ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

I SEMESTER **COMPUTER SCIENCE** Time: 4Hrs/Week

CS 1602(3) **PROBLEM SOLVING IN 'C'** Max.Marks:100

w.e.f.20-21 admitted batch-"20AH" **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:

1. Acquire knowledge about computer basics.
2. To impart knowledge on the need of programming languages and problem solving techniques.
3. To develop programming skills using the fundamentals of C Language.
4. To enable effective usage of arrays, structures, functions, pointers and to implement the memory management concepts.
5. To teach the issues in file organization and the usage of file systems.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

1. Describe knowledge of computer for better understanding of devices, basic fundamentals of computer, comprises in this course.
2. Design flowchart, write algorithm parallel with control statements to understand flow of program execution.
3. Understand about the code reusability with the help of user defined functions and file handling mechanism that are essential in database management systems.
4. Develop skills in students to learn dynamic memory allocation using pointers and understand programming skills like Arrays, Strings, Structure and union.

UNIT – I:

General Fundamentals: Introduction to computers, Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations.

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and Maintainable Programs.

UNIT – II:

Introduction to C: Introduction – Structure of C Program – Writing the first C Program –File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C – Variables – Constants – I/O Statements in C- Operators in C- Programming Examples.

Decision Control and Looping Statements: Introduction to Decision Control Statements–Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – goto Statement.

UNIT – III:

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multidimensional arrays, character handling and strings.

UNIT – IV:

Functions: Introduction – using functions – Function declaration/ prototype – Function definition function call – return statement – Passing parameters – Scope of variables –Storage Classes – Recursive functions.

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions– Union – Arrays of Unions Variables – Unions inside Structures – Enumerated Data Types.

UNIT – V:

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers – Passing Arguments to Functions using Pointer – Pointer and Arrays – Memory Allocation in C Programs –Memory Usage – Dynamic Memory Allocation – Drawbacks of Pointers.

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments.

BOOKS:

1. E Balagurusamy – Programming in ANSI C – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie – The 'C' Programming language" –Pearson publications.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar – Let Us 'C' – BPB Publications.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

I SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS 1652(2) **PROBLEM SOLVING IN "C" LAB** Max. Marks: 50

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- Learn a Programming language.
- Learn Problem solving techniques.
- Teach the student to write programs in C and to solve the problems.

COURSE OOUTCOMES:

After Completion of this course the student would be able to:

- Develop the ability to analyze a problem, develop an algorithm to solve it.
- Read, understand and trace the execution of programs written in C language.
- Demonstrate the role of Functions involving the idea of modularity.
- Implement Programs with pointers and arrays, perform pointer arithmetic, and perform operations using derived data types.

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.

4. Write a program to find both the largest and smallest number in a list of integer values

5. Write a program to demonstrate reflection of parameters in swapping of two integer values using Call by Value & Call by Address

6. Write a program that uses functions to add two matrices.

7. Write a program to calculate factorial of given integer value using recursive functions

8. Write a program for multiplication of two N X N matrices.

9. Write a program to perform various string operations.

10. Write a program to search an element in a given list of values.

11. Write a program to sort a given list of integers in ascending order.

12. Write a program to calculate the salaries of all employees using Employee (ID,Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)structure.

a. DA is 30 % of Basic Pay

b. HRA is 15% of Basic Pay

c. Deduction is 10% of (Basic Pay + DA)

d. Gross Salary = Basic Pay + DA + HRA

e. Net Salary = Gross Salary - Deduction

13. Write a program to illustrate pointer arithmetic.

14. Write a program to read the data character by character from a file.

15.Write a program to createBook (ISBN,Title, Author, Price, Pages,Publisher) structure and store book details in a file and perform the following operations

a. Add book details

b. Search a book details for a given ISBN and display book details, if available

c. Update a book details using ISBN

d. Delete book details for a given ISBN and display list of remaining Books

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

II SEMESTER **COMPUTER SCIENCE** Time: 4Hrs/Week

CS 2602(3) **DATA STRUCTURES USING C** Max. Marks: 100

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- To bring out the importance of data structures in a variety of applications.
- Introduce the concept of data structures through ADT including List, Stack and Queues.
- Develop application using data structure algorithms.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Identify the appropriate data structures and algorithms for solving real world problems.
- Describe how arrays, linked lists, stacks, queues, trees and graphs are represented in memory and their operations.
- Implement operations like searching, insertion, deletion and traversing mechanism on various data structures.
- Demonstrate primitive operations on trees and their applications and summarize the concepts of graphs and traversal techniques.
- Describe and analyse various sorting algorithms like Bubble Sort, Selection Sort, Insertion Sort and Quick Sort and therefore develop employability skills.

UNIT – I:

Introduction to Data Structures: Introduction to the Theory of Data Structures, Data Representation, Abstract Data Types, Data Types, Primitive Data Types, Data Structure and Structured Type, Atomic Type, Difference between Abstract Data Types, Data Types, and Data Structures, Refinement Stages.

Principles of Programming and Analysis of Algorithms: Software Engineering, Program Design, Algorithms, Different Approaches to Designing an Algorithm, Complexity, Big 'O' Notation, Algorithm Analysis, Structured Approach to Programming, Recursion, Tips and Techniques for Writing Programs in 'C'.

UNIT – II:

Arrays: Introduction to Linear and Non- Linear Data Structures, One- Dimensional Arrays,Array Operations, Two- Dimensional arrays, Multidimensional Arrays, Pointers and Arrays, an Overview of Pointers

Linked Lists: Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List, Atomic Linked List,Linked List in Arrays, Linked List versus Arrays.

UNIT – III:

Stacks: Introduction to Stacks, Stack as an Abstract Data Type, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks, Stacks and Recursion

Queues: Introduction, Queue as an Abstract data Type, Representation of Queues, Circular Queues, Double Ended Queues- Deques, Priority Queues, Application of Queues.

UNIT – IV:

Binary Trees: Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Counting Number of Binary Trees, Applications of Binary Tree.

UNIT – V:

Searching and sorting: Sorting – An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search, Indexed Sequential Search.

Graphs: Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs, Spanning Trees, Shortest Path, Application of Graphs.

BOOKS:

1. "Data Structures using C", ISRD group Second Edition, TMH
2. "Data Structures through C", YashavantKanetkar, BPB Publications
3. "Data Structures Using C" Balagurusamy E. TMH

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

II SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS 2652(2) **DATA STRUCTURES USING C LAB** Max. Marks: 50

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- To make the students write various programs and ADTS for all data structures.
- Students will learn to write, debug, and test large programs systematically.
- Determine which algorithm or data structure to use in different scenarios.

COURSE OUTCOMES:

After Completion of this course the student would be able to:

- Implement Linear and Non Linear Data Structure.
- Apply divide and conquer strategy to searching and sorting problems using iterative and/or recursive solutions.
- Choose the appropriate data structure and algorithm design method for a specified application.

