



MOTHER TERESA WOMEN'S UNIVERSITY

KODAIKANAL – 624 102

BACHELOR OF SCIENCE
BCA
UNDER CBCS (with effect from 2018-2019)

BACHELOR OF SCIENCE
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OBJECTIVES

1. To produce employable IT workforce, that will have sound knowledge of IT and business fundamentals that can be applied to develop and customize solutions for Small and Medium Enterprises (SME).
2. To develop academically competent and professionally motivated personnel, equipped with objective, critical thinking, right moral and ethical values that compassionately foster the scientific temper with a sense of social responsibility.
3. To develop skilled manpower in the various areas of information technology like:
Data base management, Software Development, Computer-Languages, Software engineering, Web based applications etc.

PROGRAMME SPECIFIC OUTCOMES

PSO1: The necessary technical, scientific as well as basic managerial and financial procedures to analyze and solve real world problems within their work domain

PSO2 : Clarity on both conceptual and application oriented skills in commerce, Finance & Accounting and IT Applications in Business context.

PSO3: Improved communication and business management skills, especially in providing technical support.

PSO4: Awareness on ethics, values, sustainability and creativity aspects.

PSO5: The ability and the mindset to continuously update and innovate.

S.No	Subject Code	Subject Name	Hours	Credits	CIS	ESE	Total
SEMESTER – I							
1.	ULTA11	Tamil	6	3	25	75	100
2.	ULEN11	English	6	3	25	75	100
3.	UCAT11	Programming in C	5	4	25	75	100
4.	UCAT12	Computer Fundamentals & Problem Solving	5	4	25	75	100
5.	UCAA11	Digital Principles	5	4	25	75	100
6.	UVAE11	Value Education	3	3	25	75	100
Total			30	21			600
SEMESTER – II							
7.	ULTA22	Tamil	6	3	25	75	100
8.	ULEN22	English	6	3	25	75	100
9.	UCAT21	Programming using C++	6	4	25	75	100
10.	UCAP21	Programming in C & C++ Lab	5	4	25	75	100
11.	UCAA21	Visual Basic - Lab	5	4	25	75	100
12.	UEVS21	EVS	2	2	25	75	100
Total			30	20			600
SEMESTER – III							
13.	ULTA33	Tamil	6	3	25	75	100
14.	ULEN33	English	6	3	25	75	100
15.	UCAT31	RDBMS	5	4	25	75	100
16.	UCAA32	RDBMS Lab	5	4	25	75	100
17.	UCAE31	Statistical Methods	4	3	25	75	100
18.	UCAN31	Business Automation Lab	2	2	25	75	100
19.	UCAS31	Business Automation Lab	2	2	25	75	100
Total			30	21			700
SEMESTER – IV							
20.	ULTA44	Tamil	6	3	25	75	100
21.	ULEN44	English	6	3	25	75	100
22.	UCAT41	Programming in JAVA	4	4	25	75	100
23.	UCAP42	Programming in JAVA Lab	4	4	25	75	100
24.	UCAA42	Tally Lab	3	4	25	75	100
25.	UCAE42	Accounting and Financial Management	3	3	25	75	100
26.	UCAN42	DTP Lab	2	2	25	75	100
27.	UCAS42	Python Lab	2	2	25	75	100
Total			30	25			800
SEMESTER – V							

28.	UCAT51	Computer Architecture	5	4	25	75	100
29.	UCAT52	Operation Research	5	4	25	75	100
30.	UCAT53	System Software	5	4	25	75	100
31.	UCAT54	Software Engineering	5	4	25	75	100
32.	UCAT55	Computer Networks	5	4	25	75	100
33.	UCAE53	PHP with MySQL Lab	3	3	25	75	100
34.	UCAS53	Mobile Applications Lab	2	2	25	75	100
Total			30	25			700
SEMESTER – VI							
35.	UCAT61	Computer Graphics	5	4	25	75	100
36.	UCAT62	Web Technology	5	4	25	75	100
37.	UCAT63	Multimedia and its Applications	5	4	25	75	100
38.	UCAP63	Multimedia Lab	5	4	25	75	100
39.	UCAP64	Web Technology – Lab	5	4	25	75	100
40.	UCAE64	Mini Project	3	3	25	75	100
41.	UCAS64	Software Testing - Lab	2	2	25	75	100
42.	UEAS61	Extension Activities	-	3	25	75	100
Total			30	28			800
Total Credits				140		Total I	4200

	I	II	III	IV	V	VI	
Total Credits	21	20	21	25	25	28	140
Total Marks	600	600	700	800	700	800	4200

SCHEME OF EXAMINATION

Internal (Theory)	-	25
Test	-	15
Attendance	-	5
Assignment / Technical Quiz	-	5
Total	-	25
External (Theory)	-	75

QUESTION PATTERN

1.	PART A	10*1 Marks=10 (Objective Type/Multiple Choice) 2 Question from each Unit	10
2.	PART B	5*4 Marks =20 (From each Unit Either or Choice)	20
3.	PART C	3*15 Marks =45 (Open Choice) (Any three Question out of 5,onequestion from each unit)	45
		Total	75

The Internal assessment for Practical : 25

The External assessment for Practical : 75

SEMESTER – I

Subject Code: UCAT11

PROGRAMMING IN C

5 HOURS/ 4 CREDITS

Objectives:

- 1. To understand and develop well-structured programs using C language.**
- 2. To learn the basic data structures implementing through C language.**
- 3. To deal with different memory allocation & input/output methods.**
- 4. Problem solving through computer programming using C Language.**

UNIT I:

BASICS OF C PROGRAMMING

Introduction to programming paradigms - Structure of C program - C programming: Data Types – Storage classes - Constants – Enumeration Constants - Keywords – Operators: Precedence and Associativity - Expressions - Input/output statements, Assignment statements – Decision making statements - Switch statement - Looping statements – Pre-processor directives - Compilation process.

