THIRUVALLUVAR UNIVERSITY

BACHELOR OF SCIENCE

B.Sc. SOFTWARE COMPUTER SCIENCE

DEGREE COURSE
CBCS PATTERN
(With effect from 2017 - 2018)

The Course of Study and the Scheme of Examinations

S.NO.	Part	Study Components		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
		Course Title							
SEMESTER I							**CIA**	**Uni. Exam**	**Total**
1	I	Language	Paper-1	6	4	Tamil/Other Languages	25	75	100
2	II	English	Paper-1	6	4	English	25	75	100
3	III	Core Theory	Paper-1	6	6	Digital Logic & Programming in C	25	75	100
4	III	Core Practical	Practical-1	3	2	Programming in C Lab	25	75	100
5	III	ALLIED-1	Paper-1	7	4	Mathematical Foundations I	25	75	100
6	IV	Environ. Studies		2	2	Environmental Studies	25	75	100
				30	**22**		**150**	**450**	**600**
SEMESTER II							**CIA**	**Uni. Exam**	**Total**
7	I	Language	Paper-2	6	4	Tamil/Other Languages	25	75	100
8	II	English	Paper-2	4	4	English	25	75	100
9	III	Core Theory	Paper -2	6	6	C++ & Data Structure	25	75	100
10	III	Core Practical	Practical-2	3	2	C++ & Data Structure Lab	25	75	100
11	IV	Allied-1	Paper- 2	7	6	Mathematical Foundation II	25	75	100
12	IV	Soft skill		2	1	Soft skill	25	75	100
13	IV	Value Education		2	2	Value Education	25	75	100
				30	**25**		**175**	**525**	**700**
SEMESTER III							**CIA**	**Uni. Exam**	**Total**

S.NO.	Part	Study Components		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
		Course Title							
14	I	Language	Paper-3	6	4	Tamil / Other Languages	25	75	100
15	II	English	Paper-3	6	4	English	25	75	100
16	III	Core Theory	Paper-3	3	3	Java Programming	25	75	100
17	III	Core Practical	Practical-3	3	3	Java Programming Lab	25	75	100
18	III	Allied-2	Paper-3	4	4	Quantitative Techniques I	25	75	100
19	IV	Allied-2	Practical	3	0	Quantitative Techniques Lab	0	0	0
20	IV	Skill Based subject	Paper-1	3	3	Design and Analysis of Algorithm	25	75	100
21		Non-Major Elective	Paper-1	2	2	Office Automation Tools	25	75	100
				30	**23**		**175**	**525**	**700**
SEMESTER IV							**CIA**	**Uni. Exam**	**Total**
22	I	Language	Paper-4	6	4	Tamil/Other Languages	25	75	100
23	II	English	Paper-4	6	4	English	25	75	100
24	III	Core Theory	Paper-4	3	3	Database Management System	25	75	100
25	III	Core Practical	Practical-4	3	3	RDBMS Lab	25	75	100
26	III	Allied-2	Paper-4	4	4	Quantitative Techniques II	25	75	100
27	IV	Allied Practical	Practical	3	2	Quantitative Techniques Lab	25	75	100
28	IV	Skill Based Subject	Paper-2	3	3	Software Engineering	25	75	100
29		Non-Major Elective	Paper-2	2	2	Internet and its applications	25	75	100
				30	**25**		**200**	**600**	**800**
SEMESTER V							**CIA**	**Uni. Exam**	**Total**
30	III	Core Theory	Paper -5	6	3	Mobile Application and Development	25	75	100
31	III	Core Theory	Paper -6	6	3	Object oriented analysis and design	25	75	100
32	iii	Core Theory	Paper-7	4	2	Data Mining	25	75	100
33	III	Core Practical	Practical-5	4	3	Operating System Lab	25	75	100
34	III	Core Practical	Practical-6	4	3	Mobile Application and Development Lab	25	75	100

S.NO.	Part	Study Components		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
		Course Title							
35	III	Elective I	Paper-1	3	3	**(to choose 1 out of 3)** 1. Information Security 2. Software Quality Assurance 3. Software Metrics	25	75	100
36	III	Skill Based Subject	Paper-3	3	3	Operating Systems	25	75	100
				30	**20**		**150**	**450**	**600**
SEMESTER VI							**CIA**	**Uni. Exam**	**Total**
37	III	Core Theory	Paper-7	7	5	Open Source Programming	25	75	100
38		Core Theory	Paper-8	6	5	Software Project Management	25	75	100
39	III	Core Practical	Practical 7	4	3	Open Source Programming lab	25	75	100
40	III	Core Practical	Practical 8	4	3	ASP.NET Lab	25	75	100
41	III	Elective II	Paper -2	3	3	**(to choose 1 out of 3)** 1. Cloud computing 2. Client server technology 3. Data communication & network	25	75	100
42	III	Elective III	Paper-3	3	3	**(to choose 1 out of 3)** 1. Software Design 2. Software Architecture 3. Software Testing	25	75	100
43	III	Skill Based Subject	Paper-4	3	3	ASP.NET	25	75	100
44	V	Extension Activities		0	1	Extension Activities	100	0	100
		TOTAL		**30**	**26**		**225**	**525**	**750**

Part	Subject	Papers	Credit	Total credits	Marks	Total Marks
Part I	Languages	4	4	16	100	400
Part II	English	4	4	16	100	400
Part III	Allied (Odd Semester)	2	4	8	100+75 (I + III sem)	200
	Allied (Even Semester)	2	6+4	10	100 + 75 (I + III sem)	200
	Allied Practical	1	2	2	100	100
	Electives	3	3	9	100	300
	Core	9	(3-7)	35	100	900
	Core Practical	8	(3-5)	22	100	800
Part IV	Environmental Science	1	2	2	100	100
	Soft skill	1	1	1	100	100
	Value Education	1	2	2	100	100
	Lang. & Others/NME	2	2	4	100	200
	Skill Based	4	3	12	100	400
Part V	Extension	1	1	1	100	100
	Total	**43**		**140**		**4300**

THIRUVALLUVAR UNIVERSITY

B.SC. SOFTWARE COMPUTER SCIENCE

SYLLABUS
UNDER CBCS
(with effect from 2017 - 2018)
SEMESTER I
PAPER - 1

Digital Logic &Programming in C

Objective :

Provide basic knowledge on Digital Electronics to understand the working principles of Digital computer and to develop programming skill using C language .

UNIT I: Number systems and Boolean Algebra

Number Systems -Decimal, Binary, Octal, Hexadecimal and their inter conversions, - Binary Arithmetic -1's complement, 2's complement and 9's complement .Binary codes - BCD, Excess-3, Graycode.**Boolean Algebra** : Boolean Laws - Simplification of Boolean Functions - Logic gates and Truth Table – Universal Gates (NAND and NOR) - The K-map method up to five variables, don't care conditions, POS & SOP forms.

UNIT-II: Combinational and Sequential Circuits

Combinational Logic: Half/Full adder/subtractor , code conversion, Multiplexers, demultiplexers, encoders, decoders, Combinational design using MUX & DEMUX. BCD adder, magnitude comparator.**Sequential logic**: Flip flops (RS, Clocked RS, D, JK, JK Master Slave)- Counters & types Synchronous and Asynchronous counters- Registers, Shift registers and their types.

