to web services to perform calculation.
14. Library Management System(Windows Application)
15. Online Air Ticketing System (Web Application)

Semester: II

Credits: 4

Category: MC

No. of. Hours / Week: 4

CS- 2822 ADVANCED DATABASE MANAGEMENT SYSTEM

Objective: To develop a Database with enhanced models and techniques and to understand the fundamentals of Relational Database Management Systems and Object oriented Databases.

UNIT I

Introduction :Overview of Database System: Managing Data – A Historical perspective – File Systems Vs Data Base Management System – Advantages of Database Management Systems - Describing and Storing data in Database Management System – Queries in a Database Management System –Transaction Management – Structure Of a Database Management System – The E-R Model.

UNIT II

Relational Approach :The Relational Model– Integrity Constraints over Relations – Enforcing integrity constraints – Querying Relational Data – Logical Database Design – Introduction to Views – Destroying or Altering tables and views, Relational Algebra and Relational Calculus.

UNIT III

Queries, Constraints, Triggers in SQL-The form of a Basic SQL Query – Union – Intersect and Except – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and active Databases – Designing Active Databases. Database Design – Functional Dependencies – First Normal Form, Second Normal Form, Third Normal Form, BCNF – Higher Normal Forms – Four Normal Form, Fifth Normal Form.

UNIT IV

Implementation Techniques: Query Processing-Transactions-Concurrency Control-Recovery System.

UNIT V

Current Trends: Parallel Database-Distributed Database-Object base Database-Data warehousing Data Mining-Spatial and Temporal Data and Mobility

TEXT BOOKS:

1. Raghu Ramakrishnan, "Database Management System" –Tata McGraw Hill, 3rd Edition, 2003.
2. C.J.Date , A.Kannan, S.Swamynathan ,“An Introduction to Database Systems”, Pearson, 2006.

REFERENCE BOOKS:

1.Majumdar (Arun K) and Bhattacharyya (Pritimoy) “Database Management Systems”, Tata McGraw-Hill,1996.

2.Abraham Silberschatz, Henry F Korth, S.Sudharshan, “ Database System Concepts”, Tata McGraw Hill, 6th Edition, 2011

Semester: II

Credits: 3

Category: SE

No. of Hours/Week: 3

CS– 2955 BIO-INFORMATICS

Objective: To develop skills in application of computation techniques in biological problems relevant applications.

UNIT I

Introduction: The Central Dogma - Killer Application - Parallel Universes - Watson's Definition -Top Down Vs Bottom Up Approach- Information Flow - Convergence – Data Management – Data Life Cycle – Database Technology – Interfaces – Implementation.

UNIT II

Data Visualization: Sequence Visualization – Structure Visualization – User Interface – Animation versus Simulation.

UNIT III

Statistics: Statistical Concepts – Micro Arrays – Imperfect Data – Basics – Quantifying – Randomness – Data Analysis – Tools Selection – Alignment – Clustering – Classification.

UNIT IV

Data Mining and Pattern Matching: – Data Mining Methods – Technology – Infrastructure Pattern Recognition – Discovery – Machine Learning – Text Mining – Pattern Matching Fundamentals – Dot Matrix Analysis – Substitution Matrix – Dynamic Programming – Word Method – Bayesian Method – Multiple Sequence Alignment Tools.

UNIT V

Modeling and Simulation: Drug Discovery Fundamentals – Components - process – Perspectives – Numeric considerations – Algorithms – Hardware – Issues – Protein structure – Ab Initio Methods – Heuristic methods – Systems Biology – Tools.

TEXT BOOK:

1. Bryan Bergeron, Bio-Informatics Computing, Prentice Hall, 2003.

REFERENCE BOOKS:

1. Jin Xiong, Essential Bioinformatics, Cambridge University Press, 2011.
2. T.K.Affwood, D.J.Parry Smith, Introduction to Bio Informatics, Pearson Education.
3. Pierre Baldi, Soren Brunak, Bio-Informatics –The machine Learning Approach, 2nd Edition, First East West Press, 2003.