1. Write a program to read 'N' numbers of elements into an array and also perform the following operation on an array
    a. Add an element at the beginning of an array
    b. Insert an element at given index of array
    c. Update a element using a values and index
    d. Delete an existing element
2. Write a program using stacks to convert a given
    a. postfix expression to prefix
    b. prefix expression to postfix
    c. infix expression to postfix
3. Write Programs to implement the Stack operations using an array
4. Write Programs to implement the Stack operations using Liked List.
5. Write Programs to implement the Queue operations using an array.
6. Write Programs to implement the Queue operations using Liked List.
7. Write a program for arithmetic expression evaluation.
8. Write a program for Binary Search Tree Traversals
9. Write a program to implement dequeue using a doubly linked list.
10. Write a program to search an item in a given list using the following Searching Algorithms
    a. Linear Search
    b. Binary Search.
11. Write a program for implementation of the following Sorting Algorithms
    a. Bubble Sort
    b. Insertion Sort
    c. Quick Sort
12. Write a program for polynomial addition using single linked list
13. Write a program to find out shortest path between given Source Node and Destination Node in a given graph using Dijkstra's algorithm.
14. Write a program to implement Depth First Search graph traversals algorithm .
15. Write a program to implement Breadth First Search graph traversals algorithm.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

III SEMESTER **COMPUTER SCIENCE** Time: 4Hrs/Week

CS 3601(3) **DATA STRUCTURES USING JAVA** Max. Marks: 100

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- To bring out the importance of data structures in a variety of applications.
- Introduce the concept of data structures through ADT including List, Stack and Queues.
- Develop application using data structure algorithms.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Identify the appropriate data structures and algorithms for solving real world problems.
- Describe how arrays, linked lists, stacks, queues, trees and graphs are represented in memory and their operations.
- Implement operations like searching, insertion, deletion and traversing mechanism on various data structures.
- Demonstrate primitive operations on trees and their applications and summarize the concepts of graphs and traversal techniques.
- Describe and analyse various sorting algorithms like Bubble Sort, Selection Sort, Insertion Sort and Quick Sort and therefore develop employability skills.

UNIT– I: INTRODUCTION, ARRAYS, SORTING :

Introduction to Data structures– overview of Object oriented programming and Java– Java library data structures– Arrays – Operations on arrays– linear search– binary search– big O notation–Sorting methods: Bubble Sort, Selection Sort, Insertion Sort and Quick Sort.

UNIT– II: STACKS AND QUEUES:

Stacks – Queues – Circular Queue – Deque - Priority Queue – Parsing Arithmetic Expressions.

UNIT– III: LINKED LISTS:

Simple Linked List – operations on Linked lists – Types of Lists – Sorted Lists – Doubly Linked Lists – operations – Recursion: characteristics, efficiency, simple recursive methods and merge sort.

Unit –IV: BINARY SEARCH TREES:

Tree Terminology – Finding a Node – Inserting a Node – Traversing the Tree – Finding Maximum and Minimum values – Deleting a Node – Efficiency & applications of Binary Search Trees – Trees Represented as arrays – Hashing: open addressing, separate chaining, hash functions.

UNIT–V: GRAPHS:

Introduction to Graphs – Searches – Minimum Spanning Tree – Topological Sorting with Directed Graphs – Connectivity in Directed Graphs–Warshall's algorithm– Shortest path problem (Dijkstra's Algorithm,Floyd's Algorithm)– when to use what: general purpose and special purpose data structures.

PRESCRIBED BOOKS:

1. Robert Lafore, Data Structures & Algorithms in Java, Second Edition, Pearson Education (2008) (Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 11, 13, 15).

REFERENCE BOOKS:

1. Data Structures by Seymour Lipschultz, Schaum's outline Series, International Edition, 1986.
2. John R. Hubbard, Anita Hurry, Data Structures with Java, Pearson Education (2008).

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

III SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS 3651(2) **DATA STRUCTURES USING JAVA LAB** Max. Marks: 50

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- To make the students write various programs and ADTS for all data structures.
- Students will learn to write, debug, and test large programs systematically.
- Determine which algorithm or data structure to use in different scenarios.

COURSE OOUTCOMES:

After Completion of this course the student would be able to:

- Implement Linear and Non Linear Data Structure.
- Apply divide and conquer strategy to searching and sorting problems using iterative and/or recursive solutions.
- Choose the appropriate data structure and algorithm design method for a specified application.

Java programs for implementing the following data structures and also their operations and applications.

1. Arrays: operations
2. Sorting & searching methods
3. Stacks: Basic Operations and its applications.
4. Queues: Basic Operations, Circular queue, Deques, Priority Queue.
5. Linked List: operations on singly linked lists, doubly linked lists.
6. Trees: Operations, Traversals, Binary trees–applications.
7. Graphs: Traversals.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

IV SEMESTER **COMPUTER SCIENCE** Time: 4Hrs/Week

CS 4601(3) **OPERATING SYSTEMS** Max. Marks: 100

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- Understand the overall structure and components of operating system.
- Analyze the key concept of Process Management and concurrency problem.
- Understand different approaches to memory management.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Demonstrate understanding of the concepts, structure and design of operating systems.
- Compare various algorithms for process scheduling.
- Apply various deadlock handling strategies to solve resource allocation problems.
- Evaluate the performance of different memory management techniques and page replacement algorithms and therefore develop employability skills.
- Describe file concepts and analyse various disk scheduling strategies.

UNIT – I: Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

UNIT – II: Process and CPU Scheduling: Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria and Scheduling algorithms.

Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors.

UNIT – III: Memory Management and Virtual Memory: Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT– IV: File System Interface : The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure.

Mass Storage Structure: Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

UNIT – V: Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

REFERENCES BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 9th Edition, Wiley Student Edition.
2. Principles of Operating Systems by Naresh Chauhan, OXFORD University Press(2014)
3. Operating systems - Internals and Design Principles, W. Stallings, 9th Edition, Pearson.
4. Modern Operating Systems, Andrew S Tanenbaum 4rd Edition PHI.
5. Operating Systems A concept - based Approach, 3nd Edition, D. M. Dhamdhere, TMH.
6. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
7. Operating Systems, A. S. Godbole, 3rd Edition, TMH

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

IV SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS 4651(2) **UNIX LAB** Max. Marks: 50

Computer science Practical IIB

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- Introduce Basic understanding of UNIX OS, UNIX commands and File system and to familiarize students with the Linux environment.
- Implement C programming in UNIX editor environment.

COURSE OOUTCOMES:

After Completion of this course the student would be able to:

- Identify the basic UNIX general purpose commands.
- Apply and change file permissions using UNIX commands.
- Implement shell Scripts and Run various UNIX commands on a standard UNIX/LINUX Operating system.

