

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A), KAKINADA
B.Sc. (Computer Science) - Syllabus Under CBCS
Course Structure

Semester	Paper	Subject	Hrs.	Credits	IA	ES	Total
FIRST YEAR							
SEMESTER I	I	Computer Fundamentals and Photoshop	4	3	25	75	100
		Photo Shop Lab	2	2	0	50	50
SEMESTER II	II	Programming in C	4	3	25	75	100
		Programming in C Lab	2	2	0	50	50
SECOND YEAR							
SEMESTER III	III	Object Oriented Programming Using Java	4	3	25	75	100
		Object Oriented Programming Using Java Lab	2	2	0	50	50
SEMESTER IV	IV	Data Structures	4	3	25	75	100
		Data Structures using Java Lab	2	2	0	50	50
THIRD YEAR							
SEMESTER V	V	DBMS	3	3	25	75	100
		DBMS Lab	2	2	0	50	50
	VI	Software Engineering	3	3	25	75	100
		Software Engineering Lab	2	2	0	50	50

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B.Sc. (Computer Science) - Syllabus Under CBCS
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SEMESTER VI	VII (A/B/C)	A. Operating Systems	3	3	25	75	100	
		Operating Systems Lab	3	2	0	50	50	
		B. Computer Networks	3	3	25	75	100	
		Computer Networks Lab	3	2	0	50	50	
		C. Web Technologies	3	3	25	75	100	
		Web Technologies Lab	3	2	0	50	50	
	VIII Cluster A (A1,A2) OR Cluster B (B1,B2) OR Cluster C (C1,C2)	Elective-II(Cluster A)						
		A1. Foundations of Data Science	3	3	25	75	100	
		Foundations of Data Science Lab (through R)	3	2	0	50	50	
		A2. Big Data Technology	3	3	25	75	100	
		Big Data Technology Lab (Hadoop)	3	2	0	50	50	
		Elective-II(Cluster B)						
		B1. Distributed Systems	3	3	25	75	100	
		Distributed Systems Lab	3	2	0	50	50	
		B2. Cloud Computing	3	3	25	75	100	
		Cloud Computing Lab	3	2	0	50	50	
		Elective-II(Cluster C)						
		C1. PHP – MySQL&Wordpress	3	3	25	75	100	
		PHP – MySQL&Wordpress	3	2	0	50	50	
		C2. Advanced JavaScript : JQuery, Ajax,Angular JS & JSON	3	3	25	75	100	
Advanced JavaScript Lab	3	2	0	50	50			
	Project	5	5	25	75	100		

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Course Structure

Guidelines and Evaluation pattern of the Project of the Cluster

The student who wants to do the project should follow the following.

1. She has to select the topic with clear Aim & objectives.
2. She has to collect the previous information regarding the topic.
3. She has to get the clear idea after getting the reference material ,i.e., how to proceed and what to do (methodology).
4. Before going to discuss the topic, every student has to do at least three Seminarson her chosen topic.
5. Finally she has to come with Results & Conclusions.
6. Bibliography (Reference Journals/books should be mentioned).

Seminars 25 Marks (Internal)	Report of the project : 50Marks (External 25M +Internal 25M)	Project Viva voce (External)25 Marks	
1 After 15 days(5 M) 2 After 30 days(5 M) 3 After 45 days(15M)	1.Introduction (Selection of the topic, Aim & objectives) 2.Review of Information 3.Methodology 4. Analysis& Discussion 5.Suggestions & Conclusion	Presentation 15	Viva 10

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – I Semester

Course: COMPUTER FUNDAMENTALS & PHOTOSHOP

Course Code: CS1304
Paper : I

No. of Hours/Week: 4

Course Objective:

To explore the Fundamentals of computers and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software and also to enable the students to explore Photoshop, work with layer techniques, gain an understanding of how to do basic photo repairs and color enhancements.

Course Outcomes:

At the end of the course the student will be able to

1. Understand the vocabulary of key terms related to the computer and able to identify the components of a personal computer system.
2. Identify the working principles of input and output devices and basics of different types of memories.
3. Work with the Photoshop workspace
4. Make use of Photoshop tools to modify and adjust images.
5. Create new layers; perform other basic layer functions and usage of filters.

UNIT-I:

Introduction to Computers, Characteristics and Limitations of Computer, Block Diagram of Computer, Types of Computers, Uses of Computers, Computer Generations. Number Systems: Binary, Hexa and Octal Numbering System, Number System Conversions.

UNIT-II:

Input and output devices: Keyboard and mouse, inputting data in other ways, Output devices – Monitors, Printers, Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory. Windows basics: desktop, start menu, icons.

UNIT –III

Introduction to Adobe photoshop, Getting started with photoshop, creating and saving a document in photoshop, page layout and back ground, photoshop program window-title bar,menubar,optionbar,imagewindow,image title bar,statusbar,ruler,paletts,toolbox,screenmodes,savingfiles,revertingfiles,closing files.

UNIT –IV

Images: working with images, image size and resolution ,image editing,colour modes and adjustments , Zooming & Panning an Image,, , Rulers, Guides & Grids- Cropping & Straightening an Image,image backgrounds ,making selections.

Working with tool box: working with pen tool, save and load selection-working with erasers-working with text and brushes-Colour manipulations: colour modes- Levels – Curves - Seeing Colour accurately - Patch tool – Cropping-Reading your palettes - Dust and scratches-Advanced Retouching- smoothing skin

UNIT-V

Layers: Working with layers- layer styles- opacity-adjustment layers

Filters: The filter menu, Working with filters- Editing your photo shoot, presentation –how to create adds ,artistic filter,blur filter,brush store filter,distort filters,noise filters,pixelate filters,light effects,difference clouds,sharpen filters,printing.

Additional Inputs:

Menus: purpose of menus – new file- open file- print file – copying data – cut data- paste data- saving custom shape- working with modes- define brushes.

Text Books:

1. Computer Fundamentals,**First** Edition, by Anita Goel, Pearson Education.
2. Adobe Photoshop CC Bible, First Edition, by Lisa DaNaeDayley and Brad Dayley, Wiley Publications.

Reference Books:

1. Fundamentals of Computers by ReemaThareja, Oxford University Press
2. Adobe Photoshop Class Room in a Book, Adobe Creative Team.
3. Photoshop: Beginner's Guide for Photoshop - Digital Photography, Photo Editing, ColorGrading & Graphic...19 February 2016 by David Maxwell.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – I Semester

Course: PHOTOSHOP LAB

Course Code: CS1304P

No. of Hours/Week: 2

Course Objective:

To enable the students work with Photoshop with ease and apply various techniques in the Photoshop to the images.

Course Outcomes:

At the end of the course the student will be able to

1. Work with the Photoshop workspace
2. Navigate images, resize and crop images
3. Create new layers and perform other basic layer functions
4. Transform images and make various colour corrections
5. Use various retouching and repairing techniques to correct images using layer masks, filters and blending modes

List of Experiments

1. Create your Visiting card
2. Create Cover page for any text book
3. Create a Paper add for advertising of any commercial agency
4. Design a Passport photo
5. Create a Pamphlet for any program to be conducted by an organization
6. Create Broacher for you college
7. Create Titles for any forthcoming film
8. Custom shapes creation
9. Create a Web template for your college
10. Convert colour photo to black and white photo
11. Enhance and reduce the given Image size
12. Background changes
13. Design Box package cover
14. Design Texture and patterns
15. Filter effects & Eraser effects

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – II Semester

Course: PROGRAMMING IN C

Course Code: CS2304

No. of Hours/Week: 4

Paper : II

Course Objective:

To impart basic knowledge of C Programming language so that Students will be able to develop logics and applications to solve real time problems using C.

Course Outcomes:

At the end of the course the student will be able to

1. Understand the fundamentals of C programming.
2. Make use of loops, decision making statements and functions to solve the problem.
3. Implement different Operations on Arrays.
4. Understand Pointers, Structures and Unions.
5. Implement File Operations for a given application using C file handling functions.