UNIT II :

ARRAYS AND STRINGS

Introduction to Arrays: Declaration, Initialization – One dimensional array – Example Program: Computing Mean, Median and Mode - Two dimensional arrays – Example Program: Matrix Operations (Addition, Scaling, Determinant and Transpose) - String operations: length, compare, concatenate, copy – Selection sort, linear and binary search

UNIT III:

FUNCTIONS AND POINTERS

Introduction to functions: Function prototype, function definition, function call, Built-in functions (string functions, math functions) – Recursion – Example Program: Computation of Sine series, Scientific calculator using built-in functions, Binary Search using recursive functions – Pointers – Pointer operators – Pointer arithmetic – Arrays and pointers – Array of pointers – Example Program: Sorting of names – Parameter passing: Pass by value, Pass by reference – Example Program: Swapping of two numbers and changing the value of a variable using pass by reference

UNIT IV:

STRUCTURES

Structure - Nested structures – Pointer and Structures – Array of structures – Example Program using structures and pointers – Self-referential structures – Dynamic memory allocation - typedef

UNIT V:

FILE PROCESSING

Files – Types of file processing: Sequential access, Random access – Sequential access file - Example Program: Finding average of numbers stored in sequential access file - Random access file - Example Program: Transaction processing using random access files – Command line arguments.

TEXT BOOKS:

1. ReemaThareja, —Programming in C, Oxford University Press, Second Edition, 2016.
2. Kernighan, B.W and Ritchie,D.M, —The C Programming language, Second Edition, Pearson Education, 2006

REFERENCES:

1. Paul Deitel and Harvey Deitel, "C How to Program", Seventh edition, Pearson Publication
2. Juneja, B. L and Anita Seth, "Programming in C", CENGAGE Learning India pvt. Ltd., 2011
3. PradipDey, ManasGhosh, "Fundamentals of Computing and Programming in C", First Edition, Oxford University Press, 2009.
4. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.

5. Byron S. Gottfried, "Schaum's Outline of Theory and Problems of Programming with C", McGraw-Hill Education, 1996.

CODE: UCAT12 COMPUTER FUNDAMENTALS & PROBLEM SOLVING 5 HOURS/ 4 CREDITS

Objectives:

1. To understand computer fundamental and its role in problem solving.
2. To solve Programming problems using procedural approach.
3. To specify, trace, and implement programs written in a contemporary programming language that solve a stated problem in a clean and robust fashion.
4. Students will acquire the concept of flow of control and program structures.

UNIT – I:

Fundamentals : Introduction to Computers –Generations of Computers –Types of Computers - Advantages of Computer –Characteristics of Computer –Limitations of Computer - Types of Languages

Unit II:

Block diagram of a Computer –Input Devices –Output devices-Storage device: Ram, Rom – Comparison b/w Ram and Rom –Secondary Storage devices - Types of Software

UNIT III:

Data Representation and basic Computer Arithmetic: Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.

UNIT – IV: Problem Solving

Algorithm: Introduction – Types of Algorithm (Sequence, Branch and Loop) – Properties – Examples of Algorithm.

Pseudo code: Introduction – Keywords – Assignment – Conditional Statements – Loop Structures – Command & Statements with examples – Rules – Merits & Demerits.

Flowchart: Introduction – Symbols - Assignment – Conditional Statements – Loop Structures – Command & Statements with examples – Rules – Merits & Demerits.

Unit V: Networks

Definition – Features of network –network topologies –LAN –WAN –MAN-Comparison between LAN & WAN –Introduction to Internet –History of Internet –Uses of Internet

Reference Books:

1. P. K. Sinha&PritiSinha , “Computer Fundamentals”, BPB Publications, 2007.
2. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.
3. Alexis Leon,Fundamentals of Information Technology, Vikas Publication.

Objectives:

1. To learn the operation of latches, flip-flops, counters, registers, and register transfers in the Computer organization.
2. To design two-level logic functions with AND, OR, NAND, NOR and XOR gates with minimum number of gate delays or literals
3. To be trained and design the combinational circuits and sequential circuits
4. Gaining background knowledge as well as core expertise in Digital principles and digital system.

UNIT I:

Number Representation-Number System: Binary, Hexadecimal-Octal Codes-BCD-Excess-3-Gray Code-ASCII-EBCDIC-Binary Arithmetic-1's Complement-2's Complement Representation-Error Detecting Codes-Hamming Codes.

UNIT II:

Introduction-Boolean Algebra- Demorgan's Theorem-Sum Of Product method-Product of Sum method-Karnaugh Map.

UNIT III:

Introduction - Logic Gates – OR – AND – NOT – NAND – NOR - Universal Gates – EX - OR & EX-NOR Gates.

UNIT IV:

Decoder – Encoder – Multiplexer - Demultiplexer - Half Adder - Full Adder - Half Subtractor - Full Subtractor.

UNIT V:

Flip-Flops - S-R Flip-flop - J-K Flip Flops - T Flip Flop - D Flip Flop - Counter: Ring Counter – Register - Shift Register.

Text Books:

1. Digital Principles and Applications-Albert Paul Malvino & Donald P.Leach-IV Edition-Tata McGraw Hill Company Limited.
2. Digital Circuits & Design-S.Salivahanan, S.Arivazhagan-II Edition-Vikas Publication

Reference Book

1. Digital Principles & System Design – P.S.Manoharan-Revised Edition-Charulatha Publication.

SEMESTER – II

CODE: UCAT21

PROGRAMMING USING C++

6 HOURS/ 4 CREDITS

Objectives:

1. To acquire the knowledge about Object Oriented Programming Concepts.
2. To demonstrate the use of virtual functions to implement polymorphism, friend function etc.
3. To cognize the importance and usage about Templates, Files and Exception Handling.
4. Building up students' capacity to evaluate different algorithmic techniques and to write programs for developing simple applications using C++.

UNIT -I: Object Oriented Methodology, Functions and Classes and Objects.

Object Oriented Methodology: Basic Concepts of OOP. Advantages and Application of OOPs, Procedural Programming Vs. OOP.

Functions: Inline Function, Default and Const Arguments, Function Overloading, Manipulators and Enumeration.