1. Introduction to Unix Operating System and comparing it with Windows OS.
2. Overview to Open Source Software.
3. Writing and studying about how to execute C program in UNIX environment using GCC compiler along with phases of compilation.
4. Executing simple Hello World C program in UNIX environment.
5. Working with the vi editor: Creating and editing a text file with the vi text editor using the standard vi editor commands.
6. UNIX for Beginners: Getting hands-on on basic UNIX commands.
7. Some more UNIX commands: Working with directories, input-output redirection and Pipes.
8. UNIX Shell Programming

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS 5601(3) **DATABASE MANAGEMENT SYSTEMS** Max. Marks: 100

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- Understand the different issues involved in the design and implementation of a database system.
- To understand and use data manipulation language to query, update, and manage a database.
- To introduce the concepts of transactions and transaction processing.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Develop and design database application and therefore enhance entrepreneurship skills.
- Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data.
- Design and implement a Database Schema for a given Problem-domain.
- Apply Normalization Techniques on given Database Design to avoid Anomalies.
- Understand various transaction processing and concurrency control mechanisms.

UNIT - I: Database Systems Introduction and Fundamentals.

Database Systems: Introducing the database and DBMS, Why the database is important, Historical Roots**:** Files and File Systems, Problems with File System Data Management, Database Systems, and DBMS architecture.

Data Models: The importance of Data models, Data Model basic building blocks, Business Rules, The evaluation of Data Models, levels of Data Abstraction.

UNIT - II: **Data Modelling**

Relational Database Model: A logical view of Data, Keys, Integrity Rules, Relational Set operators, the Data Dictionary and the system catalogue, Relationships within the Relational Database, Indexes, Codd's relational database rules.

Entity Relationship Model: The ER Model, Developing ER Diagram, Database Design Challenges: Conflicting Goals.

UNIT - III: **Normalization & SQL**

Normalization of database tables: Database Tables and Normalization, The need for Normalization, The Normalization Process, Improving the design, Surrogate key Considerations, High level Normal Forms, Normalization and database design, de-normalization.

Introduction to SQL: Data Definition Commands, Data Manipulation Commands, Select queries, Advanced Data Definition Commands, Advanced Select queries, Virtual tables, Joining Database Tables.

UNIT - IV: Advanced SQL & Procedural SQL

Advanced SQL: Relational Set Operators, SQL Join Operators, Sub-queries, SQL Functions, Oracle Sequences, Updatable Views,

PLSQL: programming statements, triggers, cursors, stored procedures, stored functions.

UNIT - V:

Transaction management, Database Administration, Distributed Databases Transaction properties, transaction management with SQL, transaction log

Concurrency control: Lost updates, uncommitted data, and inconsistent retrievals.

Database Administration: The evolution of database administration function, database administrator roles and responsibilities, database security.

Distributed Database Management Systems: The evolution of distributed Database Management Systems, DDBMS advantages and Disadvantages, Distribution Processing and Distribution Databases, Characteristics of distributed Database management systems.

PRESCRIBED TEXT BOOK:

Database Systems Design, Implementation and Management by Peter Rob, Carlos Coronel, 7th Edition Cengage Learning.

REFERENCE BOOKS:

1. Database management Systems by Raghuramakrishnan & Johannes Gehrke McGrahill 3rd edition.
2. Fundamentals of Database Systems by Elmasri / Navathe, Seventh Edition, Person Addison Wesley.
3. An Introduction to Database Systems by C.J.Date, A.Kannan, S. Swamynathan, Eight Edition, Person Education.
4. Database system Concepts by Avi Silberschatz, Henry F.Korth S. Sudarshan McGraw-Hill Sixth edition.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS 5651(2) **DATABASE MANAGEMENT SYSTEM LAB** Max. Marks: 50

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- Describe the basics of SQL and construct queries using SQL.
- Know query languages associated with relational models

COURSE OOUTCOMES:

After Completion of this course the student would be able to:

- Design and implement a database schema for a given problem.
- Design queries using SQL.
- Apply PL/SQL for processing database.

Exercises:

- Introduction SQL
- Data Definition Language (DDL) commands
- Data Manipulation Language (DML)
- Data Control Language (DCL)
- Key Constraints, Aggregate functions
- Joins, Views, Index
- PL/ SQL
- Exception handling
- Triggers, Cursors, Functions of PL/ SQL
- Subprograms-procedure PL/ SQL

1. Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints
3. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
   Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section .
5. Develop a program that includes the features NESTED IF, CASE and CASE expression, using WHILE LOOPS, numeric FOR LOOPS, , RAISE- APPLICATION ERROR.
6. Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.
7. Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.
8. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
9. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
10. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS 5602(3) **WEB TECHNOLOGIES** Max. Marks: 100

SYLLABUS

COURSE OBJECTIVES:

To enable the students to:

- Understanding the concept of web technologies.
- Creating web pages by using HTML.
- Applying JavaScript validations.
- Understand use of XML, MySQL and PHP in Web Technologies.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Evaluate interactive web pages using html and style sheets.
- Learn real time applications using event handling with validations.
- Acknowledge providing database connectivity to web applications with examples.
- Learn web page development and build web applications.

Unit I:

Web Essentials: Internet, World Wide Web (WWW), Components of Web, Types of Websites, Role of web browser and web server, Client, Server and Communication, HTTP –request message- response message.

HTML: Document body, Text, Hyperlinks, formatting, List, Tables, Colours, Images and Image Maps, Frames, Forms.

XML: Introduction and Feature, Use of XML, XML document, Creating XML, DTD Reading XML.

Style Sheets: properties and values in style sheets, Types- Internal, External, In-line style sheets.

Unit II:

Java Script:The basic variables, String manipulations, Mathematical functions, Statements, Operators and expressions, Arrays, Loops, Functions, Events and Event handlers.

PHP: Server side scripting, Variables, Data Types, Operators and Expression, Constants, Switching Flow, Loops, Code block and Browser Output.

Unit III:

FUNCTIONS IN PHP: Working with Functions Calling function, defining function, returning the value from user-defined functions, Creating Arrays, Array related functions, Creating objects, Instance strings manipulation in PHP, Date and Time functions in PHP.

Unit IV:

Forms: Creating forms, Accessing form input with user defined arrays, hidden fields, Redirecting a form after submission, mail, File uploads.

Cookies and Session: Introduction to cookies, setting cookie with PHP, Session function, start session, working with session variables, destroy session.

Unit V:

MySQL and PHP: interacting with MySQL using PHP, Performing basic database operations, (DML) (Insert, Delete, Update, Select), Setting query parameter, Working with Data.

Text Book:
Web Technologies HTML, CSS, JavaScript, ASP.NET, Servlets, JSP, PHP, ADO.NET, JDBC and XML Black Book, Cogent Learning Solutions Inc.

Reference books:
1. Internet and World Wide Web: How to program Deitel & Deitel, PHI
2. Sams Tech Yourself PHP, MySQL and Apache. Pearson Education

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

V SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

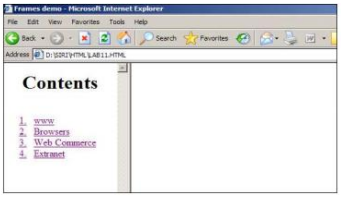
CS 5652(2) **WEB TECHNOLOGIES LAB** Max. Marks: 50

SYLLABUS

COURSE OBJECTIVES:
To enable the students to:
- To make students to create a Complete Web technology solution.
- Applying JavaScript validations.
- Understand use of MySQL and PHP in Web Technologies.

