

HAJEE KARUTHA ROWTHER HOWDIA COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai.)

(Re-Accredited at “A” Grade, by NAAC, Bangalore)

UTHAMAPALAYAM - 625533.



DEPARTMENT OF INFORMATION TECHNOLOGY

BACHELOR OF SCIENCE – INFORMATION TECHNOLOGY

SYLLABUS

2014 – 2015

**HAJEE KARUTHA ROWTHER HOWDIA COLLEGE -AUTONOMOUS
Uthamapalayam.**

Choice Based Credit System

**B.Sc., Information Technology (Semester)
Course Scheme and Scheme of Examinations
(Effective for the Academic Year 2014 -2015)**

QUALIFICATION

Passed in HSC or any other examination accepted by the syndicate as equivalent with Information Technology as one of the subject in Higher Secondary Education.

DURATION OF THE COURSE

B.Sc., Information Technology -Three Academic years (Six Semesters)

OBJECTIVES OF THE COURSE

1. To enable the students to understand the knowledge of Information Technology.
2. Study of skill based subject is to enrich the students to acquire additional knowledge
3. Study of Allied/Elective papers enable the students to expose themselves to the system side also
4. Visit to various IT concerns (Industrial Visit) helps the students for projects and future enhancement.

SUBJECTS OF STUDY

Part I	-	Tamil / Arabic / Malayalam
Part II	-	English
Part III	-	i. Core Subjects -Information Technology ii. Allied Subjects
Part IV	-	i. Non -Major Subjects ii. Skill Based Subjects iii. Environmental Studies iv. Value Education
Part V	-	Extension Activities

STRUCTURE OF QUESTION PAPERS

Internal	-	25 marks
External	-	75 marks
Total	-	100 marks

Question Paper: Three Parts (A, B and C)

Section A	-	Multiple Choice
Section B	-	Either A or B
Section C	-	3 out of 5 questions

HAJEE KARUTHA ROWTHER HOWDIA COLLEGE (AUTONOMOUS)

B.Sc., Information Technology: Syllabus Effective from 2014- 17

Sem	Part	Subject	Subject Code	Title of the Paper	Hours	Credits	Int.	Ext.	Total
I	I	Language	14UTAL11/ 14UARL11/ 14UMLL11	Tamil / Arabic / Malayalam - Paper I	6	3	25	75	100
	II	Language	14 UEN L11	English -Paper I	6	3	25	75	100
	III	Core	14 UCT C11	Programming in C	6	4	25	75	100
	III	Core	14 UCT C1P	Programming in C-Lab	6	4	40	60	100
	III	Allied	14 UCT A11	Digital Principles and Applications	4	5	25	75	100
	IV	NME	14 UCT N11	NME : Introduction to IT	2	2	25	75	100
Total					30	21	165	435	600
II	I	Language	14UTAL21/ 14UARL21/ 14UMLL21	Tamil / Arabic / Malayalam-Paper II	6	3	25	75	100
	II	Language	14 UEN L21	English -Paper II	6	3	25	75	100
	III	Core	14 UCT C21	Object Oriented Programming with C++	6	4	25	75	100
	III	Core	14 UCT C2P	Programming With C++ - Lab	6	4	40	60	100
	III	Allied	14 UCT A21	Mathematical Foundations	4	5	25	75	100
	IV	NME	14 UCT N21	NME : Internet and Web Programming	2	2	25	75	100
Total					30	21	165	435	600
III	I	Language	14UTAL31/ 14UARL31/ 14UMAL31	Tamil/Arabic/Malayala m	6	3	25	75	100
	II	Language	14UENL31	English	6	3	25	75	100
	III	Core	14UCTC31	Fundamentals of Data Structures	6	4	25	75	100
	III	Core	14UCTC3P	Data Structures & Visual Programming Lab	6	4	40	60	100
	III	Allied	14UCTA31	Resource Management Techniques	4	5	25	75	100
	IV	SBS	14UCTS3P	PC Hardware Lab	2	2	25	75	100
Total					30	21	165	435	600