Classes and Objects: Specifying a Class, Creating Objects, Private & Public Data Members and Member Functions, Defining Inline Member Functions, Static Data Members and Member Functions. Arrays within Class, Arrays of Objects, Objects as Function Arguments, Returning Objects.

UNIT -II: Constructors, Destructors and Operators Overloading.

Constructors and Destructors: Introduction, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructors, Dynamic Constructors, Const Objects, Destructors

Operator Overloading: Definition, Unary and Binary Overloading, Rules for Operator Overloading,

UNIT -III: Inheritance, Pointers Virtual & Friend functions.

Inheritance: Defining Derived Classes, Types of Inheritance, Constructors and Destructors in Derived Classes.

Pointers: Pointer to Objects, this Pointer, New and Delete Operators, Virtual Function, Friend Functions. Managing Console I/O operations.

UNIT – IV: Sequential Representations of lists.

Stacks, Queues and their applications. Lists: Linked Representation - Linear linked lists. Circular linked lists. Doubly linked lists. Operations on all types of lists and Applications.

UNIT -V: Trees.

Binary Trees, Traversals of binary trees, Structural properties of binary trees.

Binary Search Trees: Search, Insertion and Deletion algorithms, Structural properties. Threaded Binary trees.

Balanced Binary Search Trees: AVL tree, B-trees, B+- trees.

Text Books:

- 1) E Balagurusamy, "Object Oriented Programming with C++ ", Tata McGraw Hill Publishing Company Limited, New Delhi, ISBN:- 13- 978-07-066907-9
- 2) Parimala N., "Object Orientation through C++", Macmillan India Ltd. Publication, ISBN:-0333 93202-1
- 3) Narasimha Karumanchi, "Data Structures and Algorithms made Easy", Careermonk Publications, 2016 Edition, ISBN-9788 193245 279
- 4) Fundamentals of Data Structure by Ellis Horowitz Sartaj Sahnja Galgotia Publications, 1998.

References Books:

- 1) K.R.Venugopal, Rajkumar, T. Ravishankar, "Mastering C++", ISBN:0-07-463454-2.
- 2) D. Ravichandran, "Programming with C++", Tata McGraw Hill , ISBN: 978-0-07-049488-6.
- 3) Data structure, Algorithms and Applications in C++, Sartaj Sahni, TMH 1988.

Objectives:

1. Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.
2. Understand and Apply Object oriented features and C++ concepts.
3. Apply the concept of polymorphism and inheritance, exception handling and templates.
4. Develop applications using Console I/O and File I/O.

PROGRAMMING IN C LAB

1. Simple Programs
2. Arrays
3. Functions
4. Pointers
5. Files

PROGRAMMING IN C++ LAB

1. Simple Programs
2. Call by Value and Call by Reference Method
3. Program using Inheritance
4. Operator Overloading
5. Program using Polymorphism
6. Stack Operations
7. Queue Operations
8. Linked List Operations.

Objectives:

1. To explore Visual Basic's Integrated Development Environment (IDE), a GUI environment.
2. To demonstrate knowledge of programming terminology and how applied using Visual Basic.
3. To know how to link the back end data with front end using database connectivity.
4. Evolving a Graphical User Interface (GUI) based applications and projects.

Program List:

1. Simple Arithmetic Operations.
2. Picture slide show
3. Building a Color Panel for Red, Green and Blue using Scroll bars
4. Math functions.
5. String Functions
6. Program to perform an animation of a picture using Timer Control.
7. Create a "Text Styler" with font, Size and Style utilities using Rich Text Box.
8. Simulating Calculator using control arrays.
9. Database creation using Data Manager.
10. Program to prepare a payroll.
11. Program to prepare an electricity bill.
12. Program for quiz.

CODE: UCAT31
CREDITS

SEMESTER – III
RDBMS

5 HOURS/ 4

Objectives:

1. To describe the overview of Data Base systems with its Data Models.
2. To learn how to normalize the data.
3. To get familiarize with the Query Languages.
4. Understanding the needs of database processing and learn techniques for controlling the Consequences of concurrent data access.

Unit I

Introduction to database management System – Database Terminology – Distributed and Centralized Database – Traditional approach to data files – Data Models: Network, Hierarchical, and Relational data models.

Unit II

Relational Model : Characteristics of Relational Model – Normalization: First Normal Form, Second Normal Form, Third Normal Form, Boyce – Codd Normal Form – Keys – Integrity Rules – Relational Operations : Union, difference, Intersection, Product, Division, Projection, Selection, Join.

Unit III

Introduction to SQL, DDL, DML, and DCL statements, Creating Tables, Adding Constraints, Altering Tables, Update, Insert, Delete & various Form of SELECT- Simple, Using Special Operators for Data Access. Aggregate functions, Joining Multiple Tables (Equi Joins),Joining a Table to itself (self Joins) Functions.

Unit IV

Data Constraints – Introduction, advantages and disadvantages - Type of data constraints – NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY and CHECK - Modifying constraints, working with data dictionary and use of USER_CONSTRAINTS

Functions – Introduction, merits and demerits - Types of functions: Scalar: Numeric functions (ABS, FLOOR, MOD, POWER, ROUND, SIGN, SQRT and TRUNC), Character functions (CHR, ASCII, CONCAT, INITCAP, LOWER, SUBSTR, TRIM, UPPER), Date functions (ADD_MONTHS, LAST_DAY, NEXT_DAY, MONTHS_BETWEEN), Conversion functions (TO_NUMBER, TO_CHAR and TO_DATE) - Aggregate: AVG, COUNT, MAX, MIN, SUM Miscellaneous – NVL, DECODE, COALESCE.

Unit V

Introduction to PL/SQL (blocks of PL/SQL, Variables, Constants) - Control Structures –Functions - Cursor and Triggers.

Text Books:

1. Elmasri&Navathe, Fundamentals of Database systems, Addison &Weisely, New Delhi.
An introduction to Database Systems :Bipin C. Desai, GalgotiaPoblications Pvt. Ltd.
2. Ivan Bayross : SQL,PL/SQL The programming language of Oracle, 3rd revised edition, BPB Publications.
3. Kevin Loney, George Koch, Oracle9i The Complete Reference , Oracle Press.