UNIT –III: C Basics and Control constructs

C fundamentals- Operators- Constants- Expression – Library functions- Decision making and branching- Switch- FOR,WHILE, DO WHILE loops-continue-break

Unit IV: Arrays, Functions and Structures

Arrays-Multi dimensional arrays- User defines functions- Call by Value and reference- Recursion- Storage classes- Structures and Union –Self referential structures

Unit – V: Pointers and Files

Pointers- Pointer operations and Arithmetic- File management in C :File opening and closing- - I/O operations on files - Error handling during I/O operations - Random access to files - Command line arguments

Text Book:

1. Morris Mono M. "**Digital Logic and Computer Design**",PHI Latest Pub. Ed. (Unit I and 2)
2. ReemaThareja,**" Programming in C "** Oxford University Press 2014

Reference Book

1. Albert Paul Malvino, Donald P Leach, **Digital principles and applications**TMH,1996.
2. Balagurusamy," Programming in C" TMH

PRACTICAL – I

PROGRAMMING IN C- LAB

1. Summation of Series: Sin(x) (Compare with built in functions)
2. Summation of Series Cos(x) (Compare with built in functions)
3. Counting the no. of vowels, consonants, words, white spaces in a line of text
4. Reverse a string & check for palindrome without built in string function
5. ${}^{n}P_{r}$, ${}^{n}C_{r}$ in a single program using function
6. Matrix Addison, subtraction and multiplication
7. Linear Search of a number in an array
8. Sorting an array in ascending and descending order
9. Finding maximum and minimum of list of numbers
10. Call by value and call by reference of functions
11. Employee pay bill using structure
12. Preparing an EB bill using file

ALLIED 1

PAPER - 1

MATHEMATICAL FOUNDATIONS – I

Objectives

To know about

Logical operators, validity of arguments, set theory and set operations, relations and functions, laniary operations, Binary algebra, Permutations & Combinations, Differentiation, Straight lines, pair of straight lines, Circles, Parabola, Ellipse, Hyperbola.

UNIT-I : SYMBOLIC LOGIC

Proposition, Logical operators, conjunction, disjunction, negation, conditional and bi-conditional operators, converse, Inverse, Contra Positive, logically equivalent, tautology and contradiction. Arguments and validity of arguments.

UNIT-II : SET THEORY

Sets, set operations, venndiagram, Properties of sets, number of elements in a set, Cartesian product, relations & functions,

Relations : Equivalence relation. Equivalence class, Partially and Totally Ordered sets,

Functions: Types of Functions, Composition of Functions.

UNIT-III : BINARY OPERATIONS

Types of Binary Operations: Commutative, Associative, Distributive and identity, Boolean algebra: simple properties. Permutations and Combinations.

UNIT-IV : DIFFERENTIATION

Simple problems using standard limits,

$\lim_{x \to a} \frac{x^n - a^n}{x-a}$, $\lim_{x \to 0} \frac{\sin x}{x}$, $\lim_{x \to 0} \frac{\tan x}{x}$ $\lim_{x \to 0} \frac{e^x - 1}{x}$, $\lim_{n \to \infty} (1+1/n)^n$, $\lim_{n \to 0} (1+n)^{1/n}$

Differentiation, successive differentiation, Leibnitz theorem, partial differentiation, Applications of differentiation, Tangent and normal, angle between two curves, Maximum and Minimum values (Second derivative test), Curvature and radius of Curvature (Cartesian coordinates), Envelopes.

UNIT-V : TWO DIMENSIONAL ANALYTICAL GEOMETRY

Straight Lines - Pair Straight Lines - Circles - Conics (Parabola, Ellipse and Hyperbola).

Reference Books:

1. P.R.Vittal, Mathematical Foundations - Margham Publication, Chennai.
2. U. Rizwan, Mathematical Foundation - SciTech, Chennai
3. V.Sundaram & Others, Dircrete Mathematical Foundation - A.P.Publication, sirkali.
4. P.Duraipandian & Others, Analytical Geometry 2 Dimension - Emerald publication 1992 Reprint.
5. Manicavachagom pillay & Natarajan. Analytical Geometry Part I - Two Dimension - S.Viswanathan (printers & publication) Put Ltd., 1991.

SEMESTER II
PAPER – 2
C++ AND DATA STRUCTURE

Objective: To develop Object oriented programming skills using C++ and to introduce data structure concepts **.**

UNIT-I : Object Oriented Concepts and C++

C++ Fundamentals - Operators, Expressions and Control Structures: If,If..Else, Switch - Repetitive Statements- for,while,do..while - Input and Output in C++ - manipulators-manipulators with parameters. - Pointers and arrays

UNIT-II : Functions and Classes

Functions in C++ - Main Function - Function Prototyping - Parameters Passing in Functions - Values Return by Functions - inline Functions - Function Overloading.
Classes and Objects; Constructors and Destructors; and Operator Overloading - Type of Constructors

UNIT – III : Inheritance, Polymorphism & Files

Inheritance : Single Inheritance - Multilevel inheritance - Multiple inheritance - Hierarchical Inheritance - Hybrid Inheritance - Polymorphism - Working with Files : Classes for File Stream Operations - Opening and Closing a File - End-of-File Detection - Updating a File - Error Handling during File Operations .

UNIT-IV : Fundamental Data Structures

Definition of a Data structure - primitive and composite Data Types, Stacks(Array) - Operations –Linked Stack-Operations- Applications of Stack(Infix to Postfix Conversion).

Queue(Array)- operations-Linked Queue- Operations- - Singly Linked List - Operations, Application of List (Polynomial Addition)-. Doubly Linked List - Operations.

UNIT-V : Trees and Graphs

Trees: Binary Trees –Binary Search Tree- Operations - Recursive Tree Traversals-Recursion. Graph - Definition, Types of Graphs, Graph Traversal –Dijkstras shortest path- DFS and BFS.

Text Books

1. Mastering in C++, K.R.Venugopal, Raj Kumar, T.Ravisankar – McGraw Hill, 2011.

2. C++ Plus Data Structure by Nell Dale ,Narosa Publications, 2000

Reference Books:

1.ReemaThareja , Object Oriented Programming with C++, Oxford University Press, 2015

2.Balagurusamy, c++ programming, TMH.

3. Fundamentals of Data Structures in C++ by Ellis Horowitz, SartajSahni and Dinesh Mehtha, Second Edition, University Press

4. Data Structures using C++ byVarshaH.Patil. Oxford University Press, 2012

PRACTICAL – 2

C++ & DATA STRUCTURE - LAB

1. Implementing classes, object, constructors and member functions for calculating area and perimeter of a circle.
2. Implementing function overloading (Find area/volume of rectangle, circle, sphere, cylinder, cone etc).
3. Implementing operator over loading(Addition, subtraction, multiplication of matrices)
4. Implementing single , multiple , hierarchical inheritance.
5. Implementing sequential file operations using error handling functions.
6. Implementing PUSH, POP operations of stack using Arrays.
7. Implementing add, delete operations of a queue using Arrays.
8. Implementing Infix to postfix conversion of an expressionusing stack
9. Implementing Binary search tree recursive traversals (in-order, pre-order, post-order).
10. Implementing Polynomial addition using linked list.

ALLIED 1

PAPER – 2

MATHEMATICAL FOUNDATIONS – II

Objectives

To know about Matrix Operations, Symmetric, Skew-Symmetric, Hermitian, Skew-Hermitian, Orthogonal, Unitary Matrices. Rank of a Matrix Solutions of linear equations Consistency and Inconsistency, Characteristic roots and Characteristics Vectors, Cayley - Hamilton Theorem, Integration of rational functions, Integration by parts, Reduction formulae, Area and volume using integration, Planes, Straight lines, Spheres, Curves, Cylinders.

UNIT - I MATRICES

Multiplication of matrices, Singular and Non-Singular matrices, Adjoint of a Matrix, Inverse of a matrix Symmetric and Skew-Symmetric, Hermitian and Skew-Hermition, Orthogonal and unitary matrices, Rank of a matrix, Solution of Simultaneous Linear equations by

(i) Cramer's rule.

(ii) Matrix Inversion Method.

UNIT - II MATRICES

Test for Consistency and Inconsistency of linear equations, (Rank Method), characteristic roots and characteristic vectors, Cayley - Hamilton theorem, matrix of linear transformations: reflection about the x, y axes and the line y=x, rotation about the origin through an angle, expansion or compression, shears, translation.