UNIT - I

Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms – Some more Algorithms – Flow Charts – Pseudo code – Machine Languages, Assembly Languages, High level Languages - Programming Languages – Generation of Programming Languages – Structured Programming Language- Design and Implementation of Correct, Efficient and Maintainable Programs.

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

UNIT - II

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

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

UNIT - III

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array – Calculating the length of the Array – Operations on Array – one dimensional array for inter-function communication – Two dimensional Arrays –Operations on Two Dimensional Arrays - Two Dimensional Arrays for inter-function communication – Multidimensional Arrays

Strings: Introduction –Suppressive Input – String Taxonomy – String Operations – Miscellaneous String and Character functions

UNIT - IV

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

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions – Self referential Structures – Union

UNIT - V

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data from Files – Detecting the End-of-file – Error Handling during File Operations – Accepting Command Line Arguments – Functions for Selecting a Record Randomly - Remove() – Renaming a File – Creating a Temporary File

Additional Inputs:

C Pre-processor, Conditional Compilation, Header Files, Sparse Matrices, Arrays of Union Variables, Unions inside Structures.

Text Books:

1. Schaum's Outline of Programming with C, by Byron Gottfried, 2nd Edition, (Indian Adapted Edition), TMH publications, New Delhi, 2006.
2. Let Us C, by YashwantKanetkar, 5th Edition, BPB Publications, NewDelhi, 2004.

Reference Books:

1. Introduction to C programming by REEMA THAREJA, OXFORD UNIVERSITY PRESS
2. COMPUTING FUNDAMENTALS & C PROGRAMMING by E Balagurusamy, Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
3. Programming with ANSI and Turbo C, by Ashok N Kamthane, Pearson Edition Publ, 2002.
4. The Spirit of CAn Introduction to modern Programming, by Henry Mullish&HuubertL.Cooper, Jaico Pub. House,1996.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – II Semester

Course: PROGRAMMING IN C LAB

Course Code:CS2304P

No. of Hours/Week: 2

Course Objective:

To develop programming skills using the fundamentals of C Language and to enable effective usage of arrays, structures, functions, pointers and to implement the memory management concepts.

Course Outcomes:

At the end of the course the student will be able to

1. Implement programs using fundamental features of C Language.
2. Solve problems with the use of loops, decision making statements and functions.
3. Implement programs performing various Operations on Arrays.

List of Experiments

1. Find out the given number is perfect number or not using c program.
2. Write a C program to check whether the given number is Armstrong or not.
3. Write a C program to find the sum of individual digits of a positive integer.
4. Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
Write a C program to print the Fibonacci series
5. Write a C program to generate the first n terms of the Fibonacci sequence.
6. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a C program to find both the largest and smallest number in a list of integers.
8. Write a C program that uses functions to perform the following:
 - a. Addition of Two Matrices
 - b. Multiplication of Two Matrices
9. Write a program to perform various string operations
10. Write C program that implements searching of given item in a given list.
11. Write a C program to sort a given list of integers in ascending order.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – III Semester

Course: OBJECT ORIENTED PROGRAMMING USING JAVA

Course Code: CS3304

No. of Hours/Week: 4

Paper : III

Course Objective:

To impart knowledge on fundamentals of Object Oriented Programming, classes, inheritance, interfaces and packages and to make the students understand the concept of exception handling and multithreading.

Course Outcomes:

At the end of the course the student will be able to

1. Understand and Apply Object Oriented features and understand the basics of Java.
2. Develop problem-solving and programming skills using OOP concepts.
3. Apply the concepts of inheritance and to create arrays, strings.
4. Able to demonstrate Exception Handling and Multithreading.
5. Develop efficient Java applets and applications using OOP concepts.

UNIT- I

FUNDAMENTALS OF OBJECT – ORIENTED PROGRAMMING :Introduction, Object Oriented paradigm, Basic Concepts of OOP, Benefits of OOP, Applications of OOP, Java features: **OVERVIEW OF JAVA LANGUAGE**: Introduction, Simple Java program structure, Java tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. **CONSTANTS, VARIABLES & DATATYPES**:Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Value to Variables, Scope of variables, Symbolic Constants, Type casting, Getting Value of Variables, Standard Default values; **OPERATORS & EXPRESSIONS**: Arithmetic operators Relational operators, logical operators, Assignment operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special operators, Arithmetic operators, Precedence of Arithmetic operators.

UNIT-II

DECISION MAKING & BRANCHING: Introduction, Decision making with if statement, Simple if statement, if. Else statement, Nesting of if.else statements, the else if ladder, the

switch statement, the conditional operator. **LOOPING:** Introduction, The While statement, the do-while statement, the for statement, Jumps in loops.

CLASSES, OBJECTS & METHODS: Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method overloading, Static members, Nesting of methods;

UNIT-III

INHERITANCE: Extending a class, Overloading methods, Final variables and methods, Final classes, Abstract methods and classes;

ARRAYS, STRINGS AND VECTORS: Arrays, Creating an array, One-dimensional arrays, Two – dimensional arrays, Strings,

TYPES OF INHERITANCE: Single, Multilevel, Hierarchical, Multiple through interface

UNIT-IV

MULTITHREADED PROGRAMMING: Introduction, Creating Threads, Extending the Threads, Stopping and Blocking a Thread, Lifecycle of a Thread, Using Thread Methods,

MANAGING ERRORS AND EXCEPTIONS: Types of Errors: Compile-time errors, Runtime errors, Exceptions, Exception handling, Multiple Catch Statements, Using finally statement,

UNIT-V

APPLET PROGRAMMING: local and remote applets, Applets and Applications, Building Applet code, Applet Life cycle: Initialization state, Running state, Idle or stopped state, Dead state, Display state.

PACKAGES: Introduction, Java API Packages, Using System Packages, Naming conventions, Creating Packages, Accessing a Package, using a Package.

Additional Inputs:

Vectors, Wrapper classes, Hiding classes, static Import, Event Handling in Java.

Text Books:

1. Java - The Complete Reference by Herbert Schildt, 9th Edition, Oreilly Publications.
2. Introduction to java programming, by Y Daniel Liang, Seventh Edition, Pearson, 2017.

Reference Books:

1. Programming with JAVA, A primer by E.Balaguruswamy, 3e, TATA McGraw-Hill Company.
2. Programming with Java by John R. Hubbard, Second Edition, Schaum's outline Series, TATA McGraw-Hill.
3. Java TM: How to Program by Deitel&Deitel, PHI (2007).
4. Java Programming: From Problem Analysis to Program Design by D.S Mallik.
5. Object Oriented Programming Through Java by P.Radha Krishna, Universities Press (2008).

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – III Semester

Course: OBJECT ORIENTED PROGRAMMING USING JAVA LAB

Course Code: CS3304P

No. of Hours/Week: 2

Course Objective:

To introduce various Object Oriented Concepts through which the students will be enabled to implement classes, inheritance, interface, package and multithreading concepts.

Course Outcomes:

At the end of the course the student will be able to

1. Apply OOP concepts to solve real time problems.
2. Make use of class, inheritance, interface and packages to develop solutions for complex problems.
3. Build java applications using Exception handling and Threads.

List of Experiments

1. Write a program to perform various String Operations
2. Write a program on class and object in java
3. Write a program to illustrate Function Overloading &Function Overriding methods in Java
4. Write a program to illustrate the implementation of abstract class
5. Write a program to implement Exception handling
6. Write a program to create packages in Java
7. Write a program on interface in java
8. Write a program to Create Multiple Threads in Java
9. Write a program to Write Applets to draw the various polygons
10. Write a program which illustrates the implementation of multiple Inheritance using interfaces in Java
11. Write a program to assign priorities to threads in java

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – IV Semester

Course: DATA STRUCTURES

Course Code:CS4304

No. of Hours/Week: 4

Paper : IV

Course Objective:

To introduce the basic concepts of Data Structures and inculcate Knowledge on various types of Data Structures. Also to provide exposure on various Searching and Sorting Techniques.