References:

1. H. F. Korth& A. Silverschatz, Database Concepts, Tata McGraw Hill, New Delhi.
2. C. J. Date, Database Systems, Prentice Hall of India, New Delhi.
3. Oracle Developer 2000 by Ivan Bayross, BPB Publications.
4. Understanding Database Management System : S. Parthsarthy and B.W.Khalkar, First edition – 2007, Master Academy.
5. P. S. Deshpande : SQL/PLSQL for Oracle9i, dreamtech press, reprint edition 2009.

Objectives:

1. **To become familiar with SQL fundamental Concepts.**
2. **To apply Normalization techniques to normalize a database**
3. **To know the connectivity of databases with controls (DAO,ADO & RDO)**
4. **Gain a good understanding of the architecture and functioning of Database Management Systems as well as associated tools and techniques.**

Lab Program:

1. Program using Conditional Controls, Iterative Controls & Sequential Controls.
2. Programs using Exception Handling.
3. Programs using Explicit Cursors & Implicit Cursors.
4. Programs using PL/SQL Tables & Records.
5. Programs using Database Triggers.
6. Programs to design Procedures using In, Out, Inout Parameter.
7. Program to design Procedure using Functions.
8. Programs to design Procedures using Packages.
9. Program using ADO, DAO & RDO Connectivity.

Objectives:

1. To have a broad background in Statistics fundamentals and techniques.
2. To recognize the importance and value of mathematical and statistical thinking, training, and approach to problem solving, on a diverse variety of disciplines.
3. To become familiar with a variety of examples where mathematics or statistics helps accurately explain abstract or physical phenomena.
4. Creating confidence to have the versatility to work effectively in a broad range of analytic, scientific, government, financial, health, technical and other positions.

Unit – I:

Frequency distribution: Measure of Central Tendency – Arithmetic Mean – Median – Mode – Geometric Mean – Harmonic Mean.

Unit – II:

Curve Fitting – Principles of Least Square – Correlation – Rank Correlation.

Unit – III:

Random Variables – Mathematical Expectations – Moment Generating Functions – Properties of MGF – Cumulant generating function – Properties of cumulant generating function.

Unit – IV:

Binomial Distribution – Poisson Distribution – Normal Distribution (Problems only) – Some more continuous distribution.

Unit – V:

χ^2 – Distribution - χ^2 Test - χ^2 test to test the goodness of fit – Test for independence of attributes.

Text Book:

1. “Statistics” – S. Arumugam Issac, New Gamma Publishing House, Palayamkottai.

Reference:

1. “Element of Mathematical Statistics” – S.C.Gupta, V.K.Kapoor, Sultan Chand Sons.

Objectives:

1. To learn the menus and shortcuts in Word Processing to perform documentation.
2. To study the basic functions to perform accounting operations.
3. To create an effective presentation to perform presentation skills.
4. Making the students to have the capability of carrying out Basic automation work for their Business environment.

MS-WORD

1. Create an Official Letter
2. Create an Order letter in the company Letter Head
3. Create a Simple Newsletter for your department
4. Create the Mark sheet for 15 students and find the total using table formula.
5. Create your resume
6. Create a Greeting Card for any Function
7. Create a Mail Merge Letter
8. Create a Macro for inserting a picture and formatting the text

MS-EXCEL

1. Create a Worksheet with 10 Students Record and find the sum and average.
2. Create a Worksheet with 15 Employee Records and find their Gross Pay with the following Calculation.
DA (40% of Basic Pay)
HRA (45% of Basic Pay)
PF (25% of Basic Pay)
 $Gross\ Pay = Basic\ Pay + DA + HRA - PF$
3. Create a Worksheet with 10 Students Record to create a Result Sheet.
4. Create a Worksheet with a Bar Chart to highlight the Result analysis of the department for 5 years.
5. Create a Worksheet with a Pie Chart to show the usage of various Social Media in your area and give legends.

MS-POWERPOINT

1. Create a slideshow with transitions.
2. Create a slideshow by using pictures, audio & video files

Objectives:

1. To learn the menus and shortcuts in Word Processing to perform documentation.
2. To study the basic functions to perform accounting operations.
3. To create an effective presentation to perform presentation skills.
4. Making the students to have the capability of carrying out Basic automation work for their Business environment for the Non-IT Students also.

MS-WORD

1. Create an Official Letter
2. Create an Order letter in the company Letter Head
3. Create a Simple Newsletter for your department
4. Create the Mark sheet for 15 students and find the total using table formula.
5. Create a Memo
6. Create your resume
7. Create a Greeting Card for any Function
8. Create a Cover page of your project record
9. Create a Mail Merge Letter
10. Create a Macro for inserting a picture and formatting the text

MS-EXCEL

1. Create a Worksheet with 10 Students Record and find the sum and average.
2. Create a Worksheet with 15 Employee Records and find their Gross Pay with the following Calculation.
DA (40% of Basic Pay)
HRA (45% of Basic Pay)
PF (25% of Basic Pay)
$$\text{Gross Pay} = \text{Basic Pay} + \text{DA} + \text{HRA} - \text{PF}$$
3. Create a Worksheet with 10 Students Record to create a Result Sheet.
4. Create a Worksheet with a Bar Chart to highlight the Result analysis of the department for 5 years.
5. Create a Worksheet with a Pie Chart to show the usage of various Social Media in your area and give legends.
6. Create a Worksheet to import data from Database and do any two calculations on them.
7. Create a Macro which creates a line chart using the data in the worksheet.

MS-POWERPOINT

1. Create a slideshow with transitions.
2. Create a slideshow by using pictures, audio & video files

SEMESTER - IV

CODE: UCAT41

PROGRAMMING IN JAVA

4 HOURS/ 4 CREDITS

Objectives:

1. To gain Knowledge of object-oriented paradigm in the Java programming language.
2. To catch the depth knowledge about Package, Interfaces, Exception handling, Threads etc.
3. To understand about Applets programming.
4. Building an expert in developing the applications in a variety of technologies and on different platforms.