COURSE OUTCOMES:
Upon successful completion of the course, a student will be able to:
- Evaluate interactive web pages using html and style sheets.
- Learn real time applications using event handling with validations.
- Acknowledge providing database connectivity to web applications with examples.
- Learn web page development and build web applications.

Exercises:
1. Write a HTML program illustrating text formatting.
2. Prepare a sample code to link different WebPages.
3. Prepare a sample code to navigate different sections of the page using named anchors.
4. Create a simple HTML program. to illustrate three types of lists
5. Create a webpage containing your biodata (assume the form and fields).
6. Design a class Time -Table.
7. Divide the web page(frames) as follows and Create a linked web page:



8. Write a html program including style sheets.
9. Write a html program to demonstrate layers of information in web page.
10. Create a static webpage for college management.
11. Write a java Script for performing Arithmetic Operations.
12. Write a java Script to validate the Email address and mobile no of the user.
13. Write a PHP program to prepare the student marks list.
14. Write a PHP program for multiplication table
15. Write a PHP program for call by value
16. Write a PHP program for call by reference
17. Write a PHP script using string handling functions
18. Write a PHP program by using all array functions.
19. Write a PHP program for login form in PHP to get form data by using PHP super global $_GET&
20. Write a PHP program for login form in PHP to get form data by using PHP super global $_POST
21. Write a PHP application to add new Rows in a Table.
22. Write a PHP application to modify the Rows in a Table.
23. Write a PHP application to delete the Rows from a Table.
24. Write a PHP application to fetch the Rows in a Table.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-E1-6601(3) **SOFTWARE ENGINEERING** Max: Marks: 100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:

- To make the learner efficiently work as software engineer.
- Design, implement, and evaluate software- based systems or programs of varying complexity that meet desired needs and constraints
- Demonstrate accepted design and development principles.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Describe basic concepts related to software engineering methods.
- Analyze the requirements for a given problem
- Apply the design paradigms to design simple software system
- Demonstrate the testing methods and their procedures to implement in any project.

UNIT – I: INTRODUCTION TO SOFTWARE ENGINEERING.

Definition of software and software engineering, characteristics of software, software myths. Modeling with UML: - UML Concepts, diagrams.

SOFTWARE PROCESS: software process models - the waterfall model, incremental process model, prototyping model, spiral model, RAD model.

UNIT – II: SOFTWARE REQUIREMENT ANALYSIS

Requirements engineering, requirement elicitation for software, developing use cases, requirement validation, requirement specification.

Requirement analysis introduction, elements of the analysis model – data objects, attributes.

UNIT – III: SOFTWARE DESIGN:-

The software design process, design concepts, object – oriented design concepts . System design activities: - architectural design, user interface design, component level design, pattern based design.

UNIT – IV: SOFTWARE TESTING:

Software testing fundamentals, white box testing, black box testing Software testing strategies:- unit testing, integration testing, regression testing , smoke testing, validation testing, system testing, debugging.

UNIT – V: MANAGING CHANGE:

Project management concepts, process improvement, process and product quality, process analysis and modeling, process measurement, process classification, the

CMMI process improvement frame work, software maintenance, s/w supportability, s/w reengineering, reverse engineering.

TEXT BOOK:-"Software engineering- a practitioners approach " by roger s. pressman, MCGRAW HILL, 7th edition.

REFERENCE BOOK:- "Software engineering "by Ian sommersille, pearson education, 7th edition. Software engineering – design reliability and management "by Richard Fairley.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-E2-6601(3) **DATA COMMUNICATIONS** Max: Marks: 100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:

- Study basics of data communication systems.
- Various types of transmission media
- Discuss about multiplexing techniques.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand basic concepts of data communication and layered architecture.
- Ability to understand different techniques in transmission media.
- Identify various Multiplexing and signal encoding techniques.

UNIT I

Introduction: A communication model – data communication – data communication networking. Protocol Architecture: Need for protocol architecture – a simple protocol architecture – OSI – TCP/IP protocol architecture.

UNIT II

Data transmission: concepts and terminology – analog and digital data transmission – transmission impairments – Channel Capacity -- Transmission Media: Guided and Unguided.

UNIT III

Signal encoding techniques: Digital data digital signals – digital data analog signals – analog data digital signals– analog data analog signals.

UNIT IV

Digital Data Communication Techniques: Asynchronous and Synchronous transmission – types of errors - error detection techniques –error correction techniques – interfacing.

UNIT V

Multiplexing: Frequency division multiplexing – characteristics. Synchronous time division multiplexing – characteristics, TDM Link Control. Statistical time division multiplexing -- characteristics.

Text Books:

1. Data and computer communications, William Stallings, Pearson Education 7th Edn
2. Data Communications and Networking by Behrouz A Forouzan, PHI, 4th Edn.

Reference Books:

1. Data Communications, Computer Networks and Open systems by Fred Halsall, 4th edi., Pearson Education

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:3Hrs/Week

CS-E3-6601(3) **BJECT ORIENTED ANALYSIS AND DESIGN** Max:Marks:100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:

- Understand the importance and basic concepts and of object oriented modeling.
- Describe the object-oriented approach to system development, modeling objects, relationships and interactions.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Analyze the problem and apply to real world problems.
- Analyze and design the requirements through use case driven approach.
- Apply the UML notations.

UNIT-I

Introduction to UML: Importance of modeling, principles of modeling, Object oriented modeling, Conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT-II

Basic Structural Modeling: Classes, Relationships, Common Mechanisms, and Diagrams. Advanced Structural Modeling: Advanced classes, Advanced relationships, Interfaces, Types and Roles, Packages.

UNIT-III

Class & Object Diagrams: Terms, Concepts, Modeling techniques for Class & Object Diagrams. Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

UNIT-IV

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams. Advanced Behavioral Modeling: Events and signals, State machines, Processes and Threads, Time and space, State chart diagrams.

UNIT-V

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams. Case Study: The Unified Library application.

Text Books:

1. Grady Booch, James Rumbaugh, Ivar Jacobson: The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

Reference Books:

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, Wiley- Dreamtech India Pvt. Ltd.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3 Hrs/Week

COMPUTER SCIENCE PRACTICAL **IV** Max:Marks:100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

The Software Engineering Lab has been developed by keeping in mind the following objectives:

- To impart state-of-the-art knowledge on Software Engineering and UML in an interactive manner.
- Present case studies to demonstrate practical applications of different concepts.

COURSE OUTCOMES:

- Can produce the requirements and use cases the client wants for the software being produced.
- Create and specify such a software design based on the requirement specification that the software can be implemented based on the design.