Course Outcomes:

At the end of the course the student will be able to

1. Understand fundamental concepts of Data structures and to design Linked lists.
2. Implement linear data structures stacks, queues.
3. Design non-linear data structures like trees, graphs and implement their operations.
4. Compare and Contrast different searching and sorting techniques.

UNIT - I

Concept of Abstract Data Types (ADTs)- Data Types, Data Structures, Storage Structures, and File Structures, Primitive and Non-primitive Data Structures, Linear and Non-linear Data Structures.

Linear Lists– ADT, Array and Linked representations, Pointers.

Arrays– ADT, Mappings, Representations, Sparse Matrices, Sets – ADT, Operations

Linked Lists: Single Linked List, Double Linked List, Circular Linked List, applications

UNIT - II

Stacks: Definition, ADT, Array and Linked representations, Implementations and Applications

Queues: Definition, ADT, Array and Linked representations, Circular Queues, Dequeues, Priority Queues, Implementations and Applications.

UNIT - III

Trees: Binary Tree, Definition, Properties, ADT, Array and Linked representations, Implementations and Applications. Binary Search Trees (BST) – Definition, ADT, Operations and Implementations, BST Applications. Tree Traversals - Threaded Binary Trees, Heap trees.

UNIT - IV

Graphs – Graph and its Representation, Graph Traversals, Connected Components, Basic Searching Techniques, Minimal Spanning Trees, Prims Algorithm.

UNIT- V

Sorting and Searching: Selection, Insertion, Bubble, Merge, Quick, Heap sort, Sequential and Binary Searching. Time Complexity and Space Complexity.

Additional Inputs:

Polynomial Representation using Linked List, Drawback of Binary Search Trees, Right Skewed and Left Skewed Binary Search Trees, Balanced Trees: AVL Trees.

Text Books:

1. Data Structures With C by Seymour Lipschutz, Tata McGraw-Hill.
2. Data Structures And Algorithm Analysis In C, 2nd Ed, Mark Allen Weiss.

Reference Books:

1. Data Structures Using C++ by D S Malik, Thomson, India Edition 2006.
2. Data Structures, Algorithms and Applications in C++ by Sahni S, McGraw-Hill, 2002.
3. Classic Data Structures by Samanta.D, Prentice-Hall of India, 2001.
4. Data Structures and Algorithms with Object-Oriented Programming by Heilman G I, Tata McGraw-Hill. 2002. (Chapters I and 14).
5. Introduction to Data Structures with Applications by Tremblay P. and Sorenson P. G., Tata McGraw-Hill,

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – IV Semester

Course: DATA STRUCTURES USING JAVA LAB

Course Code: CS4304P

No. of Hours/Week: 2

Course Objective:

To enable the students implement various linear and Non-Linear Data Structures.

Course Outcomes:

At the end of the course the student will be able to

1. Implement Linked list and Perform operations on it.
2. Make use of arrays and linked lists to implement Stack and Queues.
3. Implement various traversals on Trees and Graphs.

List of Experiments

1. Write a Program to implement the Linked List operations
2. Write a Program to implement the Stack operations using an array.
3. Write Programs to implement theQueue operations using an array.
4. Write Programs to implement the Stack operations using a singly linked list.
5. Write Programs to implement theQueue operations using a singly linked list.
6. Write a program for arithmetic expression evaluation
7. Write a program to implement Double Ended Queue using a doubly linked list.
8. Write a program to search an item in a given list using Linear Search and Binary Search
9. Write a program for Quick Sort
10. Write a program for Merge Sort
11. Write a program on Binary Search Tree operations(insertion, deletion and traversals)
12. Write a program for Graph traversals

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – V Semester

Course: DATA BASE MANAGEMENT SYSTEMS

Course Code : CS5307

No. of Hours/Week: 3

Paper : V

Course Objective:

To present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.

Course Outcomes:

At the end of the course the student will be able to

1. Understand DBMS concepts, data models and Architecture.
2. Understand ER concepts and ER mapping to relational model
3. Improve the database design by normalization.
4. Make use of SQL to retrieve and maintain relational database.
5. Illustrate various constructs in PL/SQL.

UNIT - I

Overview of Database Management System: Introduction, file-based system, Drawbacks of file-Based System, Data and information, Database, Database management System, Objectives of DBMS, Evaluation of Database management System, Classification of Database Management System, DBMS Approach, advantages of DBMS, data models, Components and Interfaces of Database Management System. Database Architecture, Situations where DBMS is not Necessary.

UNIT - II

Entity-Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity-relationship model (EERmodel), generalization and specialization, IS A relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, aggregation and composition, entity clusters, connection types, advantages of ER modelling.

UNIT - III

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra, relational calculus, tuple relational calculus, domain relational Calculus (DRC), QBE.

UNIT - IV

Structured Query Language: Introduction, History of SQL Standard, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate

functions, Data Manipulation Language, Table Modification Commands, Table Truncation, Imposition of Constraints, Join Operation, Set Operation, View, Sub Query, Embedded SQL.

UNIT - V

PL/SQL: Introduction, Shortcoming in SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL Program, Iterative Control, Cursors, Steps to create a Cursors, Procedure, Function, Packages, Exceptions Handling, Database Triggers, Types of Triggers.

Additional Inputs:

Transaction Management and Concurrency Control: What is transaction, Concurrency control, Concurrency control with locking Methods, Concurrency control with time stamping methods.

Text Books:

1. Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill, 2010.
2. Database Management Systems by Raghu Ramakrishnan, McGrawhill, 2002.
3. Fundamentals of Relational Database Management Systems by S. Sumathi, S. Esakkirajan, Springer Publications.

Reference Books:

1. An Introduction to Database Systems by Bipin C Desai
2. Principles of Database Systems by J. D. Ullman
3. Fundamentals of Database System by R. Elmasri and S. Navathe
4. Database Systems Design, Implementation and Management by Peter Rob, Carlos Coronel Seventh Edition, Thomson , 2007.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – V Semester

Course: DATA BASE MANAGEMENT SYSTEMS LAB

Course Code : CS5307P

No. of Hours/Week: 2

Course Objective:

To provide a strong formal foundation in database concepts and emphasis is on practice to the students to groom them into well-informed database application developers.

Course Outcomes:

At the end of the course the student will be able to

1. Design database and ER diagrams for the real world scenarios
2. Understand ER concepts and ER mapping to relational model
3. Make use of SQL and PL/SQL to efficiently retrieve and maintain relational database.

List of Experiments

1. Draw ER diagrams for train services in a railway station
2. Draw ER diagram for hospital administration
3. Creation of college database and establish relationships between tables
4. Write a view to extract details from two or more tables
5. Write a stored procedure to process students results
6. Write a program to demonstrate a function
7. Write a program to demonstrate blocks, cursors & database triggers.
8. Write a program to demonstrate Joins
9. Write a program to demonstrate of Aggregate functions
10. Creation of Reports based on different queries
11. Usage of file locking table locking, facilities in applications.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – V Semester

Course: SOFTWARE ENGINEERING

Course Code : CS5308
Paper : VI

No. of Hours/Week: 3

Course Objective:

To impart the knowledge on the Software Engineering Principles, Applications and Process models and to create awareness on the basic activities of software project management and various testing techniques.

Course Outcomes:

At the end of the course the student will be able to

1. Understand basic concepts of software engineering.
2. Analyse the principles of requirement analysis
3. Create architectural design for a given project.
4. Plan the Project and identify the risk
5. Apply different testing techniques

UNIT I

Introduction: The Problem Domain, The Software Engineering Challenges, The Software Engineering Approach , Software Process : Processes and Process Models, Software Engineering Process paradigms : waterfall model, RAD model, Prototyping model, Incremental model, Spiral model.

UNIT II

Software Requirements Analysis and Specification: Software Requirements, Problem Analysis, Requirements Specification, Functional Specification with Use Cases, Metrics.