UNIT - III

Integration Simple problems, integration of rational function involving algebraic expressions of the form

$$\frac{1}{\sqrt{ax^2+bx+c}}, \frac{1}{ax^2+bx+c\sqrt{ax^2+bx+c}}, \frac{px+q}{\sqrt{ax^2+bx+c}}, \frac{px+q\sqrt{}}{ax^2+bx+c\sqrt{ax^2+bx+c}}, \frac{px+q}{ax^2+bx+c\sqrt{ax^2+bx+c}}$$

integrations using simple substitutions integrations involving trigonometric functions of the form

$$\frac{1}{a+b\cos x}, \frac{1}{a^2\sin^2 x+b^2\cos^2 x}$$ Integration by parts.

UNIT - IV

Properties of definite integrals. Reduction formulae for

$\int x^n e^{ax} dx$, $\int \sin^n x dx$, $\int \cos^n x dx$, $\int x^m (1-x)^n dx$, applications of integration for (i) Area under plane caurves, (ii) Volume of solid of revolution.

UNIT - V ANALYTICAL GEOMETRY OF THREE DIMENSION

Planes, straight lines, spheres and cones (simple problems any)

Reference Books:

1. P.R.Vittal, Mathematical Foundations - Margham Publication, Chennai.
2. U. Rizwan, Mathematical Foundation - SciTech, Chennai
3. V.Sundaram & Others, Dircrete Mathematical Foundation - A.P.Publication, sirkali.
4. P.Duraipandian & Others, Analytical Geometry 3 Dimension – Emerald publication 1992 Reprint.
5. Manicavachagom pillay & Natarajan. Analytical Geometry part II - three Dimension - S.Viswanathan (printers & publication) Pvt Ltd., 1991.

SEMESTER III

PAPER – 3

JAVA Programming

Objectives:

To improve Object Oriented Programming gathered already through an independent platform.

Unit – I: BASICS, ESSENTIALS, CONTROL STATEMENT AND CLASSES & OBJECTS

Computer and its Languages – Stage, Origin and Features for Java - JDK–OOP; Java Essentials: Program – API - Variables& Literals - Data Types - String Class – Operators - Type conversion - Constants - Scope – Comments - Keyboard Input; Control Statements: Conditional Statements – Looping Statements - Break and Continue Statements; Classes and Objects: Modifiers - Arguments - Constructors - Packages and import - Static Class - Overloaded Methods and Constructors - Returning Objects – toString() - this reference –Enumeration - Garbage Collection.

Unit – II: ARRAYS, INHERITANCE, INTERFACES AND PACKAGES

Arrays - Three or More Dimensions; Inheritance: Basics - Calling the Superclass Constructor - Overriding Superclass Methods - Inheritance from Subclasses – Polymorphism -Abstract Classes and Methods - Interfaces: Fields - Multiple inheritance - Interface inheritance; Packages: Creating packages – Accessing package from other packages- Access Specifier.

Unit – III: STRING HANDLING, EXCEPTION HANDLING AND MULTITHREADING

String Handling: Basics - Operations –String Methods - String Buffer class - String Builder – to String method -String Tokenizer class. **Exception Basics:** try and catch block - Multiple catch block - Nested try - throws keyword - Throw vs Throws - Final vs Finally vs Finalize - Method Overriding - Custom Exception **-** Multithreading: Life Cycle - Methods in Thread - thread application – Thread priority – Synchronization - Inter-thread communication - Suspending, Resuming, and Stopping Threads;

Unit – IV: APPLET AND GUI APPLICATION

Applets: Basis - Lifecycle - Applet classes - Application – Graphics; AWT-I: GUI Programming - AWT classes - Windows fundamentals- Creating Windows - Dialog Boxes - Layout Managers - Radio Buttons and Check Boxes – Borders-Swing

Unit – V: JAVA DATABASE CONNECTIVITY

JDBC - Types of Drivers- Architecture- Classes and Interfaces - Developing JDBC Application - New Database and Table with JDBC - Working with Database Metadata.

Text Book

1. S.Sagayaraj, R.Denis, P.Karthik & D.Gajalakshmi, "Java Programming", Universities Press, 2017

References

1. Patrick Naughton and Herbert Schildt. "The Complete Reference JAVA 2". 3rd Edition. Tata McGraw-Hill Edition, 1999.
2. Muthu C. "Programming with JAVA". 2nd Edition. Vijay Nicole Imprints, 2011.
3. Ken Arnold Gosling and Davis Holmen. "The Java Programming Language". 3rd Edition. Addition Wesley Publication.

PRACTICAL – 3

JAVA Programming LAB

List of Practical's

1. Implementing Package, inheritances and interfaces
2. Implementing Flow, Border and Grid Layouts
3. Implementing Dialogs , Menu and Frame
4. Implementing User defined Exception Handling
5. Implementing Multithreading
6. Implementing I/O Stream File handling
7. Implementing a Calculator using Swing
8. CRUD operation Using JDBC
9. Client Server using TCP and UDP Socket
10. GUI application with JDBC

ALLIED 2

PAPER – 3

QUANTITATIVE TECHNIQUES – I

UNIT - I

Operation Research (O.R.) - Nature and significance of Operation Research - Various models - Application and scope of Operation Research.

UNIT - II

Linear Programming Problem (L.P.P.) - characteristic of Linear Programming Problem and its formulation - graphical method of solving Linear Programming Problem - simplex method of solving Linear Programming Problem.

UNIT - III

Linear Programming Problem - Big M. Method - Two phase method Duality

1. North west corner
2. Least cost
3. Vogel's

UNIT - IV

Transportation Problem - Methods of finding Initial Basic Feasible Solution - Optimal Solution - simple problem.

UNIT - V

Assignment Problem - Balanced and unbalanced Assignment Problems - Optimal solution - simple problems.

Text Book

Kanti swarup Manmohan and Gupta - Operation Research chand and sons, New Delhi.

Reference Books:

1. J.K.Sharma (2003) Operation Research - Theory and its application, Mac Millan.
2. Taha. H.A. O.R. An Introduction PHI
3. P.K. Gupta and Hira, Problems in O.R. S.Chand and company Ltd., New Delhi.

Skill Based Subject –Paper 1

DESIGN AND ANALYSIS OF ALGORITHMS

Objective: To build a solid foundation of the most important fundamental subject in computer science. Creative thinking is essential to algorithm design and mathematical acumen and programming skills.

UNIT -I: ALGORITHM AND ANALYSIS

What is an Algorithm? - Algorithm Specification- Performance Analysis- Randomized Algorithms.

UNIT - II: DIVIDE AND CONQUER

General Method - Binary Search - Finding the Maximum and Minimum-Merge Sort - Quick Sort - Selection Sort- Stassen's Matrix Multiplications.

UNIT - III: THE GREEDY METHOD

The General Method - Knapsack Problem – Tree Vertex Splitting - Job Sequencing with Deadlines- Minimum Cost Spanning Trees - Optimal Storage on Tapes - Optimal Merge Pattern - Single Source Shortest Paths.

UNIT - IV: DYNAMIC POGRAMMING

The General Method – Multistage Graphs - All pair shortest path - String Editing - 0/1 Knapsack – Reliability Design - The Traveling Salesperson Problem

UNIT - V: TRAVERSAL, SEARCHING & BACKTRACKING

Techniques for Binary Trees- Techniques for Graphs - The General Method - The 8-Queens Problem – Sum of Subsets- Graph Colouring- Hamiltonian Cycles

TEXT BOOK

Fundamentals of Computer Algorithms, Ellis Horowitz, SartajSahni, SanguthevarRajasekaran, Galgotia Publications, 2015.

REFERENCE BOOKS:

1. Introduction to Algorithms ,Coremen T.H.,Leiserson C.E. and Rivest R.L., PHI 1998.

2. Introduction to the Design and Analysis of Algorithms, AnanyLevitin, Pearson Education, 2nd Edition.

NON MAJOR ELECTIVE

PAPER – I

OFFICE AUTOMATION TOOLS

UNIT - I

Ms word: Starting word - Parts of word window - formatting features - menus, commands, Toolbars - File menu, Edit, view, insert, Format and tool menus - Working with text, tables - checking spelling and Grammars.

UNIT - II

Mail merge concept - creating main document, data source, Adding fields - Remarks fields - Macros - Creating templates and working with templates.