Unit I:

Introduction to Java: Features of Java, JDK Environment.

Object Oriented Programming Concept Overview of Programming, Paradigm, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C++ and JAVA.

Java Programming Fundamental :Structure of java program, Data types, Variables, Operators, Keywords, Naming Convention, Decision Making (if, switch), Looping(for, while) ,Type Casting.

Unit II:

Classes and Objects: Creating Classes and objects, Memory allocation for objects, Constructor, Implementation of Inheritance, Implementation of Polymorphism, Method Overloading, Method Overriding, Nested and Inner classes.

Arrays and Strings: Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods.

Unit III:

Abstract Class, Interface and Packages: Modifiers and Access Control, Abstract classes and methods, Interfaces, Packages Concept, Creating user defined packages

Unit IV:

Exception Handling: Exception types, Using try catch and multiple catch, Nested try, throw, throws and finally, Creating User defined Exceptions.

File Handling: Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File.

Unit V:

Applet Programming: Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag.

Text Book:

1. Dr.K.Somasundram, Programming in Java 2, Jaico Publishing House -2008.
2. Herbert schildt, The Complete Reference –Java 2, 4th edition, Tata McGraw Hill 2001. (Unit 3,4,&5)
3. Er.V.K.Jain, Programming Java server Pages & servlets – dream Tech Press 2000.

Reference Book:

1. Steven Holzner, JAVA 2 Swing, Servlets JDBC, Java Beans Programming, Dream Tech Press Revised Edition.
2. Jamie Jaworski, Java 2 Platform unleashed, Techmedia.

CODE: UCAP42

PROGRAMMING IN JAVA LAB

4 HOURS/ 4 CREDITS

Objectives:

1. To gain knowledge about basic Java language syntax and semantics to write simple Java programs.
2. To become more familiar to implement OOPs concepts in application programming.
3. To impart the practical knowledge in Applet Programming.
4. Bringing out the Java developers for any projects.

Lab Program:

1. WAP to find the largest of n natural numbers.
2. WAP to find whether a given number is prime or not.
3. Write a menu driven program for following:
 - a. Display a Fibonacci series
 - b. Compute Factorial of a number
 - c. WAP to check whether a given number is odd or even.
 - d. WAP to check whether a given string is palindrome or not.
4. WAP to print the sum and product of digits of an Integer and reverse the Integer.
5. Write a program to create an array of 10 integers. Accept values from the user in that array. Input another number from the user and find out how many numbers are equal to the number passed, how many are greater and how many are less than the number passed.
6. Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.
7. Write a program in java to input N numbers in an array and print out the Armstrong numbers from the set.
8. Write java program for the following matrix operations:
 - a. Addition of two matrices
 - b. Summation of two matrices
 - c. Transpose of a matrix
 - d. Input the elements of matrices from user.
9. Write a java program that computes the area of a circle, rectangle and a Cylinder using function overloading.
10. Write a Java for the implementation of Multiple inheritance using interfaces to calculate the area of a rectangle and triangle.
11. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.
12. Write a java program to draw a line between two coordinates in a window.
13. Write a java program to display the following graphics in an applet window.
 - a. Rectangles
 - b. Circles
 - c. Ellipses
 - d. Arcs
 - e. Polygons
14. Write a program that reads two integer numbers for the variables a and b. If any other character except number (0-9) is entered then the error is caught by NumberFormatException object. After that ex.getMessage() prints the information about the error occurring causes.
15. Write a program for the following string operations:
 - a. Compare two strings
 - b. Concatenate two strings

c. Compute length of a string

16. Create a class called Fraction that can be used to represent the ratio of two integers. Include appropriate constructors and methods. If the denominator becomes zero, throw and handle an exception.

CODE: UCAA42

Tally Lab

3 HOURS/ 4 CREDITS

Objectives:

1. To educate the students about the usefulness/importance of Tally ERP-9 software for simplifying the accounting methods & procedures.
2. To train the students to create/load the company, group, security control, back-up etc.
3. To make the students proficient towards creating the accounting records and extract the financial statements and other statements related to inventory management, depreciation accounting and VAT procedure and records.
4. Cultivating the students with accounting knowledge to increase the job skill as Tally data entry operator.

Lab Program:

1. Creating a company in Tally.ERP9
2. Single & Multi Ledger Creation
3. Single & Multi group Creation
4. Contra Voucher
5. Payment Voucher
6. Receipt Voucher
7. Purchase Voucher
8. Sales Voucher
9. Debit Not
10. Balance Sheet
11. Profit and Loss Account
12. Trial Balance

Objectives:

1. To know a brief of accounting procedures.
2. To know about the preparation of final Accounts.
3. To create knowledge of accessing the account information.
4. Understanding the need of Accounts of an organization for decision making.

Unit – I

Origin and Growth of accounting: Meaning – objectives & Classifications, uses of accounting information – Limitations.

Double Entry System: Definitions - Rules, Merits & Demerits.

Unit – II

Journal – Ledger – Posting Journal to Ledger.

Unit – III

Final accounts of Sole Trading Concerns: Trail Balance – Profit and Loss account – Balance Sheet.

Unit – IV

Introduction to Financial Management – Origin – Scope – Types.

Unit – V

Financial statement analysis & interpretation: Accounting ratio their significance, Utility & Limitations, Analysis for Inequality, Profitability & Solvency.

Text Books:

1. Double entry book keeping - T.S.Grewal
2. Advanced Accountancy - R.L.Gupta&M.Radhasamy
3. Advanced Accountancy - M.A.Arulanantham&S.Raman
4. Advanced Accountancy - S.N.Maheswari
5. Advanced Accountancy - M.C.Shukhala&T.S.Grewal

Reference Books:

1. Accounting – R.L.Gupta&RadhaSwamy.
2. Financial Management – Khan & Jain

Objectives:

1. To understand the difference between DTP and how it differs from word processing procedures
2. To acquire knowledge of typography e.g. font size, style, kerning, alignment, hyphenation and line spacing
3. To create and print a multi-page document which incorporates a variety of visual elements to design newsletter, brochure, advertisement or magazine.
4. Bringing out the experts in designing which helps to improve the students Entrepreneurship skill.