UNIT III

Function-Oriented Design: Design Principles – Problem Partitioning and Hierarchy, Top-Down and Bottom-Up Strategies , Abstraction, Modularity, Module-Level Concepts - Cohesion and Coupling, Design Heuristics

UNIT IV

Planning a Software Project: Process Planning, Effort Estimation, Project Scheduling and Staffing, Software Configuration Management Plan, Quality Plan, Risk Management: Risk Management Concepts, Risk Assessment, Risk Control.

UNIT V

Testing: Testing Fundamentals, Black box testing, White Box testing, Testing Process, Defect Analysis and Prevention, Metrics—Reliability Estimation.

Additional Inputs:

Reverse Engineering and Reengineering, Building Blocks for CASE, Taxonomy of CASE Environments.

TEXT BOOKS:

1. An Integrated Approach to Software Engineering, Pankaj Jalote, 3rd Edition, Springer.
2. Fundamentals of Software Engineering, Rajib Mall, 3rd Edition. PHI,

REFERENCE BOOKS:

1. Roger Pressman S., “Software Engineering: A Practitioner's Approach”, 7th Edition, McGraw Hill, 2010.
2. Software Engineering Principles and Practice by Deepak Jain Oxford University Press
3. Sommerville, “Software Engineering”, Eighth Edition, Pearson Education, 2007

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – V Semester

Course: SOFTWARE ENGINEERING LAB

Course Code : CS5308P

No. of Hours/Week: 2

Paper : VI

Course Objective:

To enable the student identify the various stages in Software Development.

Course Outcomes:

At the end of the course the student will be able to

1. Understand basic concepts of software process models.
2. Develop SRS for a real world Project.
3. Analyze the risk related to a project using RMMM plan.
4. Design various test cases for a real world scenario.

List of Experiments

1. Studying various phases of Water-Fall Model.
2. Prepare SRS for Banking or On line book store domain problem
3. Using COCOMO model estimate effort for Banking or on line book store domain problem.
4. Calculate effort using FP oriented estimation model
5. Analyze the Risk related to the project and prepare RMMM plan.
6. Develop Time-line chart and project table using PERT or CPM project scheduling methods.
7. Draw E-R diagram, DFD, CFD and STD for the project.
8. Design of the test cases.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: OPERATING SYSTEMS
Elective - A

Paper : VII

No. of Hours/Week: 3

Course Objective:

To provide knowledge about the services and functions rendered by operating systems and inculcate knowledge on Process Scheduling and Memory Management.

Course Outcomes:

At the end of the course the student will be able to

1. Interpret the basic structure of OS and architectural components.
2. Compare and contrast various Process scheduling algorithms.
3. Analyze various mechanisms of Synchronization and the principles of deadlock.
4. Make use of paging and segmentation in Memory management.
5. Discuss the issues related to file system interface, implementation and disk management.

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, Scheduling algorithms, Case studies: Linux, Windows. Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors, Case Studies: Linux, Windows.

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 Demand Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, FileSystem 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.

Additional Inputs:

Inter process Communication, Inter process Communication in Linux, Multithreading: Benefits, Multithreading Models.

Text Books:

1. Operating System Concepts - Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, 9th Edition, John Wiley and Sons Inc., 2012.
2. Operating Systems - Internals and Design Principles, William Stallings, 7th Edition, Prentice Hall, 2011.

Reference Books:

1. Modern Operating Systems, Andrew S. Tanenbaum, Second Edition, Addison Wesley, 2001.
2. Operating Systems: A Design-Oriented Approach, Charles Crowley, Tata McGraw Hill Education", 1996.
3. Operating Systems: A Concept-Based Approach, D M Dhamdhare, Second Edition, Tata McGraw-Hill Education, 2007.

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DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: OPERATING SYSTEMS LAB
Elective - A

Paper : VII

No. of Hours/Week: 2

Course Objective:

To impart knowledge on Operating System design Principles and demonstrate Process Scheduling and Page Replacement Algorithms.

Course Outcomes:

At the end of the course the student will be able to

1. Understand basic commands of Linux Operating System
2. Write Shell Scripts
3. Implement Process Scheduling and Page Replacement Algorithms.

List of Experiments

1. Usage of following commands
Ls,pwd,tty,cat,who,who am I,rm, mkdir,rmdir,touch,cd.
2. Usage of following commands
Cal,cat(append),cat(concatenate),mv,cp,man,date.
3. Usage of following commands
Chmod,grep,tput(clear,highlight),bc.
4. Write a shell script to check if the number entered at the command line is Prime or not.
5. Write a shell script to modify “cal” command to display calendars of the specified months.
6. Write a shell script to modify “cal” command to display calendars of the specified range of months.
7. Write a shell script to accept a login name. If not a valid login name display message “entered login name is invalid”
8. Write a shell script to display date in the mm/dd/yy format.
9. To implement the FCFS Algorithm.
10. To implement the shortest job First Algorithm.
11. To implement the priority algorithm.
12. To implement the round robin Algorithm.
13. To implement the FIFO page replacement algorithm
14. To implement the LRU page replacement Algorithm.
15. To implement the Resource request Algorithm.

16. To implement the First-Fit, Best-Fit, Worst-Fit Algorithm.
17. To implement the sequential file organization.
18. To implement the Random file organization.
19. Simulate Page Replacement Algorithms FIFO.
20. Simulate Page Replacement Algorithms LRU.
21. Simulate Page Replacement Algorithms OPTIMAL.
22. Simulate Algorithm For Deadlock Prevention.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: COMPUTER NETWORKS
Elective - B

Paper: VII

No. of Hours/Week: 3

Course Objective:

To provide students with an overview of the concepts and fundamentals of data communication and computer networks.

Course Outcomes:

At the end of the course the student will be able to

1. Understand the basics of computer networks and transmission using physical layer.
2. Analyze error detection and error correction codes and understand the concepts behind medium access control sub layer.
3. Implement and analyze routing and congestion issues in network design.
4. Analyze the underlying protocols in transport layer.
5. Identify different applications in Application layer.

UNIT – I

Introduction: Uses of Computer Networks, Network Hardware, Network Software, Reference Models, Example Networks.

The Physical Layer: The Theoretical Basis for Data Communication, Guided Transmission Media, Wireless transmission, the public switched telephone network

UNIT – II

The Data Link Layer: Data Link Layer Design Issues, Error Detection and Correction, Sliding Window Protocols.

The Medium Access Control Sub-layer: The channel allocation problem, **Multiple Access Protocols, Ethernet**, Data Link Layer Switching.

UNIT – III

The Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion control algorithms, Quality of Service. Internet Working, The Network Layer in the Internet

UNIT – IV

The Transport Layer: The Transport Service, Elements of Transport Protocols, Congestion Control Algorithms, The Internet Transport Protocols, The Internet Transport Protocols: TCP, Delay Tolerant Networks.

UNIT – V

The Application Layer: DNS – The Domain Name System, Electronic Mail, The WorldWide Web, Real Time Audio & Video, Content Delivery & Peer-to-Peer.

Additional Inputs:

Data link layer in HDLC: configuration and transfer modes, frames, control field, point to point protocol (PPP): framing transition phase, multiplexing, multi link PPP.

Text Books:

1. Computer Network by Andrew S. Tanenbaum, Fifth Edition, Pearson Education.
2. Data Communications and Networking by Behrouz A Forouzan, Fourth Edition, TMH (2007).

Reference Books:

1. Computer Networks by Bhushan Trivedi, Oxford University Press
2. Computer Networking by James F. Kurose, Keith W. Ross, Third Edition, Pearson Education.
3. COMPUTER NETWORKS– A Top-down approach featuring the Internet by Kurose & Ross, Pearson Education – Alberto Leon – Garciak.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: COMPUTER NETWORKS LAB
Elective - B

No. of Hours/Week: 2

Course Objective:

To enable students to implement the concepts of data communication and demonstrate various routing algorithms in Computer Networks.

Course Outcomes:

At the end of the course the student will be able to

1. Make use of a programming platform to design services that control a network behaviour.
2. Develop data link layer services of dynamic framing.
3. Demonstrate the working of various routing algorithms, error detection and correction techniques.