IV	I	Language	14UTAL41/ 14UARL41/ 14UMAL41	Tamil/Arabic/Malayalam	6	3	25	75	100
	II	Language	14UENL41	English	6	3	25	75	100
	III	Core	14UCTC41	Relational Database Management System	6	4	25	75	100
	III	Core	14UCTC4P	Relational Database Management System - Lab	6	4	40	60	100
	III	Allied	14UCTA41	Computer Oriented Numerical Methods	4	5	25	75	100
	IV	SBS	14UCTS4P	Multimedia Lab	2	2	25	75	100
Total					30	21	165	435	600
V	III	Core	14UCTC51	Java Programming	6	4	25	75	100
	III	Core	14UCTC52	Operating Systems	6	4	25	75	100
	III	Core	14UCTC5P	Java Programming - Lab	5	5	40	60	100
	III	Core	14UCTC5Q	Web Design - Lab	5	5	40	60	100
	III	Elective Core	14UCTE51	Web Technology	4	5	25	75	100
			14UCTE52	Computer Graphics					
			14UCTC53	Embedded Systems					
	IV	SBS	14UCTS51	Bio-Metrics	2	2	25	75	100
	IV	EVS	14UEVS51	Environmental Studies	2	2	25	75	100
Total					30	27	205	395	700
VI	III	Core	14UCTC61	Software Engineering	6	5	25	75	100
	III	Core	14UCTC6P	Dot Net Programming - Lab	6	5	40	60	100
	III	Core	14UCTC6T	Project Work	5	4	40	60	100
	III	Elective Core	14UCTE61	Computer Networks	5	5	25	75	100
			14UCTE62	Artificial Intelligence and Expert Systems					
			14UCTE63	Data Mining					
	IV	SBS	14UCTS61	Numerical Aptitude	2	2	25	75	100
	IV	SBS	14UCTS62	System Software	2	2	25	75	100
	IV	SBS	14UCTS63	Grid Computing	2	2	25	75	100
	IV	VE	14UVED61	Value Education	2	2	25	75	100
	V	EA		Extension Activities		2			
	Total				30	29	230	570	800
	Total				180	140	1095	2705	3900

Year : First

CORE PAPER – I

Semester : I

Hours : 6

14UCTC11 -PROGRAMMING IN C

Credits : 4

UNIT I

Fundamentals of Computers : Introduction -History of Computers - Generations of Computers - Classification of Computers - Basic Anatomy of a Computer System - Input Devices -Processor - Output Devices - Memory Management - Types of Software - Overview of Operating System - Programming Languages - Translator Programs - Problem Solving Techniques - Overview of C.

UNIT II

Overview of C: Introduction - Character Set - C Tokens - Keyword & Identifiers - Constants - Variables - Data types - Declaration of Variables - Assigning Values to Variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement Operators - Arithmetic Expressions - Evaluation of Expression - Precedence of Arithmetic Operators - Type Conversion in Expression -Operator Precedence & Associativity - Mathematical Functions - Reading & Writing a Character - Formatted Input and Output.

UNIT III

Decision Making and Branching: Introduction - If , If....Else, Nesting of If ...Else Statements - Else If ladder - The Switch Statement, The ?: Operator - The Goto Statement.
Decision Making and Looping : Introduction - The While statement - The do Statement - The for Statement - Jumps in Loops. Arrays - Character Arrays and Strings.

UNIT IV

User Defined Functions: Introduction -Need and Elements of User-Defined Functions - Definition - Return Values and their Types - Function Calls - Declarations - Category of Functions - Nesting of Functions - Recursion - Passing Arrays and Strings to Functions - The Scope, Visibility and Lifetime of Variables - Multi file Programs. Structures and Unions.

UNIT V

Pointers: Introduction - Understanding Pointers - Accessing the Address of a Variable - Declaration and Initialization of Pointer Variable - Accessing a Variable Through its Pointer - Chain of Pointers - Pointer Expressions - Pointer Increments and Scale Factor - Pointers and Arrays - Pointers and Strings - Array of Pointers - Pointers as Function Arguments - Functions Returning Pointers - Pointers to Functions - Pointers and Structures. File Management in C.