Lab Exercises:

Page Maker:

1. Letter Pad
2. Calendar
3. Flow chart

Corel Draw:

1. Rangoli
2. Logo Design
3. Power Clip

Photoshop:

1. Passport size photo
2. Conversion of Color image to Black & White
3. Change of Background
4. Light effect
5. Rain Effect
6. Text effect
7. Visiting Card
8. Certificate

Objectives:

1. To develop a basic understanding of Python programming language.
2. To be fluent in the use of procedural statements in the upcoming language.
3. To be able to design, code, and test small Python programs.
4. Creating Python programmers to solve problems requiring the writing of well-documented programs.

Unit I:

Overview of Programming: Structure of a Python Program, Elements of Python.

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).

Unit II:

Creating Python Programs: Input and Output Statements, Control statements (Looping- while Loop, for Loop, Loop Control, Conditional Statement- if...else, Difference between break, continue and pass).

Unit III:

Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.

LAB Exercises

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:
Grade A: Percentage ≥ 80
Grade B: Percentage ≥ 70 and < 80
Grade C: Percentage ≥ 60 and < 70
Grade D: Percentage ≥ 40 and < 60
Grade E: Percentage < 40
3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. WAP to find the given number is odd or even.
5. WAP to display the first n terms of Fibonacci series.
6. WAP to find factorial of the given number.
7. WAP to find sum of the following series for n terms: $1 - 2/2! + 3/3! - \dots - n/n!$
8. WAP to calculate the sum and product of two compatible matrices.
9. WAP to compute the sum $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10$ recursively:
10. WAP to generate password.

Reference Books

1. P. K. Sinha & Priti Sinha, "Computer Fundamentals", BPB Publications, 2007.
2. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.
3. T. Budd, Exploring Python, TMH, 1st Ed, 2011
4. Python Tutorial/Documentation www.python.org 2010
5. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a computer scientist: learning with Python, Freely available online. 2012
6. <http://docs.python.org/3/tutorial/index.html>
7. <http://interactivepython.org/courselib/static/pythonds>
8. <http://www.ibiblio.org/g2swap/byteofpython/read/>

SEMESTER – V

CODE: UCAT51

COMPUTER ARCHITECTURE

5 HOURS/ 4 CREDITS

Objectives:

- 1. To evaluate the historical development of computer systems**
- 2. To identify design levels for computer system development**
- 3. To recognize and deal with high performance architecture design**
- 4. Making the students to understand the internal processing system and procedure of the Computer.**

UNIT I:

Introduction: Logic gates, Boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexers, registers, counters and memory units.

UNIT II:

Basic Computer Organization and Design: Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt.

UNIT III:

Central Processing Unit: Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.

UNIT IV:

Programming the Basic Computer: Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming.

UNIT V:

Input-output Organization: Peripheral devices, I/O interface, Modes of data transfer, direct memory access.

Text Book:

1. M. Mano, Computer System Architecture, Pearson Education 1992.
2. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2004
3. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2009
4. Digital Design, M.M. Mano, Pearson Education Asia, 1979

Objectives:

1. To Handle Mathematical Formation of Linear Programming.
2. To Understand Simplex Method & Artificial Variables for solving LPP.
3. To Cognize transportation Problem and Assignment Problem for optimization.
4. Making the students experts in finding the optimal solutions and networking problems through the Mathematical foundation techniques.

Unit: I

Definition of OR – General methods for solving OR models – Main characteristics of OR – Applications of OR.

Unit: II

Linear programming problems – Mathematical formation of LPP – Slack and surplus variables – Graphical solutions for LPP.

Unit: III

Simplex method – Computational procedure – Artificial variable techniques – two phase method – Duality in Linear programming.

Unit: IV

Mathematical formula of Assignment problem – Method for solving the assignment problem.

Unit: V

Mathematical formula of Transportation problem method for obtaining an Initial feasible solution – Optimum solution T.P – Degeneracy in T.P – Unbalanced T.P

Text book:

Operations Research- S.D Sharma, KedarNath Ram Nath& Co Publications, Sixteenth Revised Edition 2009.

Reference books:

1. Operations Research- KantiSwarup, P.K Gupta &Manmohan, Sultan Chand &Sons publications, Sixteenth Revised Edition 2009.
2. Resource Management Techniques – Prof.V.Sundaresan, K.S.Ganapathy Subramanian, K.Ganesan, AR Publications Revised Edition 2010.

Objectives:

1. To review chronological development of system softwares.
2. To learn the basics of an operating systems and its functions.
3. To acquire knowledge about the phases of compiler.
4. Gaining the knowledge about the working process and methodology of programming languages in the Computer.

UNIT –I

Basic Concepts of System software – System software and Machine Architecture-SIC machine-CISC machine –RISC machine

UNIT –II ASSEMBLERS

Basic Assembler Function-Dependent Assembler feature- Independent Assembler feature – Design Option.

UNIT –III LOADER & LINKER

Basic Loader Function-Dependent loader feature- Independent loader feature – Design Option.

UNIT –IV COMPILER

Basic Compiler Function-Dependent compiler feature- Independent compiler feature – Design Option.

UNIT –V OS

Basic OS Function-OS Types -OS feature – Design Option-Interactive Debugging System.

Text Book:

1. System software, An Introduction to System Program – Leland L.Beck, D.Manjula-3rd Edition 2007.
2. System software, An Introduction to System Program – Leland L.Beck-3rd Edition 2007.

Objectives:

1. To know the role of the software engineer in project development.
2. To describe the processes of software development life cycle.
3. To know about the dos and don'ts in Project design and development.
4. Bringing out the talented SEs with the Knowledge of converting the user requirements into the Project in a phased approach.

UNIT I

INTRODUCTION: Software Engineering - Software Process - Generic process model - Prescriptive process model specialized, unified process - Agile development - Agile Process - Extreme Programming - Other agile Process models -Software engineering Knowledge - core Principles - Principles that guide each framework Activity.