LIST OF PROGRAMS

1. Phases in software development project, overview, need, coverage of topics
2. To perform the system analysis : Requirement analysis, SRS
3. To draw UML diagrams using Microsoft Visio software.
4. To perform the user's view analysis : Use case diagram
5. To draw the structural view diagram : Class diagram, object diagram
6. To draw the behavioral view diagram : Sequence diagram, Collaboration diagram
7. To draw the behavioral view diagram : State-chart diagram, Activity diagram
8. To draw the implementation view diagram: Component diagram
9. To draw the environmental view diagram : Deployment diagram

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-A1-6601 (3) **FOUNDATIONS OF DATA SCIENCE** Marks: 100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

Modern scientific, engineering, and business applications are increasingly dependent on data, existing traditional data analysis technologies were not designed for the complexity of the modern world. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Acquire the fundamental concepts and techniques in data science
- Apply fundamental algorithmic ideas to process data.
- Document and transfer the results and effectively communicate the findings using visualization techniques.

UNIT I

INTRODUCTION TO DATA SCIENCE : Data science process – roles, stages in data science project – working with data from files – working with relational databases – exploring data – managing data – cleaning and sampling for modeling and validation – introduction to NoSQL.

UNIT II

MODELING METHODS : Choosing and evaluating models – mapping problems to machine learning, evaluating clustering models, validating models – cluster analysis – K-means algorithm, Naïve Bayes – Memorization Methods – Linear and logistic regression – unsupervised methods.

UNIT III

INTRODUCTION TO R Language: Reading and getting data into R – ordered and unordered factors – arrays and matrices – lists and data frames – reading data from files – probability distributions – statistical models in R - manipulating objects – data distribution.

UNIT IV

MAP REDUCE: Introduction – distributed file system – algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce – Hadoop - Understanding the Map Reduce architecture - Writing Hadoop Map Reduce Programs - Loading data into HDFS - Executing the Map phase - Shuffling and sorting - Reducing phase execution.

UNIT V

DELIVERING RESULTS : Documentation and deployment – producing effective presentations– Introduction to graphical analysis – plot() function – displaying multivariate data – matrix plots – multiple plots in one window - exporting graph - using graphics parameters. Case studies.

Reference Books

1.Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.
2.Jure Leskovec, Anand Rajaraman, Jeffrey D.Ullman, "Mining of Massive Datasets", Cambridge University Press, 2014.
3.Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley & Sons, Inc., 2012.
4.W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013.
5.Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.
6.Nathan Yau, "Visualize This: The FlowingData Guide to Design, Visualization, and Statistics", Wiley, 2011.
7.Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, "Professional Hadoop Solutions", Wiley, ISBN: 9788126551071, 2015.

Student Activity:

1. Collect data from any real time system and create clusters using any clustering algorithm
2. Read the student exam data in R perform statistical analysis on data and print results.

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER	**COMPUTER SCIENCE**	Time:2Hrs/Week
CS-A1-6651(2)	**PROJECT & VIVA-VOCE**	Max Marks:50
w.e.f. 2015 – 2018 ("15AC")	**SYLLABUS - IV A1**	

COURSE OBJECTIVES:

To enable the students to:

- Motivate them to work in emerging/latest technologies.
- To develop ability, apply theoretical and practical tools/techniques.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand the software development process, models and software engineering principles.
- Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc.
- Self educate and perseverance in project implementation & completion.
- Demonstrate professionalism with ethics.

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-A2-6601(3) **BIG DATA TECHNOLOGY** Max: Marks: 100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:

- Learn practical foundation level training that enables immediate and effective participation in big data projects.
- Understand basic and advanced methods to big data technology and tools, including MapReduce and Hadoop and its ecosystem.

COURSE OUTCOMES

After Completion of this course the student would be able to:

- Classify tips and tricks for Big Data use cases.
- Use distributed systems with Apache and Hadoop.
- Apply Hadoop ecosystem components.

UNIT I

INTRODUCTION TO BIG DATA: Introduction – distributed file system – Big Data and its importance, Four V's in bigdata, Drivers for Big data, Big data analytics, Big data applications. Algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce.

UNIT II

INTRODUCTION HADOOP : Big Data – Apache Hadoop & Hadoop EcoSystem – Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization.

UNIT- III

HADOOP ARCHITECTURE: Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Tasktrackers - Cluster Setup – SSH & Hadoop Configuration – HDFS Administering –Monitoring & Maintenance.

UNIT-IV

HADOOP ECOSYSTEM AND YARN : Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features- NameNode High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN.

UNIT-V

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries, HBase concepts- Advanced Usage, Schema Design, Advance Indexing - PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

Reference Books

1. Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, “Professional Hadoop Solutions”, Wiley, ISBN: 9788126551071, 2015.
2. Chris Eaton, Dirk deroos et al. , “Understanding Big data ”, McGraw Hill, 2012.
3. Tom White, “HADOOP: The definitive Guide” , O Reilly 2012.
4. Vignesh Prajapati, “Big Data Analytics with R and Haoop”, Packet Publishing 2013.
5. Tom Plunkett, Brian Macdonald et al, “Oracle Big Data Handbook”, Oracle Press, 2014.
6. Jy Liebowitz, “Big Data and Business analytics”,CRC press, 2013.

Student Activity:

1. Collect real time data and justify how it has become Big Data
2. Reduce the dimensionality of a big data using your own map reducer

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:2Hrs/Week

CS-A2-6651(2) **PROJECT & VIVA-VOCE** Max Marks:50

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS - IV A2**

COURSE OBJECTIVES:

To enable the students to:

- Motivate them to work in emerging/latest technologies.
- To develop ability, apply theoretical and practical tools/techniques.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand the software development process, models and software engineering principles.
- Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc.
- Self educate and perseverance in project implementation & completion.
- Demonstrate professionalism with ethics.

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-A3-6601(3) **COMPUTING FOR DATA ANALYTICS** Max Marks:100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:
Learn fundamental concepts and tools needed to understand the emerging role of business analytics in Organizations.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Design the statistical procedures which are used by engineers.
- Apply the forecasting methods in business applications.

UNIT – I

DATA ANALYTICS LIFE CYCLE: Introduction to Big data Business Analytics - State of the practice in analytics role of data scientists - Key roles for successful analytic project - Main phases of life cycle - Developing core deliverables for stakeholders.

UNIT – II

STATISTICS Sampling Techniques:

Data classification, Tabulation, Frequency and Graphic representation - Measures of central value - Arithmetic mean, Geometric mean, Harmonic mean, Mode, Median, Quartiles, Deciles, Percentile - Measures of variation – Range, IQR, Quartile deviation, Mean deviation, standard deviation, coefficient variance, skewness, Moments & Kurtosis.

UNIT – III

PROBABILITY AND HYPOTHESIS TESTING:

Random variable, distributions, two dimensional R.V, joint probability function, marginal density function. Random vectors - Some special probability distribution - Binomial, Poison, Geometric, uniform, exponential, normal, gamma and Erlang. Multivariate normal distribution - Sampling distribution – Estimation - point, confidence – Test of significance, 1& 2 tailed test, uses of t-distribution, F-distribution, x2distribution.