UNIT - III

MS - Excel: Excel Basics - Creating Work Sheets - Formulas - Functions - Charts - Coping Data, between worksheets - Case studies pay bill, profit and loss accounts etc.

UNIT - IV

Power point - Making presentation with Ms power points - working with power point - organization chart - inserting chart from excel.

UNIT - V

Ms-Access: Introduction - creating a new Database - saving the database - Forms - Reports.

SEMESTER IV

PAPER – 4

DATABASE MANAGEMENT SYSTEM

Objective: To incorporate a strong knowledge on databases to students

UNIT - I Database Basics

Introduction: Flat File – Database System – Database – Actionable for DBA. The Entity – Relationship Model: Introduction – The Entity Relationship Model. Data Models: Introduction – Relational Approach – The Hierarchical Approach – The Network Approach.

UNIT – II Relational Algebra

Structure of Relational Databases – Fundamental Relational Algebra Operations –Additional Relational Algebra Opearations - Extended Relational Algebra Operations - Null Values - Modification of the Database - The Tuple Relational Calculus – The Domain Relational Calculus

UNIT – III Normalization

Normalization: Introduction - Normalization – Definition of Functional Dependence (FD) – Normal Forms: 1NF, 2NF, 3NF and BCNF.

UNIT – IV Structured Query Language

Structured Query Language: Features of SQL – Select SQL Operations – Grouping the Output of the Query – Querying from Multiple Tables – Retrieval Using Set operators – Nested Queries. T-SQL – Triggers and Dynamic Execution: Transact-SQL..

UNIT – V Procedural Language

Procedural Language- SQL: PL/SQL Block Structure – PL/SQL Tables. Cursor Management and Advanced PL/SQL: Opening and Closing a Cursor – Processing Explicit Cursor – Implicit Cursor – Exception Handlers – Sub Programs in PL/SQL – Functions – Precaution While Using PL/SQL Functions – Stored Procedure – Object Oriented Technology.

Text Book

1. Rajesh Narang, "Database Management Systems", PHI Learning Private Limited, New Delhi, sixth printing, 2010.

Reference

1. S.K. Singh, "Database Systems – Concepts, Design and Appplications", Dorling Kindersley (India) Pvt. Ltd., Second Impression, 2008

2. Database System Concepts , Abraham Silberchatz, Henry F Korth , S.Sudarshan, McGraw-Hill - 5th Edition - 2006.

Core Practical

Practical 4- RDBMS LAB

1. Table creation and simple Queries
2. Queries using Aggregate Function and Set Operations
3. Table creation with various Joins
4. Nested Sub queries and correlated Sub queries
5. View creation and manipulation
6. PL/SQL program for cursor
7. PL/SQL program for packages
8. PL/SQL program for triggers and its type
9. PL/SQL program for procedures and functions

ALLIED 2

PAPER – 4

QUANTITATIVE TECHNIQUES – II

UNIT - I

Network scheduling by CPM/PERT - project network diagram - Critical path method (CPM) - PERT Computations.

UNIT - II

Inventory models - EOQ model (a) Uniform demand rate infinite production rate with no shortages (b) Uniform demand rate finite production rate with no shortages - Inventory control with Price Breaks.

UNIT - III

Sequencing problem - n jobs through 2 machines, n jobs through 3 machines - two jobs through m machines - n jobs through m machines.

UNIT - IV

Game Theory - Two person zero sum game - pure and mixed strategies - saddle point - domain and rule - graphical solution of rectangle games.

UNIT - V

Replacement problem - introduction - replacement of items that deteriorate with time - replacement of items that fail completely.

Recommended Text

Gupta P.K. and Hira D.S. (2000) *Problems in Operations Research*, S.Chand & Co. Delhi

Reference Books

1. J.K.Sharma, (2001) Operations Research: Theory and Applications, Macmillan, Delhi
2. Kanti Swaroop, Gupta P.K. and Manmohan, (1999) *Operation Research*, Sultan Chand & Sons., Delhi.
3. V.K.Kapoor [1989] *Operations Research*, sultan Chand & sons.
4. Ravindran A., Philips D.T. and Solberg J.J., (1987)*Operations research*, John Wiley & Sons, New York.
5. Taha H.A. (2003) *Operations Research,* Macmillan Publishing Company, New York.
6. P.R.Vittal (2003) *Operations Research*, Margham Publications, Chennai.
7. S.J.Venkatesan, *Operations Research,* J.S. Publishers, Cheyyar-604 407.
8. Arumugam & Issac, Operation research - Vol. - I, New Gamma Pub., House. Palayamkottai.

ALLIED PRACTICAL

QUANTITATIVE TECHNIQUES LAB

1. Solving Linear Programming Problem by graphical methods.
2. Solving Linear Programming Problem by simplex methods (Two variables three and more variables)
3. Solving Linear Programming Problem by Big M. methods
4. Solving Linear Programming Problem by Two phase method
5. Solving Linear Programming Problem by Duality
6. Solving Transportation problems (Balanced unbalanced)
7. Solving Assignment Problems (Balanced unbalanced)
8. Solving job sequencing Problems
9. Solving Problems related to game theory

SKILL BASED SUBJECT

PAPER – 2

SOFTWARE ENGINEERING

Objective:

This course introduces the concepts and methods required for the construction of large software intensive systems.

UNIT-I:

Introduction - Evolving Role of Software - Changing Nature of Software – SoftwareMyths; A Generic View of Process: Layered Technology - Process Models: Waterfall Model - Evolutionary Process Models.

UNIT-II:

Requirements Engineering: Tasks - Initiating the Requirements Engineering Process - Eliciting Requirements - Building the Analysis Model - Requirements Analysis - Data Modeling Concepts.

UNIT-III:

Data Engineering: Design Process and Design Quality - Design Concepts - The Design Model Creating an Architectural Design: Software Architecture - Data Design -Architectural Design - Mapping Data Flow into Software Architecture; Performing User Interface Design: Golden Rules.

UNIT-IV:

Testing Strategies: Strategic Approach to Software Testing- Test Strategies for Conventional and Object Oriented Software - Validation Testing - System Testing -Art of Debugging. Testing Tactics:Fundamentals - White Box- Basis Path - Control Structure - Black Box Testing Methods

UNIT-V:

Project Management: Management Spectrum - People - Product - Process - Project. Estimation: Project Planning Process - Resources - Software Project Estimation - Project Scheduling - Quality Concepts - Software Quality Assurance - Formal Technical Reviews.

TEXT BOOK:

Roger S Pressman,"Software Engineering - A Practitioner's Approach", Sixth Edition, McGraw Hill International Edition, New York: 2005.

REFERENCES:

1. Ian Somerville,"Software Engineering", 7th Edition, Pearson Education, 2006.
2. Mall Rajib," Software Engineering", 2/E, PHI, 2006.

NON MAJOR ELECTIVE

PAPER – 2

INTERNET AND ITS APPLICATIONS

UNIT – I

Introduction to Computers Programming Language types History of Internet Personal Computers History of World Wide Web- Micro software .NET Java-Webresources.

UNIT – II

Web Browsers- Internet Explorer- connecting to Internet Features of Internet explorer6 Searching the Internet- online help and tutorials- File Transmission Protocol (FTP) Browser settings.

UNIT – III

Attaching a file, Electronic mail Creating an E-mail id Sending and Receiving mails-attaching a file-Instance messaging- other web browsers.

UNIT – IV

Introduction to HTML headers - Linking- Images-special characters and line breaks- unordered lists- simple HTML programs.

UNIT – V

E-marketing consumer tracking Electronic advertising search engine-CRM- credit card Payments- Digital cash – e wallets – smart card.

Textbook

Internet and World Wide Web Third edition H.M.Deital, P.J. Deital and A.B.Goldberg-PHI

Book for Reference

The Internet- Complete Reference Harley hahn, Tata McGraw hill

SEMESTER V

PAPER - 5

Mobile Application and Development

Objective:

This course aims to provide the students with a detailed knowledge on Mobile Application and Development and covers Android programming from fundamentals to building mobile applications for smart gadgets.