UNIT II

REQUIREMENTS: Requirements Engineering - Establishing the Groundwork - Eliciting Requirements - Developing use cases - Building the requirements model - Negotiating, validating Requirements - Requirements Analysis -Requirements Modeling Strategies.

UNIT III**DESIGN:**

MODELING WITH UML: Modeling Concepts and Diagrams-Use Case Diagrams-Class Diagrams - Interaction Diagrams-State chart Diagrams-Activity Diagrams-Package Diagrams-Component Diagrams-Deployment Diagrams-Diagram Organization-Diagram Extensions. Design Process- Design concepts: Abstraction, Architecture, patterns, Separation of Concerns, Modularity, Information Hiding, Functional Independence, Refinement, Aspects, Refactoring, Object Oriented Design Concepts, Design Classes -Design Model: Data, Architectural, Interface, Component, Deployment Level Design Elements .

UNIT IV

SOFTWARE IMPLEMENTATION: Structured coding Techniques -Coding Styles-Standards and Guidelines-Documentation Guidelines-Modern Programming Language Features: Type checking-User defined data types -Data Abstraction-Exception Handling-Concurrency Mechanism.

UNIT V**TESTING AND MAINTENANCE:**

TESTING: Software Quality-Software Quality Dilemma-Achieving Software Quality-Testing: Strategic Approach to software Testing-Strategic Issues-Testing: Strategies for Conventional Software, Object oriented software, WebApps-Validating Testing-System Testing-Art of Debugging.

MAINTENANCE: Software Maintenance-Software Supportability-Reengineering-Business Process Reengineering-Software Reengineering-Reverse Engineering-Restructuring-Forward Engineering-Economics of Reengineering

TEXT BOOKS

1. Roger S,Pressman “Software Engineering–A Practitioner’s Approach”, Seventh edition, Pressman, 2010.
2. Pearson Edu, “Software Engineering by Ian Sommerville”, 9th edition, 2010

Objectives:

1. To understand networking concepts and basic communication model.
2. To know the working principles of various application protocols
3. To know various routing algorithms for security.
4. Familiarize the students with the knowledge of handling the data movement without any traffic and with high security.

UNIT I

Basic concepts : Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite.

UNIT II

Physical Layer: Cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway.

UNIT III

Data Link Layer: Framing techniques; Error Control; Flow Control Protocols; shared media protocols - CSMA/CD and CSMA/CA.

UNIT IV

Network Layer: Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive)

Transport Layer: Transport services, Transport Layer protocol of TCP and UDP

UNIT V

Application Layer: Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP

Network Security: Common Terms, Firewalls, Virtual Private Networks

Text Books:

1. B.A. Forouzan: Data Communication and Networking, 4th Edition, Tata McGraw Hill, 2007.
2. D.E. Comer, Internetworking with TCP/IP, Vol. I, Prentice Hall of India, 1998.
3. W. Stalling, Data & Computer Communication, 8th edition, Prentice Hall of India, 2006.
4. D. Bertsekas, R. Gallager, Data Networks, 2nd edition, Prentice Hall of India, 1992.

Objectives

- 1. To Describe and uses, features and syntax of PHP**
- 2. To create, translate and process HTML information using the CGI.**
- 3. To retrieve, insert, update and delete data from the relational database MYSQL**
- 4. Able to Write PHP code to produce outcomes and solve problems.**

Lab Programs:

1. Creating simple webpage using PHP
2. Use of conditional statements in PHP
3. Use of looping statements in PHP
4. Creating different types of arrays
5. Usage of array functions
6. Creating user defined functions
7. File manipulation using PHP
8. Creating simple applications using PHP
9. Creating simple table with constraints
10. Insertion, Updation and Deletion of rows in MYSQL tables
11. Searching of data by different criteria
12. Demonstration of joining tables
13. Usage of subqueries
14. Usage of aggregate functions
15. Working with string, numeric and date functions
16. Database connectivity in PHP with MySQL
17. Validating Input

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Lab Program:

Objectives

- 1. To design and develop user Interfaces for the Android platform.**
- 2. To apply Java programming concepts to Android application development.**
- 3. To identify the different application programming interfaces that are available for the different mobile platforms and languages.**
- 4. Bringing out the students with competent designing knowledge in developing mobile applications using application development framework.**

1. Develop an application that uses GUI components, Font and Colors
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Develop an application that makes use of RSS Feed.
7. Implement an application that implements Multi-threading
8. Develop a native application that uses GPS location information.
9. Implement an application that writes data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock

SEMESTER VI

CODE: UCAT61

COMPUTER GRAPHICS

5 HOURS/ 4 CREDITS

Objectives:

- 1. To understand computational development of graphics**
- 2. To analyze 2D and 3D graphics.**
- 3. To get well known about the basic transformation techniques.**
- 4. Developing the practical knowledge in creating animated videos.**

UNIT- I:

Introduction to computer Graphics - Video display devices- Raster scan Systems -Random Scan Systems -Output primitives : Points and Lines –Line drawing algorithm: DDA Algorithm, Bresenham's line algorithm –Circle Generating Algorithms: Properties of Circles, Mid point Circle Algorithm,

Unit - II

Attributes of output Primitives - line attributes –Curve Attributes - Color and Grayscale style - Area filling attributes - Character attributes – Bundled attributes - Two Dimensional Geometric Transformations: Basic Transformation –Composite Transformation – Other Transformations -

Unit - III

Two Dimensional Viewing: The Viewing pipeline – Viewing Coordinates Reference Frame - Window to View port coordinate Transformation – 2D Viewing Functions - Clipping Operations: Point Clipping –Line Clipping –Polygon Clipping – Curve Clipping – Text clipping.

Unit - IV

Three - dimensional concepts - Three dimensional display methods - parallel Projection - Perspective Projection - Depth Cueing - Visible line and surface identification - Three dimensional transformation.

Unit V:

Three Dimensional Viewing: Viewing pipeline – Viewing Coordinated – Projections – Clipping – Visible Surface Detection Algorithms – Backface detection – Depth buffer detection – A-Buffer method.