UNIT – IV

PREDICTIVE ANALYTICS:

Predictive modeling and Analysis - Regression Analysis, Multi collinearity , Correlation analysis, Rank correlation coefficient, Multiple correlation, Least square, Curve fitting and good ness of fit.

UNIT – V

TIME SERIES FORECASTING AND DESIGN OF EXPERIMENTS : Forecasting Models for Time series : MA, SES, TS with trend, season - Design of Experiments, one way classification, two way classification, ANOVA, Latin square, Factorial Design.

Reference Books

1. Chris Eaton, Dirk Deroos, Tom Deutsch etal., "Understanding Big Data", McGrawHIll, 2012.
2. Alberto Cordoba , "Understanding the Predictive Analytics Lifecycle", Wiley, 2014.
3. Eric Siegel, Thomas H. Davenport , "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die", Wiley, 2013.
4. James R Evans, "Business Analytics – Methods, Models and Decisions", Pearson 2013.
5. R. N. Prasad, Seema Acharya, "Fundamentals of Business Analytics", Wiley, 2015.
6. S M Ross, "Introduction to Probability and Statistics for Engineers and Scientists", Academic Foundation, 2011.
7. David Hand, Heiki Mannila, Padhria Smyth, "Principles of Data Mining", PHI 2013.
8. Spyros Makridakis, Steven C Wheelwright, Rob J Hyndman, "Forecasting methods and applications", Wiley 2013(Reprint).

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 2 Hrs/Week
CS-A3-6651 (2) **R PROGRAMMING LAB** Max Marks: 50
w.e.f. 2015 – 2018 ("15AC") **PRACTICAL SYLLABUS – IV A3**

COURSE OBJECTIVES:

- R is a well-developed, simple and effective programming language which includes conditionals, loops; user defined recursive functions and input and output facilities.
- R has an effective data handling and storage facility,
- R provides a suite of operators for calculations on arrays, lists, vectors and matrices.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Use R for effective data analysis.
- Motivation for learning a programming language
- Familiar with loading and unloading of packages.

Exercises

1. Introduction to programming
   R Installation
   Basic syntax
2. Basic Operations in r
3. Operators
4. Getting data into R, Basic data manipulation
   Vectors, Materials, operation on vectors and matrices
5. Basic plotting
6. Loops and functions

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:3Hrs/Week

CS-B1-6601 (3) **DISTRIBUTED SYSTEMS** Marks:100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students:

- To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.
- To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Create models for distributed systems.
- Apply different techniques learned in the distributed system like file system and hence enhance employability skills.

UNIT I

Introduction to Distributed Computing Systems, System Models, and Issues in Designing a Distributed Operating System, Examples of distributed systems.

UNIT II

Features of Message Passing System, Synchronization and Buffering, Introduction to RPC and its models, Transparency of RPC, Implementation Mechanism, Stub Generation and RPC Messages, Server Management, Call Semantics, Communication Protocols and Client Server Binding.

UNIT III

Introduction, Design and implementation of DSM system, Granularity and Consistency Model, Advantages of DSM, Clock Synchronization, Event Ordering, Mutual exclusion, Deadlock, Election Algorithms.

UNIT IV

Task Assignment Approach, Load Balancing Approach, Load Sharing Approach, Process Migration and Threads.

UNIT V

File Models, File Accessing Models, File Sharing Semantics, File Caching Schemes, File Replication, Atomic Transactions, Cryptography, Authentication, Access control and Digital Signatures.

Reference Books

1.Pradeep. K. Sinha: " Distributed Operating Systems: Concepts and Design " , PHI, 2007.

2 .George Coulouris, Jean Dollimore, Tim Kindberg: " Distributed Systems" , Concept and Design, 3rd Edition, Pearson Education, 2005.

Student Activity

1. Implementation of Distributed Mutual Exclusion Algorithm.
2. Create a Distributed Simulation Environment.

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:2Hrs/Week

CS-B1-6651(2) **PROJECT & VIVA-VOCE** Max Marks:50

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS - IV B1**

COURSE OBJECTIVES:

To enable the students to:

- Motivate them to work in emerging/latest technologies.
- To develop ability, apply theoretical and practical tools/techniques.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand the software development process, models and software engineering principles.
- Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc.
- Self educate and perseverance in project implementation & completion.
- Demonstrate professionalism with ethics.

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-B2-6601(3) **CLOUD COMPUTING** Max: Marks: 100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

- Learn various cloud service models.
- Understand the concept of Virtualization.
- import fundamental concepts in the area of cloud computing

COURSE OUTCOMES

- Compare the strengths and limitations of cloud computing
- Identify the architecture, infrastructure of cloud computing
- Apply suitable virtualization concept.
- Address the core issues related to Security concerns.

UNIT–I: CLOUD COMPUTING OVERVIEW:

Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self-service , Broad network access , Location independent resource pooling , Rapid elasticity , Measured service.

UNIT–II: Cloud scenarios – Benefits:

Scalability, simplicity, vendors, security. Limitations – Sensitive information - Application development – Security concerns - privacy concern with a third party - security level of third party - security benefits Regularity issues: Government policies.

UNIT – III: Cloud architecture:

Cloud delivery model – SPI framework, SPI evolution , SPI vs. traditional IT Model

Software as a Service (SaaS): SaaS service providers – Google App Engine, Salesforce.com and google platfrom – Benefits – Operational benefits - Economic benefits – Evaluating SaaS

Platform as a Service (PaaS): PaaS service providers – Right Scale – Salesforce.com – Rackspace – Force.com – Services and Benefits

UNIT – IV: Infrastructure as a Service

(IaaS): IaaS service providers – Amazon EC2 , GoGrid –Microsoft soft implementation and support – Amazon EC service level agreement – Recent developments – Benefits

Cloud deployment model: Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing

UNIT – V: Virtualization:

Virtualization and cloud computing - Need of virtualization – cost, administration, fast deployment, reduce infrastructure cost – limitations.

Types of hardware virtualization: Full virtualization - partial virtualization - para virtualization.

Desktop virtualization: Software virtualization – Memory virtualization - Storage virtualization – Data virtualization–Network virtualization.

Microsoft Implementation: Microsoft Hyper V – Vmware features and infrastructure – Virtual Box - Thin client.

REFERENCE BOOKS:

1. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi - 2010
2. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
3. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
4. Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press
5. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammarai selvi, TMH

STUDENT ACTIVITY:

1. Prepare the list of companies providing cloud services category wise.
2. Create a private cloud using local server

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:2Hrs/Week

CS-B2-6651(2) **PROJECT & VIVA-VOCE** Max Marks:50

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS - IV B2**

COURSE OBJECTIVES:

To enable the students to:

- Motivate them to work in emerging/latest technologies.
- To develop ability, apply theoretical and practical tools/techniques.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand the software development process, models and software engineering principles.
- Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc.
- Self educate and perseverance in project implementation & completion.
- Demonstrate professionalism with ethics.