UNIT I Introduction to Mobile Applications:

Native and web applications - Mobile operating systems and applications - Mobile Databases. Android: History of Android - Android Features – OSS – OHA - Android Versions and compatibility - Android devices - Prerequisites to learn Android -– Setting up software – IDE - XML. Android Architecture: Android Stack - Linux Kernel - Android Runtime - Dalvik VM - Application Framework - Android emulator - Android applications.

UNIT II Android development:

Java - Android Studio – Eclipse – Virtualization – APIs and Android tools – Debugging with DDMS – Android File system – Working with emulator and smart devices - A Basic Android Application - Deployment. Android Activities: The Activity Lifecycle – Lifecycle methods – Creating Activity. Intents – Intent Filters – Activity stack.

UNIT III Android Services:

Simple services – Binding and Querying the service – Executing services.- Broadcast Receivers: Creating and managing receivers – Receiver intents – ordered broadcasts. Content Providers: Creating and using content providers – Content resolver. Working with databases: SQLite – coding for SQLite using Android – Sample database applications – Data analysis.

UNIT IV Android User Interface:

Android Layouts – Attributes – Layout styles - Linear – Relative – Table – Grid – Frame. Menus: Option menu – context menu - pop-up menu – Lists and Notifications: creation and display. Input Controls: Buttons-Text Fields-Checkboxes-alert dialogs-Spinners-rating bar-progress bar.

UNIT V Publishing and Internationalizing mobile applications :

Live mobile application development: Game, Clock, Calendar, Convertor, Phone book. App Deployment and Testing: Doodlz app – Tip calculator app – Weather viewer app.

Text Books

Barry Burd, “Android Application Development – All-in-one for Dummies”, 2nd Edition, Wiley India, 2016.

Reference:

1. Paul Deitel, Harvey Deitel, Alexander Wald, “ Android 6 for Programmers – An App-driven Approach”, 3rd edition, Pearson education, 2016.
2. Jerome (J. F) DiMarzio, “Android – A Programmer‟s Guide”, McGraw Hill Education, 8th reprint, 2015.
3. http://www.developer.android.com

PAPER – 6

OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT - I

System development - object basics development cycle methodologist patterns frame works unified approach UML.

UNIT - II

Use case models object analysis - object relations attributes methods class and object responsibilities.

UNIT – III

Design process design axioms class design object storage object interoperability.

UNIT - IV

User interface design view layer classes micro level processes view layer interface.

UNIT - V

Quality analysis testing strategies object orientation on testing test cases test plans continuous testing

Text book

Object Oriented System Development Ali Bahrami Mc Graw Hill Publication.

PAPER 7

DATA MINING

UNIT - I

Introduction - What is Data mining , Data mining - important Data mining - various kind of data - Data mining Functionalities - Various kinds of Patterns Pattern Interesting Classification of Data mining Systems Data mining Task Primitives Integration of Data Mining System Major issues in Data Mining.

UNIT - II

Data Processing - Process the Data Descriptive Data Summarization - Measuring Central Tendency Dispersion of Data Graphic Displays of - Basic Descriptive Data Summaries Data Cleaning Data Integration and Transformation data Reduction.

UNIT - III

Data Warehouse OLAP Technology An overview - Data Warehouse Multidimensional Data Model Data Warehouse Architecture Data Warehouse Implementation.

UNIT - IV

Mining - Frequent Patterns Associations Correlations - Basic Concepts Road Map Efficient Scalable Frequent Tamest Mining methods Mining - Various Kinds of Association rules.

UNIT - V

Applications Trends - Data mining Applications Data mining - System Products Research Prototype Additional Themes on Data Mining Social impact of Data mining Trends in Data mining.

Text Book:

1. **Data Mining** (Concepts and Techniques) Second Ed
   Author : Jiawei Han and Micheline Kamber

   Publishers : Morgan Kaufmann Publishers (An imprint of Elsevier)

   (Chapter 1 : 1.1 -1.9, 2 : 2.1 - 2.5 , 3: 3.1-3.4 , 4: 5.1 - 5.3 5 : 11.1 - 11.6)

Reference Books:

1 **Data Mining** (Next Generation Challenges and Future Directions)
   Author : Karguta, Joshi, Sivakumar & Yesha

   Publishers : Printice Hall of India (2007)

2. **Data Mining** (Practical Machine Learning Tools and Techniques (II Edition)
   Author : Ian H. Witten & Eibe Frank

   Publishers : Morgan Kaufmann Publishers (An imprint of Elsevier]

3. **Data Warehousing , Data mining & OLAP** (Edition 2004)
   Author : Alex Benson, Stephen V. Smith

   Publishers : Tata McGraw - Hill

CORE PRACTICAL - 5

Operating System Lab

1. Implementing the Process system calls.
2. Implementing I/O system calls.
3. Implementing IPC using message queues.
4. Implementing CPU& scheduling algorithm for first come first serve scheduling.
5. Implementing CPU scheduling algorithm for shortest job first scheduling.
6. Implementing perform priority scheduling.
7. Implementing CPU scheduling for Round Robin Scheduling.
8. Implementing pipe processing.
9. Implementing first fit, best fit algorithm for memory management.
10. A program to simulate producer-consumer problem using semaphores.
11. A Shell Program to find factorial of a given number
12. A shell program to generate Fibonacci number

PRACTICAL - 6

Mobile Application and Development – Lab

1. Intent and Activity
2. Using Controls
3. Alert Dialogs
4. List View
5. Options Menu
6. Seek Bars
7. Shared Preferences
8. Status Bar Notifications
9. Tab Widgets Talking Clock.
10. Tween Animation
11. Grid View
12. Internal Storage - Files
13. SQlite - Database
14. Google Map
15. Permissions

ELECTIVE I

(to choose 1 out of the given 3)

PAPER – 1

1. Information Security

Objective: To enable the student to understand various methodology available for securing information

UNIT I Information Security Basics

INTRODUCTION -History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC

UNIT II Security Investigation

SECURITY INVESTIGATION - Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues

UNIT III Security Analysis

SECURITY ANALYSIS-Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk

UNIT IV Security Models

LOGICAL DESIGN-Blueprint for Security, Information Security Poicy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity

UNIT V Security Physical Design

PHYSICAL DESIGN-Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel.

Text Book

1. Michael E Whitman and Herbert J Mattord, “Principles of Information Security”, Vikas Publishing House, New Delhi, 2003

Reference

1. Micki Krause, Harold F. Tipton, " Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
2. Stuart McClure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw-Hill, 2003
3. Matt Bishop, " Computer Security Art and Science", Pearson/PHI, 2002.

PAPER – 1

2. Software Quality Assurance

UNIT I - INTRODUCTION

Software Quality Challenge - Software Quality Factors - Components of the Software Quality Assurance System. Pre-Project Software Quality Components - Contract Review - Development and Quality Plans

UNIT II-SQA COMPONENTS IN THE PROJECT LIFE CYCLE

Integrating Quality Activities in the Project Life Cycle – Reviews - Software Testing – Strategies - Software Testing –Implementation - Assuring the Quality of Software Maintenance - Assuring The Quality of External Participants' Parts - Case Tools and their Affect on Software Quality.

UNIT III-SOFTWARE QUALITY INFRASTRUCTURE COMPONENTS

Procedures and Work Instructions - Supporting Quality Devices - Staff TrainingInstructing and Certification - Preventive and Corrective Actions - Configuration Management - Documentation and Quality Records Controls.

UNIT IV-SOFTWARE QUALITY MANAGEMENT COMPONENTS

Project Progress Control - components of project progress control- Progress control of internal projects and external participants- Implementation of project progress control. Software Quality Metrics - Objectives of quality measurement- Process metrics- Product metrics . Software Quality Costs - Objectives of cost of software quality metrics- classic model of cost of software quality.