List of Experiments:

1. Write a program to implement data link layer framing method bit stuffing.
2. Write a program to implement data link layer framing method character stuffing.
3. Write a program to implement data link layer framing method character count.
4. Write a program to implement Cyclic Redundancy Check (CRC 12, CRC 16 and CRCCCIR) on a data set of characters.
5. Write a program to implement Dijkstra's algorithm to compute the shortest path through a graph.
6. Write a program to implement subnet graph with weights indicating delay between.
7. Write a program to implement subnet.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: WEB TECHNOLOGIES
Elective - C

Paper : VII

No. of Hours/Week: 3

Course Objective:

To inculcate knowledge on web architecture, web services, client side and server side scripting technologies and to provide skills to design interactive and dynamic web sites.

Course Outcomes:

At the end of the course the student will be able to

1. Write well-structured, easily maintained, standards-compliant, accessible HTML code to design a web page.
2. Design well-structured, easily maintained CSS code to present HTML pages in different ways.
3. Know the basics of java script to perform client side programming
4. Build dynamic web pages using JavaScript.
5. Create XML documents used to share data on the World Wide Web

UNIT – I

HTML: Basic HTML, Document body, Text, Hyper links, adding more formatting, Lists, Tables using images. More HTML: Multimedia objects, Frames, Forms towards interactive, HTML document heading detail.

UNIT – II

Cascading Style Sheets: Introduction, using Styles, simple examples, your own styles, properties and values in styles, style sheet, formatting blocks of information, layers.

UNIT – III

Introduction to JavaScript: What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions. Objects in JavaScript: Data and objects in JavaScript, regular expressions, exception handling

UNIT – IV

DHTML with JavaScript: Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images.

UNIT – V

XML: defining data for web applications, basic XML, document type definition, presenting XML, document object model. Web Services

Additional Inputs:

XSLT for transforming XML, SAX Parser

Text Books:

1. Internet & World Wide Web How to Program by Harvey M. Deitel and Paul J. Deitel, 4/e, Pearson Education.
2. Web Technologies by Uttam Kumar Roy, Oxford University Press

Reference Books:

1. Beginning Web Programming by Jon Duckett, WROX.
2. Programming world wide web by Sebesta, Pearson.

**A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
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B.Sc – VI Semester**

**Course: WEB TECHNOLOGIES LAB
Elective - C**

No. of Hours/Week: 2

Course Objective:

To enable the students to develop static and dynamic web pages.

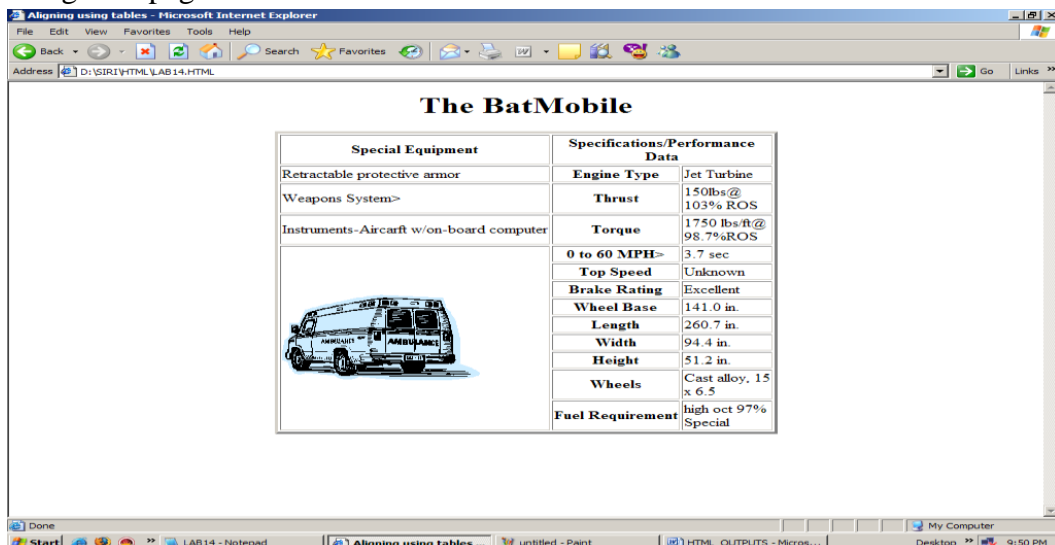
Course Outcomes:

At the end of the course the student will be able to

1. Make use of HTML tags to design Web pages.
2. Develop dynamic Web pages

List of Experiments:

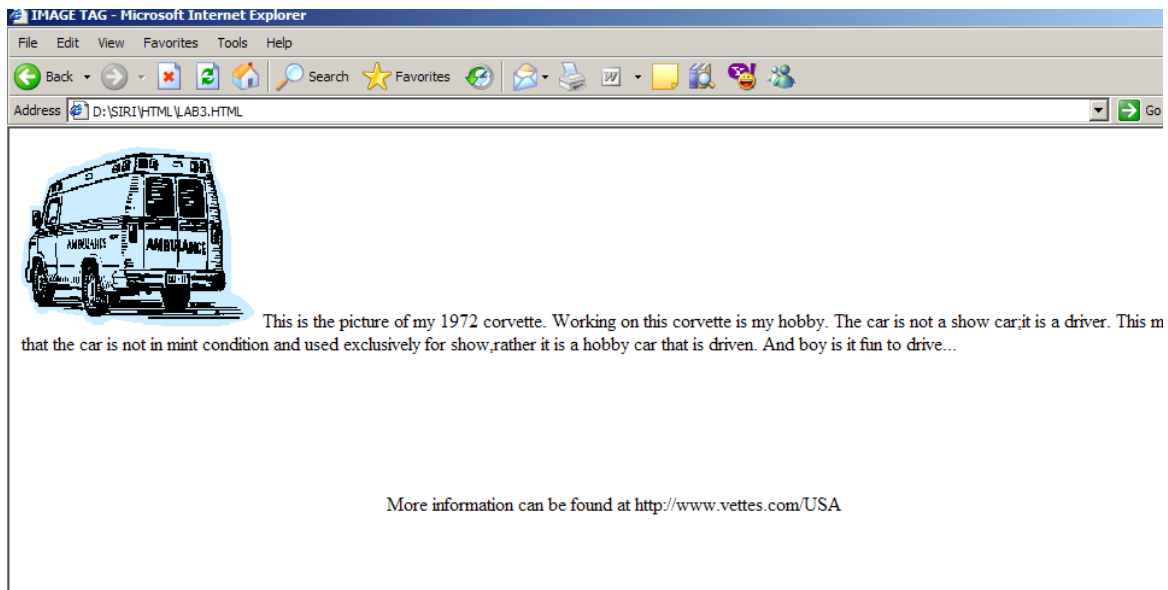
1. Write a HTML program illustrating text formatting.
2. Illustrate font variations in your HTML code.
3. Prepare a sample code to illustrate links between different sections of the page.
4. Create a simple HTML program to illustrate three types of lists.
5. Embed a calendar object in your web page.
6. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
7. Create nested table to store your curriculum.
8. Create a form that accepts the information from the subscriber of a mailing system.
9. Design the page as follows:



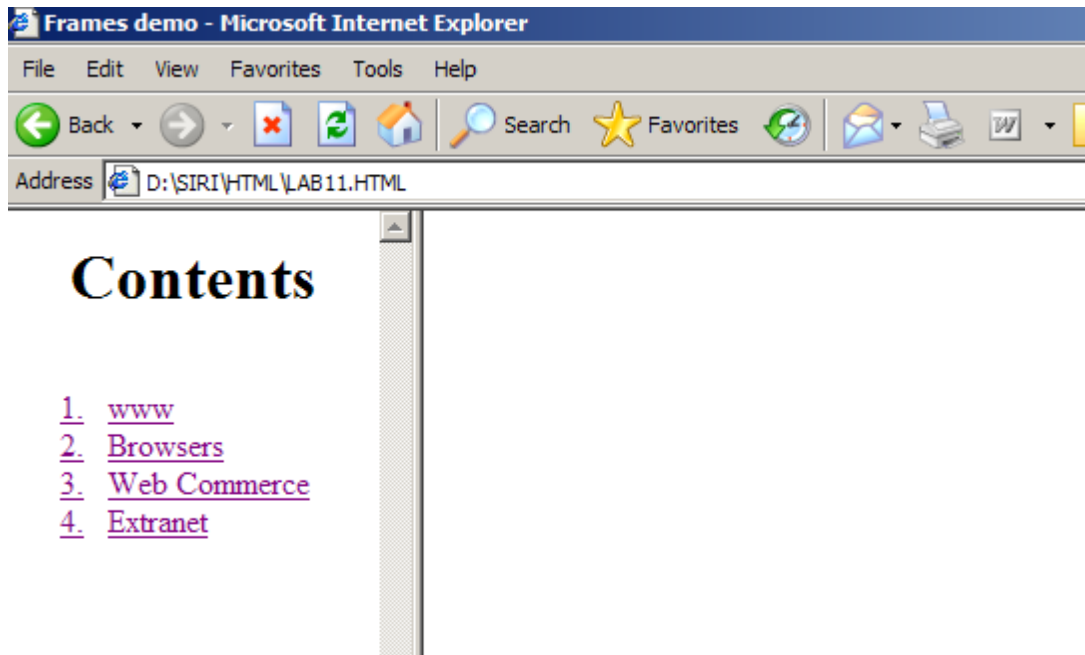
10. Using “table” tag, align the images as follows:



11. Divide the web page as follows:
12. Design the page as follows:



13. Illustrate the horizontal rulers in your page.
14. Create a help file as follows:



15. Create a form using form tags(assume the form and fields).
16. Create a webpage containing your biodata(assume the form and fields).
17. Write a html program including style sheets.
18. Write a html program to layers of information in web page.
19. Create a static webpage.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
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B.Sc – VI Semester

Course: FOUNDATIONS OF DATA SCIENCE
Cluster 1: Elective –A-1

Paper : VIII

No. of Hours/Week: 3

Course Objective:

To impart knowledge on data science that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

Course Outcomes:

At the end of the course the student will be able to

1. Apply fundamental algorithmic ideas to process data.
2. Learn to apply hypotheses and data into actionable predictions.
3. 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 modelling 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 – Kmeans 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.

UNIT - IV

PROBABILITY DISTRIBUTIONS in R - Binomial, Poisson, Normal distributions. - Manipulating objects - data distribution.

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 in R Language. Case studies.

Additional Inputs:

Linear Models, Simple Linear Regression, -Multiple Regression Generalized Linear Models, Logistic Regression, - Poisson Regression.

Text Books:

1. Practical Data Science with R by Nina Zumel, John Mount, Manning Publications, 2014.
2. Mining of Massive Datasets by Jure Leskovec, AnandRajaraman, Jeffrey D.Ullman,Cambridge University Press, 2014.

Reference Books:

1. Beginning R - The Statistical Programming Language by Mark Gardener, John Wiley& Sons, Inc., 2012.
2. An Introduction to R by , 2013.
3. Practical Data Science Cookbook by Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, AbhijitDasgupta,, Packt Publishing Ltd., 2014.
4. Visualize This: The FlowingData Guide to Design, Visualization,and Statistics by Nathan Yau,, Wiley, 2011.
5. Professional HadoopSolutions by Boris lublinsky, Kevin t. Smith, Alexey Yakubovich, Wiley, ISBN: 9788126551071, 2015.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: FOUNDATIONS OF DATA SCIENCE LAB

Cluster 1: Elective –A-1

No. of Hours/Week: 2

Course Objective:

To provide an overview of language R used for data science and to introduce students to the R programming environment and related eco-system and thus provide them with an in demand skill-set.

Course Outcomes:

At the end of the course the student will be able to

1. Install and use R for simple programming tasks.
2. Extend the functionality of R by using add-on packages.
3. Extract data from files and other sources and perform various data manipulation tasks on them.
4. Code statistical functions in R.

List of Experiments

I. Installing R and R studio

II. Basic Operations in r

1. Arithmetic Operations
2. Comments and spacing
3. Logical Operators - <, <=, >, >=, =, !=, &&, 1

III.

1. Getting data into R, Basic data manipulation
2. Vectors, Matrices, operation on vectors and matrices.

IV.

1. Basic Plotting
2. Quantitative data
3. Frequency plots
4. Box plots
5. Scatter plot
6. Categorical data
7. Bar charts
8. Pie charts

V. Loops and functions

1. if, if else, while, for break, next, repeat.
2. Basic functions- Print(), exp(), Log(), sqrt(), abs(), sin(), Cos(), tan(), factorial(), rand ().

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B.Sc – VI Semester

Course: BIG DATA TECHNOLOGY
Cluster 1: Elective – A-2

Paper : VIII

No. of Hours/Week: 3

Course Objective:

To provide an overview of an exciting growing field of Big Data analytics and to teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability.

Course Outcomes:

At the end of the course the student will be able to

1. Elucidate the motivation for big data systems and identify the main sources of Big Data in the real world.
2. Demonstrate an ability to use frameworks like Hadoop, NOSQL to efficiently store retrieve and process Big Data for Analytics.
3. Implement several Data Intensive tasks using the Map Reduce Paradigm
4. Apply several newer algorithms for Clustering Classifying and finding associations in Big Data
5. Design algorithms to analyze Big data.

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, SecondaryNameNode, and DataNode, Hadoop MapReduce paradigm, Map and Reduce tasks, Job, Task trackers - Cluster Setup – SSH & Hadoop Configuration – HDFS Administering – Monitoring & Maintenance.

UNIT-IV

HIVE AND HIVEQL, HBASE:-Hive Architecture and Installation, Comparison with Traditional Database, HiveQL - Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins & Subqueries.

UNIT-V

HBase concepts- Advanced Usage, Schema Design, Advance Indexing - Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

Additional Inputs:

Pig: Hadoop Programming Made Easier Admiring the Pig Architecture, Going with the Pig Latin Application Flow, Working through the ABCs of Pig Latin, Evaluating Local and Distributed Modes of Running Pig Scripts.

Text Books:

1. Professional Hadoop Solutions by Boris Iubinskiy, Kevin T. Smith, Alexey Yakubovich, Wiley, ISBN: 9788126551071, 2015.
2. Big Data Black Book(Covers Hadoop 2, Map Reduce, Hive, Yarn, Pig & Data Visualization)-Dream Tech Publications

Reference Books

1. Understanding Big data by Chris Eaton, Dirk Derros et al, McGraw Hill, 2012.
2. HADOOP: The definitive Guide by Tom White, O Reilly 2012.
3. Big Data Analytics with R and Hadoop by Vignesh Prajapati, Packet Publishing 2013.
4. Oracle Big Data Handbook by Tom Plunkett, Brian Macdonald et al., Oracle Press, 2014.
5. Big Data and Business analytics by Jy Liebowitz, CRC press, 2013.

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DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: BIG DATA TECHNOLOGY LAB
Cluster 1: Elective – A-2

No. of Hours/Week: 2

Course Objective:

To introduce the tools required to manage and analyze big data like Hadoop, NoSql and to impart knowledge of Map reduce paradigm to solve complex problems Map-Reduce.

Course Outcomes:

1. At the end of the course the student will be able to
2. Demonstrate capability to use Big Data Frameworks like Hadoop
3. Program applications using tools like Hive, pig, , NO SQL and MongoDB for Big data Applications

List of Experiments

1. Implement the following Data Structures in Java
 - a) Linked Lists
 - b) Stacks
 - c) Queues
 - d) Set
 - e) Map
2. (i) Perform setting up and Installing Hadoop in its three operating modes: Standalone
Pseudo distributed
Fully distributed
(ii) Use the web based tools to monitor your Hadoop setup.
3. Implement the following file management tasks in Hadoop.
 - Adding files and directories
 - Retrieving files
 - Deleting files

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DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: DISTRIBUTED SYSTEMS
Cluster 1: Elective – B-1

Paper : VIII

No. of Hours/Week: 3

Course Objective:

To introduce the fundamentals of distributed computer systems and to impart knowledge on distributed algorithms, distributed file systems, distributed databases, security and protection.