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and

implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-B3-6601(3) **GRID COMPUTING** Max Marks: 100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

The student will learn about the Grid environment, building software systems and components that scale to millions of users in modern internet, Grid concepts capabilities across the various Grid services.

COURSE OUTCOMES:

- Frame the concept of grid architecture.
- Apply the security models in the grid environment, data management and transfer in Grid environments.

UNIT I

CONCEPTS AND ARCHITECTURE :Introduction-Parallel and Distributed Computing-Cluster Computing-Grid Computing- Anatomy and Physiology of Grid- Web and Grid Services-Grid Standards - OGSA-WSRF - Trends, Challenges and applications.

UNIT II

GRID MONITORING :Grid Monitoring Architecture (GMA) - An Overview of Grid Monitoring Systems- R-GMA –Grid ICE – MDS- Service Level Agreements (SLAs) - Other Monitoring Systems- Ganglia, Grid Mon, Hawkeye and Network Weather Service.

UNIT III

GRID SECURITY AND RESOURCE MANAGEMENT: Grid Security-A Brief Security Primer-PKI-X509 Certificates-Grid Security-Grid Scheduling and Resource Management, Grid way and Grid bus Broker-principles of Local Schedulers- Overview of Condor, SGE, PBS, LSF -Grid Scheduling with QoS.

UNIT IV

DATA MANAGEMENT AND GRID PORTALS :Data Management-Categories and Origins of Structured Data-Data Management Challenges-Architectural Approaches-Collective Data Management Services-Federation Services-Grid Portals-Generations of Grid Portals.

UNIT V

GRID MIDDLEWARE: List of globally available Middleware's - Case Studies-Recent version of Globus Toolkit and gLite - Architecture, Components and Features. Features of Next generation grid.

Reference Books

1. Ian Foster, Carl Kesselman, The Grid 2: Blueprint for a New Computing Infrastructure, Elsevier Series, 2004.
2. Vladimir Silva, Grid Computing for Developers, Charles River Media, January 2006.
3. Parvin Asadzadeh, Rajkumar Buyya, Chun Ling Kei,Deepa Nayar, and Srikumar Venugopal, Global Grids and Software Toolkits: A Study of Four Grid Middleware Technologies, High Performance Computing : Paradigm and Infrastructure, Laurence Yang and Minyi Guo (editor s), Wiley Press, New Jersey, USA, June 2005.
4. Jarek Nabrzyski, Jennifer M. Schopf, Jan Weglarz , Grid Resource Management: State of the Art and Future Trends , (International Series in Operations Research & Management Science), Springer; First edition, 2003

Student Activity:

1. Implement and analyze any one Grid Resource Sharing algorithm.
2. Listout various security issues with Grid

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER	**COMPUTER SCIENCE**	Time: 2 Hrs/Week
CS-B3-6651 (2)	**DISTRIBUTED SYSTEMS LAB**	Max Marks:50
w.e.f. 2015 – 2018 ("15AC")	**PRACTICAL SYLLABUS**	

COURSE OBJECTIVES:

To enable the students:

To cover all the aspects of distributed system. It introduce its readers to basic concepts of middleware, states of art middleware technology.

COURSE OUTCOMES:

Upon successful completion of the course:

- Students will get the concepts of Inter-process communication.
- Students will get the concepts of Distributed Mutual Exclusion and Distributed Deadlock Detection algorithm.

1. To study client server based program using RPC.
2. To study Client server based program using RMI.
3. To study Implementation of Clock Synchronization (Logical/Physical)
4. To study Implementation of Election algorithm.
5. To study Implementation of Mutual Exclusion algorithms.
6. To write program multi-threaded client/server processes.
7. To write program to demonstrate process/code migration.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week

CS-C1-6601 (3) **COMPUTER NETWORKS** Marks: 100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:

- Understand the concepts of computer networks.
- Study the functions of different layers.
- Make the students to get familiarized with different protocols and network components.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Enumerate the layers of the OSI model and TCP/IP.
- Knows about different topologies, network types and IEEE standards.
- Understand and build the skills of routing mechanisms.
- Familiarity with the basic protocols of computer networks.

UNIT–I: INTRODUCTION:

Uses of Computer Networks – Networks for Companies, Networks for people, Social Issues. Network Hardware – Topologies, LAN, MAN, WAN, Wireless Networks, Internetworks. Network Software– Protocol Hierarchies, Design Issues for the Layers, Interfaces and Services, Connection-Oriented and Connectionless Services, Service Primitives.

Reference Models -The OSI Reference Model, The TCP/IP Reference Model, A comparison of the OSI and TCP Reference Model.

Physical Layer: Transmission Media – Magnetic media, Twisted Pair, Baseband Coaxial Cable, Broadband Coaxial Cable, Fiber Optics, Wireless Transmission.

Chapters 1.1, 1.2, 1.3, 1.4(1.4.1, 1.4.2, 1.4.3), 2.2, 2.3

UNIT–II: DATA LINK LAYER: Data Link Layer Design Issues, Error Detection and Correction, Elementary Data Link Protocols- A Simplex Stop-and-Wait Protocol, A Simplex Protocol for a Noisy channel. Sliding Window Protocol- A protocol using Go Back n

UNIT–III: MEDIUM ACCESS SUBLAYER:

Channel Allocation Problem, Multiple Access Protocols, IEEE Standard 802.3: Ethernet, 802.5: Token Ring

Chapters: 3.1, 3.2, 3.3(3.3.2, 3.3.3), 3.4(3.4.1, 3.4.2), 4.1, 4.2, 4.3(4.3.1, 4.3.3)

UNIT–IV: NETWORK LAYER:

Network Layer Design Issues, Routing Algorithms-Shortest Path Routing, Hierarchical Routing, Routing for Mobile Hosts, Broadcast Routing and Multicast Routing.

Chapters: 5.1, 5.2(5.2.1, 5.2.2, 5.27, 5.2.8, 5.2.9, 5.2.10)

UNIT–V: TRANSPORT LAYER:

The Transport Services-Services provided to the Upper Layers, Quality of Service, Transport Service Primitives, Elements of Transport Protocols-Addressing, Establishing a connection, Releasing a connection, Flow control and buffering, Multiplexing, and Crash Recovery. Chapters: 6.1, 6.2

APPLICATION LAYER: Domain Name System, Simple Network Management Protocol- SNMP Model, SNMP Protocol, Electronic Mail, and World Wide Web.
Chapters: 7.2, 7.3(7.3.1, 7.3.5), 7.4(7.4.1, 7.4.2, 7.4.3), 7.6(7.6.1, 7.6.2, 7.6.3)

TEXT BOOK: Andrew S. Tanenbaum, "Computer networks", Third Edition, Pearson Education.
REFERENCE BOOK: Behrouz A.Fourouzan, "Data Communication and Networking", Tata McGraw- Hill, 2004.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:2Hrs/Week
CS-C1-6651(2) **PROJECT & VIVA-VOCE** Max Marks:50
w.e.f. 2015 – 2018 ("15AC") **SYLLABUS - IV C1**

COURSE OBJECTIVES:

To enable the students to:

- Motivate them to work in emerging/latest technologies.
- To develop ability, apply theoretical and practical tools/techniques.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand the software development process, models and software engineering principles.
- Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc.
- Self educate and perseverance in project implementation & completion.
- Demonstrate professionalism with ethics.