UNIT V-STANDARDS- CERTIFICATION AND ASSESSMENT

SQA Standards - ISO 9001 Certification - Software Process Assessment. Organizing for Quality Assurance -Management and its Role in Quality Assurance - The Software Quality Assurance Unit - SQA Trustees and Committees

TEXT BOOKS

1. Daniel Galin - “Software Quality Assurance: From Theory to Implementation” - Pearson Addison-Wesley, 2012.

2. Allen Gilles, “Software quality: Theory and management” - International Thomson - Computer press, 1997.

REFERENCES

1. Stephen H.Kan - “Metrics and models in software quality Engineering” - Addison – Wesley, 1955.

2. Roger S. Pressman - “Software Engineering-A Practitioner’s Approach” - McGraw Hill pub, 2001.

3. Humphrey Watts - “Managing the Software process”, Addison Wesley, 1986.

PAPER – 1

3. Software Metrics

UNIT I - THE HISTORY AND EVOLUTION OF SOFTWARE METRICS

Evolution of the software industry and evolution of software measurements – The cost of counting function point metrics – The paradox of reversed productivity for high-Level languages- The Varieties of functional metrics – Variations in application size and productivity rates – Future Technical Developments in Functional Metrics- Software measures and metrics not based on function points.

UNIT II-MEASURING SOFTWARE QUALITY

Quality control and international competition – Defining quality for measurement and estimation – Five steps to software quality control- Measuring software defect removal- Measuring Defect removal efficiency – Measuring the costs of defect removal – Evaluating defect prevention methods – Measuring customer reported defects- Measuring invalid defects, Duplicate defects and special cases- Reliability Models - The Rayleigh Model- Reliability Growth Models.

UNIT III-PROCESS METRICS

In-Process Metrics for Software Testing - Test Progress S Curve - Testing Defect Arrivals Over Time - Product Size Over Time - CPU Utilization - Effort/Outcome Model. Complexity Metrics and Models - Lines of Code - Halstead's Software Science - Cyclomatic Complexity. - Syntactic Constructs - Structure Metrics. Metrics for Object-Oriented Projects - Concepts and Constructs - Design and Complexity Metrics - Lorenz Metrics and Rules of Thumb - CK OO Metrics Suite -
Productivity Metrics.

UNIT IV-MECHANICS OF MEASUREMENT

Software Assessments – Software Baselines – Software Benchmarks- What a Baseline analysis covers – Developing or Acquiring a baseline data collection Instrument – Administering the data collection questionnaire – Analysis and aggregation of the Baseline data. Measuring and Analyzing Customer Satisfaction - Surveys - Data Collection - Sampling Methods - Analyzing Satisfaction Data. Conducting In-Process Quality Assessments - Preparation - Evaluation - Quantitative Data - Qualitative Data - Evaluation Criteria - Overall Assessment.

UNIT V-MEASUREMENTS, METRICS AND INDUSTRY LEADERSHIP

Measures and metrics of industry leaders – Measures, metrics and innovation – Measurements, metrics and outsource litigation – Measurements, metrics and behavioral changes – Commercial software measurement tools. Measuring Process Maturity - Process Capability - Value of Process Improvement – Process Adoption – Process Compliance. Function Point Metrics to Measure Software Process Improvement - Software Process Improvement Sequences.

TEXT BOOKS

1. Caper Jones, *"Applied Software Measurement: Global Analysis of Productivity and Quality"*, Third Edition, McGraw Hill Companies, 2008.

2. Stephen H. Kan, *"Metrics and Models in Software Quality Engineerin*g", Addison Wesley, 2011.

REFERENCES

1. Mark Lorenz, Jeff Kidd, *"Object-Oriented Software Metric*s", Prentice Hall, 2000.

2. Naresh Chauhan, *"Software Testing Principles and Practices"*, Oxford University Press, 2010.

3. Ravindranath Pandian C, *"Software Metrics A Guide to planning, Analysis, and Application"*, Auerbach, First Indian Reprint, 2011.

Skill Based Subject
Paper 3
Operating System

Unit – I Operating System Basics

Basic Concepts of Operating System - Services of Operating System-Classification of Operating System- Architecture and Design of an Operating System-Process Management **-** Introduction to Process-Process State -PCB - Process Scheduling - Interprocess Communication

Unit –II Operating System Scheduling

CPU Scheduling**:** Introduction - Types of CPU Scheduler - Scheduling Criteria - Scheduling Algorithms - FCFS Scheduling **–** SJF Scheduling;-Priority Scheduling - Round-Robin Scheduling-Multilevel Queue Scheduling - Deadlock **-** Basic Concept of Deadlock- Deadlock Prevention - Deadlock Avoidance- Deadlock - Detection and Recovery

Unit- III Memory management

Memory Management - Basic Concept of Memory - Address Binding; Logical and Physical Address Space- Memory Partitioning - Memory Allocation-Protection-Fragmentation and Compaction

Unit – IV Swapping

Swapping- Using Bitmaps - Using Linked Lists- Paging-Mapping of Pages to Frames - Hierarchical Page Tables- Segmentation - Virtual Memory - Basic Concept of Virtual Memory-Demand Paging - Transaction Look aside Buffer (TLB) - Inverted Page Table-Page Replacement Algorithms

Unit –V File Management

File Management - Basic Concept of File-Directory Structure-File Protection-Allocation Methods **–** Various Disk Scheduling algorithms

Text Books:

Abraham Silberschatz Peter B. Galvin, G. Gagne, “Operating System Concepts”, Sixth Edition, Addison Wesley Publishing Co., 2003.

Reference

1. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson
2. Willam-Stalling “Operating System” Fourth Edition, Pearson Education, 2003.

Semester VI

Paper – 7

Open Source Programming

Objective:

To discuss techniques that can be effectively applied in practice about HTML5, JavaScript, PHP , CSS and Linux

UNIT I : INTRODUCTION TO HTML5,JAVA SCRIPT, PHP AND CSS

Introduction to Dynamic Web content- HTTP and HTML- Request and Response Procedure- The Benefits of PHP, JAVA Script, CSS, and HTML5- Introduction to HTML5- The Canvas -The HTML5 Canvas- HTML5 Audio and Video- Introduction to CSS- CSS Rules-Style Types- CSS Selectors- CSS Colors.

UNIT-II : LINUX

Introduction : Linux Essential Commands – File system Concept – Standard Files – The Linux Security Model – Vi Editor – Partitions Creation – Shell Introduction – String Processing – Investigation and Managing Processes – Network Clients – Installing Application.

UNI- III : MYSQL

Introduction to MY SQL – The show Databases and Table – The USE command – Create Database and Tables – Describe Table – Select, Insert, Update, and Delete statement – Some Administrative detail – Table Joins – Loading and Dumping a Database.

UNIT-IV : PHP

PHP Introduction – General Syntactic Characteristics – PHP Scripting – Commenting your code – Primitives, Operations and Expressions – PHP Variables – Operations and Expressions Control -statement – Array – Functions.

UNIT – V PHP

Basic Form Processing – File and Folder Access – Cooking – Sessions – Database Access with PHP – MySQL - MySQL Functions – Inserting Records – Selecting Records – Deleting Records – Update Records.

Text Books

1. "Learning PHP, MySQL, Java Script, CSS and HTML5", Robin Nixon, O'Reilly Publications, 3rd Edition, 2014.
2. Steven Holzner, "HTML Black Book", Dreamtech Press &Paraglyph Press Publishers, 2007

Reference Books

Open Source Software, P.Rizwan Ahmed, Margham Publication, Chennai, 2015

Paper 8

Software Project Management

UNIT I - BASIC CONCEPTS

Product Process and project—Definition—Product life Cycle: Prototype Development Phase, Alpha Phase, Beta Phase, Production &Maintenance Phase—Project Life Cycle Models:Water fall Model, Prototype Model, RAD & Spiral Model—Process Models.

UNIT II-UMBRELLA ACTIVITIES

Metrics—Software Configuration Management: Process and activities ,Configuration audit, Metrics in SCM, Tools & automation –Software Quality Assurance:Quality Control & Quality Assurance, Tools, Meassure of SQA Success –Risk Management:Risk Management Cycle, Risk Identification, Quantification, Monitoring, Mitigation, Metrics in Risk Management.