Text Book:

D.Hearn and M.P.Baker - Computer Graphics - Prentice Hall of India - 1997.

Reference Book:

W.M. Newman and R.F.Sproull - Principles of Interactive Computer Graphics - McGraw Hill International Edition – 1979.

Objectives:

1. To understand the concept of Tables, Forms, Files, Basic Web server Controls.
2. To know about Internet Basics and HTML.
3. To understand the concept of OLEDB connection class & Cookies.
4. Gaining knowledge of solving web client/server problems.

UNIT I:

Introduction – History of the Internet – Services and Accessibility – Uses – Protocols – Internet Standards

UNIT II:

HTML – Introduction – HTML Document – Head Section – Body Section – HTML Forms – Java Script – Introduction – Language Elements – Objects of Java Script – Other Objects – Arrays.

UNIT III: Cascading Style Sheets – Advantages of CSS – Properties of Tags – Property Values – Embedded Style Sheets – External Style Sheets – Grouping – Inheritance – Class as Selector – Pseudo Classes and Pseudo Elements – Positioning – Backgrounds – Element Dimensions

UNIT IV: Servlets – Introduction – Advantages of Servlets - Servlet Life Cycle - The Servlet API - A Simple Servlet – Handling HTTP GET Requests – Handling HTTP POST Requests – Cookies – Session Tracking

UNIT V: Introduction – Advantages of JSP – Developing First JSP – Components of JSP – Reading request information – Retrieving the data posted from a HTML file to a JSP File – JSP Sessions – Cookies – Disabling Sessions

Text Book:

1. Web Technology – A Developers Perspective – N P Gopalan, J Akilandeswari, Prentice Hall of India Pvt. Ltd., New Delhi, 2008. 454

Reference Books:

1. Mastering Javascript, J Jaworski, BPB Publications, 1999 2. Core SERVLETS AND JAVA SERVER PAGES VOLUME 1: CORE TECHNOLOGIES By Marty Hall and Larry Brown Pearson, Pearson Education India

Objectives:

1. To understand Multimedia Architecture and its evolution.
2. To disseminate the knowledge in Design Authoring Tools.
3. To gain the importance of multimedia in Internet.
4. Creating the Ability to use the current multimedia applications for developing animation videos.

UNIT – I:

Where to use Multimedia, **Text:** About font and faces using Text in Multimedia – Hypermedia and Hypertext

Unit – II:

Images: Making Still images: Bit map, Vector Drawing, Vector drawn objects vs Bitmap – 3D Drawing and Rendering. Color: Computerized Colors – Image file formats.

Unit – III:

Sound: Digital Audio – MIDI Audio –MIDI vs Digital Audio – Audio file formats – Adding Sound to multimedia projects.

Unit – IV:

Animation and Video: Principles of Animation – Animation by Computer – Making Animation that Works.

Video: How video works and is displayed – Digital Video Containers – Shooting and editing video

Unit – V:

Making Multimedia – Stages of a Multimedia Project – What you need: The Intangibles, Hardware, Software, authoring Systems.

Text Book:

1. **Multimedia : Making it works**, 8th Edition, Tay Vaughan, Tata McGraw Hill Publications

Objectives

- 1. To understand the multimedia technology and tools.**
- 2. To acquire conceptual knowledge of animation within the domain.**
- 3. To develop an application using action script language.**
- 4. Producing Students with the Capacity to create effective audiovisual presentation.**

Lab Program:

1. Procedure to create an animation to represent the growing moon.
2. Procedure to create an animation to indicate a ball bouncing on steps.
3. Procedure to simulate movement of a cloud.
4. Procedure to draw the fan blades and to give proper animation.
5. Procedure to display the background given (filename: Tulip.jpg) through your name.
6. Procedure to create an animation with the following features.
7. Procedure to simulate a ball hitting another ball.
8. Procedure to create an animated cursor using `startdrag("ss",True); mouse.hide()`
9. Procedure to design a visiting card containing atleast one Graphic and text information.
10. Procedure to take a photographic image. Give a title for the Image. Put the border. Write your names. Write the name of Institution and place.
11. Procedure to prepare a cover page for the book in your Subject area. Plan your own design.
12. Procedure to extract the flower only from given Photographic image and organize it on a background. Selecting your own background for organisation.
13. Procedure to display the background given (filename: Garden.jpg) through your name using mask.
14. Procedure to change a circle into a square using flash.

Objectives:

- 1. To apply the knowledge of the internet and related internet concepts that are vital in understanding web application development.**
- 2. To understand, analyze and apply the role of markup languages in the workings of the web and web applications.**
- 3. To automate the real time problems by developing & analyzing a web project and identify its elements and attributes in comparison to traditional projects.**
- 4. Developing the ability among the students in making use of the best technologies for solving web client/server problems.**

Lab Program:

- Creation of HTML pages with frames, links, tables and other tags
- APPLYING STYLE TO AN HTML PAGE USING CSS
- Java script for Displaying and Comparing Date & Form Validation
- Online Applications using JSP
- Servlet program using HTTP Servlet
- Online application with data access
- Creation of XML document
- XML document and DTD

Objectives:

1. To apply various techniques and to detect the errors in the software
2. To generate and apply the test cases using the automated testing tool
3. To learn the functionality of automated testing tools to apply in the specialized environment
4. Making the students as testers to test the software by applying various testing techniques and checking quality and reliability metrics to ensure the performance of the software.

Lab Program:

1. Understand the automation testing approach.
2. Using Selenium IDE, Write a test suite containing minimum 4 test cases for arithmetic operations.
3. Conduct a test suite for any two web sites.
4. Install Selenium server and demonstrate it using a script in Java/PHP by developing a web page which calculates the GCD of 2 numbers.
5. Write and test a program to login a specific web page.
6. Write and test a program to update 10 student records into table into Excel file.
7. Write and test a program to select the number of students who have scored more than 60 in any one subject (or all subjects).
8. Write and test a program to provide total number of objects present available on the page.
9. Write and test a program to get the number of list items in a list combo box using HTML.
10. Write and test a program to count number of check boxes on the page checked and unchecked count using Visual Basic script.