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used

- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 3Hrs/Week
CS-C2-6601(3) **CLOUD COMPUTING** Max: Marks: 100
w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

- Learn various cloud service models.
- Understand the concept of Virtualization.
- import fundamental concepts in the area of cloud computing

COURSE OUTCOMES

- Compare the strengths and limitations of cloud computing
- Identify the architecture, infrastructure of cloud computing
- Apply suitable virtualization concept.
- Address the core issues related to Security concerns.

UNIT–I: CLOUD COMPUTING OVERVIEW:

Origins of Cloud computing – Cloud components - Essential characteristics – On-demand self-service , Broad network access , Location independent resource pooling , Rapid elasticity , Measured service.

UNIT–II: Cloud scenarios – Benefits:

Scalability, simplicity, vendors, security. Limitations – Sensitive information - Application development – Security concerns - privacy concern with a third party - security level of third party - security benefits Regularity issues: Government policies.

UNIT – III: Cloud architecture:

Cloud delivery model – SPI framework, SPI evolution , SPI vs. traditional IT Model

Software as a Service (SaaS): SaaS service providers – Google App Engine, Salesforce.com and google platfrom – Benefits – Operational benefits - Economic benefits – Evaluating SaaS

Platform as a Service (PaaS): PaaS service providers – Right Scale – Salesforce.com – Rackspace – Force.com – Services and Benefits

UNIT – IV: Infrastructure as a Service

(IaaS): IaaS service providers – Amazon EC2 , GoGrid –Microsoft soft implementation and support – Amazon EC service level agreement – Recent developments – Benefits

Cloud deployment model: Public clouds – Private clouds – Community clouds - Hybrid clouds - Advantages of Cloud computing

UNIT – V: Virtualization:

Virtualization and cloud computing - Need of virtualization – cost, administration, fast deployment, reduce infrastructure cost – limitations.

Types of hardware virtualization: Full virtualization - partial virtualization - para virtualization.

Desktop virtualization: Software virtualization – Memory virtualization - Storage virtualization – Data virtualization–Network virtualization.

Microsoft Implementation: Microsoft Hyper V – Vmware features and infrastructure – Virtual Box - Thin client.

REFERENCE BOOKS:

6. Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi - 2010
7. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
8. Cloud Computing, Theory and Practice, Dan C Marinescu, MK Elsevier.
9. Cloud Computing, A Hands on approach, Arshadeep Bahga, Vijay Madisetti, University Press
10. Mastering Cloud Computing, Foundations and Application Programming, Raj Kumar Buyya, Christenvecctiola, S Tammarai selvi, TMH

STUDENT ACTIVITY:

Prepare the list of companies providing cloud services category wise.

Create a private cloud using local server

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:2Hrs/Week

CS-C2-6651(2) **PROJECT & VIVA-VOCE** Max Marks:50

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS - IV C2**

COURSE OBJECTIVES:

To enable the students to:

- Motivate them to work in emerging/latest technologies.
- To develop ability, apply theoretical and practical tools/techniques.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand the software development process, models and software engineering principles.
- Plan, analyze, design and implement a software project using programming languages like C, Java, PHP etc.
- Self educate and perseverance in project implementation & completion.
- Demonstrate professionalism with ethics.

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 2 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The Project work should be either an individual one or a group of not more than three members and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time:3Hrs/Week

CS-C3-6601(3) **DATA WAREHOUSE & DATAMINING** Max:Marks:100

w.e.f. 2015 – 2018 ("15AC") **SYLLABUS**

COURSE OBJECTIVES:

To enable the students to:

- Understand the overall architecture of a data warehouse and techniques.
- Learn Different data mining models and techniques.
- Various algorithms in Association rule mining, classification and clustering.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Understand operational database, warehousing and multidimensional need of database to meet industrial needs.
- Ability to apply acquired knowledge for understanding data and select suitable methods for data analysis.
- Technically know how to apply Data Mining principles and techniques for real time applications.

UNIT – I: DATA WAREHOUSING : Data warehousing Components –Building a Data warehouse– Data Extraction, Cleanup, and Transformation Tools –Metadata.

UNIT – II: Data Warehouse and OLAP Technology for Data Mining Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation.

UNIT – III: Introduction To Data Mining: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining.

Data Pre-Processing: Needs Pre-processing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT – IV: ASSOCIATION RULE MINING AND CLASSIFICATION: Mining Frequent Patterns, Associations and Correlations – Mining Methods – Mining Various Kinds of Association Rules – Correlation Analysis Classification- Basic Concepts - Decision Tree Induction - Bayesian Classification – Rule Based Classification – Classification by Back propagation – Associative Classification.

UNIT – V: CLUSTERING AND APPLICATIONS AND TRENDS IN DATA MINING :

Cluster Analysis - Types of Data – Categorization of Major Clustering Methods - K- means – Partitioning Methods – Hierarchical Methods - Density-Based Methods -Clustering High Dimensional Data- Outlier Analysis.

TEXT BOOKS:

1. Data Mining Concepts and Techniques Jiawei Han and Micheline Kamber Morgan Kaufman Publications.

REFERENCE BOOKS:

1. Data Mining Introductory and Advanced Topics, Margaret H Dunhan, Pearson Education.
2. Data Mining, Ian H. Witten Eibe Frank, Morgan Kaufman Publications.

** ** **

ST.JOSEPH'S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

VI SEMESTER **COMPUTER SCIENCE** Time: 2 Hrs/Week
CS-C3-6651 (2) **WEKA TOOL LAB** Max Marks:50
w.e.f. 2015 – 2018 ("15AC") **PRACTICAL SYLLABUS – IV C3**

COURSE OBJECTIVES:

To enable the students to:

- Learn to perform data mining tasks using WEKA tool.
- Understand the data sets and data preprocessing.
- Demonstrate the working of algorithms for data mining tasks such association rule mining, classification and clustering.

COURSE OUTCOMES:

Upon successful completion of the course, a student will be able to:

- Demonstrate the association rule mining, classification and clustering in large data sets.
- Ability to apply mining techniques for realistic data.

1. Introduction about Weka Tool.
2. Converting Numerical attribute to Nominal attributes.
3. Demonstration of preprocessing on dataset Weather.arff
4. Demonstration of Association rule process on dataset Student.arff using Apriori algorithm.
5. Demonstration of Association rule process on dataset Test.arff using Apriori algorithm.
6. Demonstration of classification rule process on dataset student.arff using j48 algorithm.
7. Demonstration of classification rule process on dataset employee.arff using naïve bayes algorithm.
8. Demonstration of clustering rule process on dataset weather.arff using simple k-means.
9. Demonstration of clustering rule process on dataset student.arff using simple k-means.

** ** **