UNIT III - PROJECT MANAGEMENT PROCESS AND ACTIVITIES

In-Stream activities - Project initiation: activities, Outputs, Quality Records, completion criteria –Project Planning and Tracking: Components, activities specific to Project tracking—Project Closure: Effective closure Process issues, Metrics for Project Closure.

UNIT IV–ENGINEERING ACTIVITIES IN PROJECT LIFE CYCLE

Software requirement Gathering: Inputs and start criteria, Dimentions, steps ,Output & Quality records, Skillsets, Challenges, Metrics for Requirement Phase – Estimation : Phases of Estimation, Methodology, Models for size estimation, Challenges, Metrics for Estimation Process —Design and Development Phases- Project Management in Testing & Maintenance Phase.

UNIT V-EMERGING TRENDS IN PROJECT MANAGEMENT

Globalization Issues in Project management : Evolution, Challenges, Models – Impact of the internet on Project Management:Effect of internet on Project Management, managing project for internet, Project management activities – People Focused Process Models:People centric models, P-CMM, other peoplefocussed Models.

TEXT BOOKS

1. Ramesh Gopalaswamy, "*Managing and global Software Projects"*, Tata McGraw Hill.Tenth Reprint 2011.**(Revised)**

REFERENCES

1. Roger S.Pressman, *"Software Engineering - A Practitioner's Approach"*, 7th Edition McGraw Hill, 2010.**(Revised).**

2. Humphery Watts, *"Managing the Software Process"*, Addision Wesley,1989**.(Revised).**

3. Wheelwright and Clark: "*Revolutionizing product development"*, The FreePress, 1993

Practical 7

Open Source Programming Lab

1. Create a web page with Frames and Tables.
2. Create a web page incorporating CSS (Cascading Style Sheets)
3. Write a shell program to find the factorial of an integer positive number
4. Write a shell program for checking whether a given string is a palindrome or not.
5. Create a simple calculator in Java script.
6. Write a JavaScript program to scroll your name in the scroll bar.
7. Develop a program and check message passing mechanism between pages.
8. Develop a program and check file system functions, date &time functions.
9. Create a student database table in MYSQL and manipulate records (insert,delete,update) records in a web browser.
10. Develop a program using cookies and session.

Practical 8

ASP.NET Lab

1. Implement Validation Controls
2. Write a Program to implement ad rotator control
3. Write a Program to implement state management techniques
4. Write a Program to implement view State and Session State.
5. Write a Program to displaying data with the grid view
6. Write a Program to implement ASP.Net Server Side Controls.
7. Write a Program to implement ASP.Net Master Pages, Themes and Skins.
8. Write a Program working with forms using ASP.Net
9. Write a Program working with pages using ASP.Net.
10. Write a Program to access data sources through ADO.NET

ELECTIVE II

(to choose 1 out of the given 3)

PAPER – 2

1. CLOUD COMPUTING

Objective:

To enable the students to learn the basic functions, principles and concepts of cloud Systems.

UNIT I: UNDERSTANDING CLOUD COMPUTING

Cloud Computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why Cloud Computing Matters – Advantages of Cloud Computing – Disadvantages of Cloud Computing – Cloud Services.

UNIT II: DEVELOPING CLOUD SERVICES

Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds.

UNIT III: CLOUD COMPUTING FOR EVERYONE

Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events.

UNIT IV: PROGRAMMING MODEL

Parallel and Distributed Programming Paradigms – Map Reduce, Twister and Iterative Map Reduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments -Eucalyptus, Open Nebula, Open Stack, Aneka, CloudSim.

UNIT V: SECURITY IN THE CLOUD

Security Overview - Cloud Security Challenges and Risks - Software-as-a-Service Security- Security Governance - Risk Management - Security Monitoring - Security Architecture Design - Data Security - Application Security - Virtual Machine Security - Identity Management and Access Control - Autonomic Security.

TEXT BOOK:

1. Michael Miller, "Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online", Que Publishing, August 2008.

REFERENCES:

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
2. John W.Rittinghouse and James F.Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.
3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", TMH, 2009.
4. Kumar Saurabh, "Cloud Computing – insights into New-Era Infrastructure", Wiley India, 2011.
5. George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud" O'Reilly

PAPER – 2

2. CLIENT/ SERVER TECHNOLOGY

UNIT – I

INTRODUCTION: Introduction to client/server computing - Main frame -centric client/server computing - Down sizing and client/server computing - Preserving mainframe applications-Investment through porting - Client/server development tools - Advantages of Client/Server computing.

UNIT – II

CLIENT COMPONENT: Components of client/server applications - The client - Client service, request for services, RPC, windows services, Fax/print services, Remote boot services, other remote services - Utility services and other services, Dynamic data exchange, Object linking and embedding. Common request broker architecture - the server - detailed server functionality. The networking operating system - Novell Network - LAN manager - IBM LAN server - Banyan VINES-PC network file services - Server operating systems: Netware, OS/2, Windows NT unix - system application architecture (SAA)

UNIT – III

SERVER COMPONENT: Components of client/server architecture - Connectivity - Open Systems Interconnect (OSI) - Inter Process Communication (IPC) - Communication interface technology - Wide area network technology - Client/server development software - Platform migration and reengineering of existing systems - Hardware components.

UNIT – IV

DISTRIBUTED OBJECTS AND INTERNET: Client/server with distributed objects - Distributed objects and components - from orb to business objects - Compound Documents: The client framework - OLE/DCOM - Client/server and the Internet-Web client/server. The hyper text era - the interactive era - The Java object era - The distributed object era.

UNIT-V

APPLICATION DEVELOPMENT TOOLS: GUI front end to 3270/5250 screens - The prototype process - Application development - Workbench architecture - Information Engineering facility Architecture - EASEL Workbench - Ellipse - SQL Windows - Power builder - SQL Tool set. APT workbench component.

Text Book

1. Dewire and dawna travis,'client/server computing'-mcgraw hill-1993

Reference Books:

1. Beth gold-Bernstein, David Marca, 'Designing enterprise client/server systems', phi-1998.

2. Thomas S Ligon, 'Client/Server communications', Mcgraw Hill series on client/server computing-1997.

3. Robert Orfali, Dan Harley, Jeri Edward, 'The essential client/server survival guide', second edition, Galgotia 1997.

PAPER - 2

3. DATA AND COMMUNICATION NETWORKS

UNIT - I

A communications model - Data Communications - Data Communications Networking – computer communication architecture - Analog and Digital - Transmission - Transmission Impairments - Transmission media.

UNIT - II

Data encoding - Digital data Digital signals, Digital data Analog signals, Analog data Analog signals Data Communications Interface : Asynchronous and synchronous Transmission.

UNIT - III

Data link control: Flow controls - Error Detection - Error Control. MULTIPLEXING : Frequency Division multiplexing - Synchronous time - Division multiplexing - Statistical time division multiplexing.

UNIT - IV

Circuit switching: Circuit switching networks switching concepts - Routing in circuit switched networks.

UNIT - V

Packet switching principles - Routing in packet switching - Congestion control.

Frame relay: Frame relay Protocol Architecture – Frame relay Congestion control.

Text Books

1. William Stallings, Data and Computer Communications Fifth Edition, Prentice Hall of India, 1997.
2. Forouzan: Introduction to Data Communication & Networking, McGraw-Hill, 1998.

Reference Books:

1. Ulysess D. Black Data Communications and Distributed Networks Third Edition, 1997. Prentice Hall of India.
2. Prakash C.Gupta,Data Communications, Prentice Hall of India,1996.

ELECTIVE III

(to choose 1 out of the given 3)

PAPER – 3

1. SOFTWARE DESIGN

PURPOSE The purpose of this course is to impart knowledge on the basic concepts of the design principles of software.

UNIT I–INTRODUCTION

Software Modeling – Object oriented Methods and UML- Software Architectural design – Method and Notation – Evolution of Software Modeling and Design Methods - Overview of UML Notations – Software Life cycles and UML Processes – Software Life cycle and Models – Design Verification and Validation – Software Design and Architectural Concepts – OO Concepts – Information Hiding - Inheritance and Generalization- Concurrent Processing – Design Patterns – Requirements analysis and Design Modeling – Designing Software Architectures.