Course Outcomes:

At the end of the course the student will be able to

1. Demonstrate knowledge of the basic elements and concepts related to distributed system technologies.
2. Demonstrate knowledge of the core architectural aspects of distributed systems.
3. Use and apply important methods in distributed systems to support scalability and fault tolerance;
4. Demonstrate experience in building large-scale distributed applications.

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.

Additional Inputs:

Interprocess Communication: Introduction, The API for the Internet Protocols- The Characteristics of Interprocess communication, Sockets, UDP Datagram Communication, TCP Stream Communication.

Text Books:

1. Distributed Operating Systems: Concepts and Design by Pradeep. K. Sinha , PHI, 2007.
2. Distributed Systems- Concept and Design by George Coulouris, Jean Dollimore, Tim Kindberg, 3rd Edition, Pearson Education, 2005.

Reference Books:

1. Distributed Operating System by Andrew. S. Tanenbaum, PHI
2. Operating Systems – Internal and Design Principles by W. Stallings, Fifth Edition– 2005, Pearson education/PHI

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: DISTRIBUTED SYSTEMS LAB
Cluster 1: Elective – B-1

No. of Hours/Week: 2

Course Objective:

To enable the students to implement and demonstrate various concepts of Distributed Systems.

Course Outcomes:

At the end of the course the student will be able to

1. Demonstrate Inter-process Communication and Remote Procedure Call in Distributed Systems.
2. Implement Mutual Exclusion in Distributed Systems.
3. Demonstrate Election Algorithm in Distributed Systems.

List of Experiments

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.

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DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: CLOUD COMPUTING
Cluster 1: Elective – B-2

Paper : VIII

No. of Hours/Week: 3

Course Objective:

To provide the knowledge of the basics of cloud computing, Key concepts of virtualization, and different Cloud Computing services, and to provide exposure on various Cloud Vendors.

Course Outcomes:

At the end of the course the student will be able to

1. Compare the strengths and limitations of cloud computing
2. Identify the architecture, infrastructure and delivery models of cloud computing
3. Apply suitable virtualization concept.
4. Choose the appropriate Cloud Model and approach.
5. Address the core issues of cloud computing such as security, privacy and interoperability.

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

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

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

UNIT - IV

Infrastructure as a Service (IaaS): IaaS service providers – Amazon EC2 , GoGrid - 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 – paravirtualization

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

Additional Inputs:

Cloud Resource Management and Scheduling Policies and Mechanisms for Resource Management Applications of Control Theory to Task Scheduling on a Cloud, Stability of a Two Level Resource Allocation Architecture, Feedback Control Based on Dynamic Thresholds.

Text Books:

1. Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online by Michael Miller, Que 2008.
2. Cloud Computing, Theory and Practice by Dan C Marinescu, MK Elsevier.

Reference Books

1. Cloud computing a practical approach by Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, TATA McGraw-Hill, New Delhi – 2010.
2. Cloud Computing, A Hands on approach by Arshdeep Bahga, Vijay Madiseti, University Press.
3. Mastering Cloud Computing, Foundations and Application Programming by Raj Kumar Buyya, Christenvecctiola, S Tammaraiselvi, TMH.

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B.Sc – VI Semester

Course: CLOUD COMPUTING LAB
Cluster 1: Elective – B-2

No. of Hours/Week: 2

Course Objective:

To demonstrate the key concepts of virtualization and issues involved in application delivery like SaaS using various Cloud Vendors.

Course Outcomes:

At the end of the course the student will be able to

1. Define & implement Virtualization using different Cloud Vendors
2. Describe steps to perform on demand Application delivery using various Cloud Service Providers
3. Analyze and understand the functioning of different components in Amazon web services.

List of Experiments

Use Eucalyptus or Open Nebula or equivalent to set up the cloud and demonstrate.

1. Find procedure to run the virtual machine of different configuration. Check how many virtual machines can be utilized at particular time.
2. Find procedure to attach virtual block to the virtual machine and check whether it holds the data even after the release of the virtual machine.
3. Install a C compiler in the virtual machine and execute a sample program.
4. Show the virtual machine migration based on the certain condition from one node to the other.
5. Find procedure to install storage controller and interact with it.

1. Introduction to cloud computing.
2. Creating a Warehouse Application in Sales Force.com.
3. Creating an Application in Sales Force.com using Apex programming Language.
4. Implementation of SOAP web services in C#/ JAVA Applications.
5. Implementation of Para- Virtualization using VM ware's workstation/Oracle's Virtual Box and Guest O.S.
6. Case study: PAAS (Face book, Google App Engine)
7. Case Study: Amazon web services.

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B.Sc – VI Semester

Course: PHP & MYSQL, WORDPRESS
Cluster 1: Elective – C-1

Paper : VIII

No. of Hours/Week: 3

Course Objective:

To provide the skills and knowledge necessary to create dynamic database-driven websites and understand high-level Architecture required for Web Page design.

Course Outcomes:

At the end of the course the student will be able to

1. Understand the basics of PHP and MySQL.
2. Understand arrays, objects, strings and functions in PHP
3. Know how to use PHP cookies and generating forms
4. To Design databases using MySQL
5. Learn how to interact with MySQL using PHP and manage or create **WordPress** blog or website.

UNIT - I

Installing and Configuring MySQL: Current and Future Versions of MySQL, How to GetMySQL, Installing MySQL on Linux, Windows, Trouble Shooting your Installation, Basic Security Guidelines, Introducing MySQL Privilege System, Working with UserPrivileges. Installing and Configuring Apache: Current and future versions of Apache, Choosing the Appropriate Installation Method, Installing Apache on Linux, Windows, Apache Configuration File Structure, Apache Log Files, Apache Related Commands, Trouble Shooting. Installing and Configuring PHP: Building PHP on Linux with Apache, Windows, php.ini. Basics, The Basics of PHP scripts. The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output.

UNIT- II

Working with Functions: What is function?, Calling functions, Defining Functions, Returning the values from User-Defined Functions, Variable Scope, Saving state between Function calls with the static statement, more about arguments.

Working with Arrays: What are Arrays? Arrays, Some Array-Related Functions.

Working with Objects: Creating Objects, Object Instance

Working with Strings, Dates and Time: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

UNIT - III

Working with Forms: Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads.

Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users. Working with Files.

UNIT- IV

Introduction to MySQL

Understanding the Database Design Process: The Importance of Good Database Design, Types of Table Relationships, and Understanding Normalization.

Learning basic SQL Commands: Learning the MySQL Data types, Learning the Table Creation Syntax, Using Insert Command, Using SELECT Command, Using WHERE in your Queries, Selecting from Multiple Tables, Using the UPDATE command to modify records, Using REPLACE Command, Using the DELETE Command, Frequently used string functions in MySQL, Using Date and Time Functions in MySQL.

UNIT - V

Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Subentities to a Record.

WordPress: Introduction to WordPress, servers like wamp, bitnamietc, installing and configuring WordPress, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts. Customizing the site, changing the appearance of site using CSS.

Additional Inputs:

Advanced PHP Programming PHP and Web Forms, Files, PHP Authentication and Methodologies -Hard Coded, File Based, Database Based, IP Based

Text Books:

1. Learning PHP, MySQL & JavaScript with jQuery, CSS & HTML5 by Robin Nixon, 4th Edition, O'Reilly 2015.
2. Wordpress Web Application Development by Rakhitha Nimesh Ratnayake, 3rd Edition, PACKT 2017.