UNIT II–SOFTWARE MODELING

Use case Modeling – Static Modeling – Association between classes- Composition and Classification Hierarchies – Constraints – Static Modeling and the UML – Categorization of classes using UML stereotypes – Modeling External Classes – Static Modeling of Entity Classes – Object and class Structuring

UNIT III–DETAILED DESIGN

Dynamic Interaction Modeling – Object Interaction Modeling – Message Sequence Numbering on Interaction Diagram – Dynamic Interaction Modeling – Stateless Dynamic Interaction Modeling– Finite State Machines and State Transitions – Events, Guard Conditions and Actions – Hierarchical State charts – Guidelines for designing State Charts – Steps in State Dependent Dynamic Interaction Modeling – Modeling Interaction Scenarios using Interaction and State Chart Diagrams

UNIT IV–ARCHITECTURAL DESIGN

Software Architecture and Component Based Software Architecture – Multiple views of Software Architecture and Patterns – Documenting Software Architecture – Interface Design – Designing Software Architecture – Software Sub system Architectural Design – Designing Object oriented Software Architecture – Designing Component Based Software Architecture

UNIT V–CASE STUDIES

Designing Concurrent and Real time Software Architectures – Designing Software Product Line Architectures – Software Quality Attributes – Case Studies - Client – Server Software Architecture Case Study - Component Based Software Architecture Case Study – Real Time Software Architecture

TEXT BOOKS

1. Hassan Gomma, “Software Modeling and design with UML”, Cambridge University Press, 1 edition, 2011.

2. Michael Bigrigg, “Software Design Specification with UML”, Addison- Wesley, 2007.

REFERENCES

1. David Budgen, “Software Design”, Addison-Wesley, 2007.

2. Christopher Fox, “Introduction to Software Engineering Design: Processes, Principles and Patterns with UML2”, Pearson, 2007.

2. Software Architecture

PURPOSE To analyze and design large scale software and apply different architecture styles to software design and to provide practical knowledge in software architecture

UNIT I - INTRODUCTION

Software Architecture –Architecture Structures and Views – Importance of Software Architecture – Predicting System Quality – Influencing Organizational Structure – Improving Cost and Schedule estimates – Context of Software architecture.

UNIT II-QUALITY ATTRIBUTES

Understanding quality attributes – availability – interoperability – modifiability - performance and security – testability - usability – quality attribute modeling and analysis.

UNIT III-ARCHITECTURE IN THE LIFE CYCLE

Architecture in the agile projects – Architecture and requirements – Designing and documentation – Implementation and testing – Architecture reconstruction and conformance.

UNIT IV-ARCHITECTURE AND BUSINESS

Economic analysis of Architecture – Architecture competence – Architecture and Software product lines – Case Studies.

UNIT V-ARCHITECTURE IN ADVANCE

Architecture in Cloud - Cloud Definition – Service Model – Economic Justification – Base Mechanism – Architecture for the Edge – Edge Document system – SDLC – Metropolis Model.

TEXT BOOKS

1. Len Bass, Paul Clements, Rick Kazman, “Software Architecture in Practice”, 3 rd edition Pearson, 2013.
2. Mary Shaw, David Garlan, “Software Architecture: Perspectives on an Emerging Discipline”, Prentice Hall, 1996.

REFERENCES

1. Taylor R. N, Medvidovic N, Dashofy E. M, “Software Architecture: Foundations, Theory, and Practice”, Wiley, 2009.

2. Booch G, Rumbaugh J, Jacobson I, “The Unified Modeling Language User Guide”, Addison-Wesley, 1999.

3. SOFTWARE TESTING

UNIT I - INTRODUCTION

Activities of a Test Engineer - Testing Levels Based on Software Activity - Beizer's Testing Levels Based on Test-Process Maturity - Automation of Test Activities - Software Testing Limitations and Terminology - Coverage Criteria for Testing - Infeasibility and Subsumption - Characteristics of a Good Coverage Criterion - Older Software Testing Terminology

UNIT II-GRAPH TESTING

Graph Coverage Criteria - Structural Coverage Criteria - Graph Coverage for Source Code - Graph Coverage for Design Elements - Graph Coverage for Specifications - Graph Coverage for Use Cases - Representing Graphs Algebraically

UNIT III-LOGIC TESTING & INPUT SPACE PARTITIONING

Logic Predicates and Clauses - Logic Expression Coverage Criteria - Structural Logic Coverage of Programs -Specification-Based Logic Coverage - Logic Coverage of Finite State Machines - Disjunctive Normal Form Criteria. Input Domain Modeling - Combination Strategies Criteria - Constraints among Partitions

UNIT IV-SYNTAX TESTING

Syntax- Based Coverage Criteria - Program-Based Grammars - Integration and Object-Oriented Testing - Specification-Based Grammars - Input Space Grammars. Regression Testing - Integration and Testing - Test Process - Test Plans

UNIT V-ENGINEERING CRITERIA

Testing Object-Oriented Software - Unique Issues with Testing OO Software - Types of Object-Oriented Faults – Testing Web Applications and Web Services - Testing Static Hyper Text Web Sites - Testing Dynamic Web Applications -Testing Web Services - Testing Graphical User Interfaces - Testing GUIs - Real-Time Software and Embedded Software

TEXT BOOKS

1. Paul Ammann, Jeff Offutt, “Introduction to Software Testing”, Cambridge University Press, 2008.

2. Srinivasan Desikan, Gopalaswamy Ramesh, “Software Testing: Principles and Practices”, Pearson, 2012.

REFERENCES

1. Aditya P. Mathur, “Foundations of Software Testing”, Pearson, 2008.

2. Paul C. Jorgensen, “Software Testing: A Craftsman's Approach”, Auerbach Publications, 2008.

Skill based Subject

Paper 4

ASP .NET

UNIT I : ASP.NET Basics

Introduction to ASP.NET: .NET Framework (CLR, CLI, BCL), ASP.NET Basics, ASP.NET Page Structure, Page Life Cycle. Controls: HTML Server Controls, Web Server Controls, Web User Controls, Validation Controls, Custom Web Controls.

UNIT II : Form

Form validation: Client side validation, Server side validation, Validation Controls: Required Field Comparison Range, Calendar Control, Ad rotator Control, Internet Explorer Control. State Management: View State, Control State, Hidden Fields, Cookies, Query Strings, Application State, Session State.

UNIT III : ADO.NET

Architecture of ADO. NET, Connected and Disconnected Database, Create Database, Create connection Using ADO.NET Object model, Connection Class, Command Class, Data Adapter Class, Dataset Class, Display data on data bound controls and Data Grid.

UNIT IV : Database accessing

Database accessing on Web Applications: Data Binding Concept with web, Creating Data Grid, Binding standard web server controls, Display data on web form using Data Bound Controls.

UNIT V : XML

Writing Datasets to XML, Reading datasets with XML. WEB services: Remote method call using XML, SOAP, Web service description language, Building and Consuming a web service, Web Application deployment.

Textbook:

Professional ASP.NET 1.1 Bill Evjen , Devin Rader , Farhan Muhammad, Scott Hanselman , Srivakumar

REFERENCE BOOKS:

1. Introducing Microsoft ASP .NET 2.0 Esposito PHI
2. Professional ADO.NET BipinJoshi,Donny Mack, Doug Seven , Fabio Claudio Ferracchiati, Jan D NarkiewiezWrox
3. Special Edition Using ASP.NET Richard Leineker Person Education
4. The Complete Reference ASP.NET Matthew MacDonald TMH
5. ASP.NET Black Book DreamTech

QUESTION PAPER PATTERN FOR PRACTICAL EXAMINATIONS:

Answer any **TWO** questions out of **Three**. 10 marks for record note book. 5 marks for viva. Total 75 marks.

Practical CIA	–	25 marks
University Practical	–	75 marks(60+10+5)
Total	–	100 marks

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