Reference Books:

1. PHP MySQL and Apache, SAMS Teach yourself by Julie C. Meloni, Pearson Education (2007).
2. The web warrior guide to Web Programming by Xue Bai Michael Ekedahl Thomson (2006).

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: PHP & MYSQL, WORDPRESS LAB
Cluster 1: Elective – C-1

No. of Hours/Week: 2

Course Objective:

To enable the students handle the Web page development and support activities in the real-time and make them Work independently with implementing Advance concepts.

Course Outcomes:

At the end of the course the student will be able to

1. Build Dynamic website using server side PHP Programming and Database connectivity.
2. Describe and differentiate different Web Extensions and Web Services.
3. Build Websites using WordPress.

List of Experiments

MySQL Lab Cycle
Cycle -1

An Enterprise wishes to maintain the details about his suppliers and other corresponding details. For that he uses the following details.

Suppliers (sid: Integer, sname: string, address: string)

Parts (pid: Integer, pname: string, color: string)

Catalog (sid: integer, pid: integer, cost: real)

The catalog relation lists the prices charged for parts by suppliers.

Write the following queries in SQL:

1. Find the pnames of parts for which there is some supplier.
2. Find the snames of suppliers who supply every part.
3. Find the snames of supplier who supply every red part.
4. Find the pnames of parts supplied by London Supplier and by no one else.
5. Find the sid's of suppliers who charge more for some part than the average cost of that part.
6. For each part, find the sname of the supplier who charges the most for that part.
7. Find the sid's of suppliers who supply only red parts.
8. Find the sid's of suppliers who supply a red and a green part.
9. Find the sid's of suppliers who supply a red or green part.
10. Find the total amount has to pay for that supplier by part located from London.

Cycle – 2

An organisation wishes to maintain the status about the working hours made by his employees. For that he uses the following tables.

Emp (eid: integer, ename: string, age: integer, salary: real)

Works (eid: integer, did: integer, pct_time: integer)

Dept (did: integer, budget: real, managerid: integer)

An employee can work in more than one department; the pct_time field of the worksrelation shows the percentage of time that a given employee works in a given department.

Resolve the following queries.

1. Print the names and ages of each employee who works in both Hardware and Software departments.
2. For each department with more than 20 full time equivalent employees (i.e., where the part-time and full-time employees add up to at least that many fulltimeemployees), print the did's together with the number of employees that work in that department.
3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she work in.
4. Find the managerid's of managers who manage only departments with budgets greater than 1,000,000.
5. Find the enames of managers who manage the departments with largest budget.
6. If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerid's of managers who control more than 5,000,000.
7. Find the managerid's of managers who control the highest amount.
8. Find the average manager salary.

PHP Lab Cycle

1. Write a PHP program to Display "Hello"
2. Write a PHP Program to display the today's date.
3. Write a PHP Program to read the employee details.
4. Write a PHP Program to display the
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Write a PHP Application to perform demonstrate the college website.
8. Write a PHP application to add new Rows in a Table.
9. Write a PHP application to modify the Rows in a Table.
10. Write a PHP application to delete the Rows from a Table.
11. Write a PHP application to fetch the Rows in a Table.
12. Develop an PHP application to make following Operations
 - i. Registration of Users.
 - ii. Insert the details of the Users.
 - iii. Modify the Details.
 - iv. Transaction Maintenance.
 - a) No of times Logged in
 - b) Time Spent on each login.
 - c) Restrict the user for three trials only.
 - d) Delete the user if he spent more than 100 Hrs of transaction.

WordPress Lab

1. Installation and configuration of word press.
2. Create a site and add a theme to it.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: ADVANCED JAVA SCRIPT
(JQUERY /AJAX / JSON / ANGULAR JS)
Cluster C: Elective – C-2

Paper : VIII

No. of Hours/Week: 3

Course Objective:

To enable the students learn advanced JavaScript techniques and good standard coding conventions and inculcate knowledge on advanced form validation with Regular Expressions and ways to manipulate the HTML DOM.

Course Outcomes:

At the end of the course the student will be able to

1. Create effective scripts using jQuery to enhance the end user experience
2. Apply more style properties for the selected elements using CSS
3. Design user interface interactions, effects and widgets built on top of the jQuery JavaScript Library.
4. Understand the techniques for creating better, faster, and more interactive web applications using AJAX.
5. To design single Page Applications using AngularJS.

UNIT - I

jQuery– Basics: String, Numbers, Boolean, Objects, Arrays, Functions, Arguments, Scope, Built-in Functions. **jQuery– Selectors:** CSS Element Selector, CSS Element ID Selector, CSS Element Class Selector, CSS Universal Selector, Multiple Elements E, F, G Selector, Callback Functions. **jQuery– DOM Attributes:** Get Attribute Value, Set Attribute Value. **jQuery– DOM Traversing :** Find Elements by index, Filtering out Elements, Locating Descendent Elements, JQuery DOM Traversing Methods.

UNIT - II

jQuery– CSS Methods : Apply CSS Properties, Apply Multiple CSS Properties, Setting Element Width & Height, JQuery CSS Methods. **jQuery– DOM Manipulation Methods:** Content Manipulation, DOM Element Replacement, Removing DOM Elements, Inserting DOM elements, DOM Manipulation Methods. **jQuery– Events Handling:** Binding event handlers, Removing event handlers, Event Types, The Event Object, The Event Attributes. **jQuery– Effects:** JQuery Effect Methods, jQuery Hide and Show, jQuery Toggle, jQuery Slide – slideDown, slideUp, slideToggle, jQuery Fade – fadeIn, fadeOut, fadeTo, jQuery Custom Animations

UNIT - III

Introduction to jQuery UI: Need of jQuery UI in real web sites, Downloading jQueryUI, Importing jQuery UI, Draggable, Droppable, Resizable, Selectable, Sortable, Accordion, AutoComplete, Button Set, Date Picker, Dialog, Menu, Progress Bar, Slider, Spinner, Tabs, Tooltip. Intro to jQuery validation plug-in, Using jQuery validation plug-in, regular expressions.

UNIT - IV

Introduction to AJAX: Need of AJAX in real web sites, Getting database data using jQuery-AJAX, Inserting, Updating, Deleting database data using jQuery-AJAX Grid Development using jQuery-AJAX

Introduction to JSON: JSON syntax, Need of JSON in real web sites, JSON object, JSON array, Complex JSON objects, Reading JSON objects using jQuery.

UNIT - V

Introduction to AngularJS: Need of AngularJS in real web sites, Downloading AngularJS, AngularJS first example, AngularJS built-in directives, AngularJS expressions, AngularJS modules, AngularJS controllers, AngularJS scope, AngularJS registration form and login form, AngularJS CRUD operations, AngularJS Animations, AngularJS validations.

Additional Inputs:

Internationalization and localization of Web Services using AngularJS, Using AngularJS animations, Working with remote web services, Template caching

Text Books:

1. Head First jQuery by Benedetti , O'Reilly-2011
2. Ajax: With Notes Critical and Explanatory by Sophocles, Import, 2018.

Reference Books:

1. jQuery UI 1.8: The User Interface Library for jQuery by Dan Wellman.
2. jQuery Fundamentals by Rebecca Murphey.
3. Ajax: The Complete Reference by Thomas A. Powell.
4. Pro AngularJS by Adam Freeman Kindle Edition.

A.S.D. GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)
DEPARTMENT OF COMPUTER SCIENCE
B.Sc – VI Semester

Course: ADVANCED JAVA SCRIPT LAB
(JQUERY /AJAX / JSON / ANGULAR JS)
Cluster C: Elective – C-2

No. of Hours/Week: 2

Course Objective:

To enable the students develop dynamic Websites.

Course Outcomes:

At the end of the course the student will be able to

1. Design Dynamic Webpages using jQuery.
2. Create dynamic forms with jSon
3. Create dynamic menus.

List of Experiments

1. Create a Webpage using jQuery.
2. Design Cascading menus using jQuery.
3. Create Webpage using AngularJS.
4. Create a Webpage using jSon.
5. Illustrate the use of Ajax.