Text Book:

1. E Balagurusamy,“**Computing Fundamentals & C Programming**” -TMH.

Reference book:

1. Ashok N Kamthane, “**Programming with ANSI and Turbo C**”, Pearson Edition Publ, 2002.

Year : First

CORE PAPER - II

Semester : I

Hours : 6

14UCTC1P -PROGRAMMING WITH C - LAB

Credits : 4

1. Write a C program to find the sum, average, standard deviation for a given set of numbers.
2. Write a C program to generate “n” prime numbers.
3. Write a C program to generate Fibonacci series.
4. Write a C program to print magic square of order n where $n > 3$ and n is odd.
5. Write a C program to sort the given set of numbers in ascending order.
6. Write a C program to check whether the given string is a palindrome or not using pointers.
7. Write a C program to count the number of Vowels in the given sentence.
8. Write a C program to find the factorial of a given number using recursive function.
9. Write a C program to print the student's Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.
10. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.
11. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file.
12. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total i)no of chars ii) no. of words and iii) no. of lines.

Year : First

ALLIED PAPER - I

Semester : I

Hours : 4

14UCTA11 -DIGITAL PRINCIPLES AND APPLICATIONS

Credits : 5

UNIT I

Number System and Discrete logic: Binary Number -Binary to Decimal - Decimal to Binary - Octal -Hexadecimal -ASCII Code -Excess 3 Code -Gray Code -Transistor Inverter -OR gates - AND Gates -Boolean Algebra -NOR Gates -NAND Gates.

UNIT II

Circuit Analysis and Design: Boolean Laws and Theorems -Sums of Product Method -K-Map Truth Tables -Pairs, Quads and Octets -K-map Simplifications -Don't Care -Product of Sums Method and its Simplifications.

UNIT III

Arithmetic Circuits: Binary Addition -Binary Subtraction -2's and 1's Complement Representations -Complement Arithmetic -Arithmetic Building Blocks.

UNIT IV

Data processing circuits: Multiplexers -De Multiplexers -1 of 16 decoder -BCD to Decimal Decoders -7 Segment Decoders -Encoders - Exclusive OR Gates -Parity bit Generators and Checkers.

UNIT V

Flip-flops, Registers and Counters : RS flip-flop -D flip-flop -JK flip-flop -Edge triggered flip flops. -Shift Register: Types of Register -Counters: Ring counter and MOD counters-A digital clock.

Text Books:

1. Albert Paul Malvino and Donald P. Leach, "**Digital Principles and Applications**", TMH 4th Edition, 1996.

UNIT I :	CHAPTER	5,2.1,2.2
UNIT I :	CHAPTER	3.1 -3.8
UNIT III :	CHAPTER	6.1 -6.7
UNIT IV :	CHAPTER	4.1 -4.8
UNIT V :	CHAPTER	8.1 -8.7, 9.1 -9.5, 10.1, 10.4, 10.8

Reference:

1. Tocei R.J. Widmer N S, "**Digital systems principles and applications**", 8th Edition, Pearson Education Pvt., Ltd., 2004.

Year : First

NME PAPER - I

Semester : I

Hours : 2

14UCTN11 -INTRODUCTION TO IT

Credits : 2

UNIT I

Information Technology : Introduction -Information System -Software and Data -IT in Business and Industry -the Home and at Play -Education and Training -Entertainment and the Arts - Science, Engineering and Math -Computers in Hiding.

UNIT II

Types of Computers: Corporate and Departmental Computers -Desktop and Personal Computer - The Anatomy of Computer -Binary Numbers -Digital Signals -The Binary Code The CPU - Memory RAM and ROM -Other Forms and use of Memory.

UNIT III

Input and Output: I/O Devices -Inputting text: Keyboards -Direct Input Devices -Inputting Graphics -Pointing Devices -Pixels and Resolution -Fonts -Range of Colors -Display Screen: Types of Screens -Resolution -Printers.

UNIT IV

Secondary Storage: How Data is Stored -Storage Characteristics -Floppy Disks -Hard Disk Drives -Optical Disks -Increasing Data Storage Capacity -Backing up your Data- The Smart Card. Software: User Interface -Application Programs -Operating Systems.

UNIT V

Internet and World Wide Web: Introduction -The Web -Getting Connected to the Web -Browsing the Web -Locating the Information on the Web -Web Multimedia.

Text book:

1. **“Information Technology The breaking Wave”**, Dennis P.Curtin, Kim Foley, Kunal Sen, Cathileen Morin. - TMH edition.

UNIT I : CHAPTER 2.1 -2.9

UNIT I : CHAPTER 3.1 -3.11

UNIT III : CHAPTER 4.1 -4.12

UNIT IV : CHAPTER 5.1 -5.9,6.1 -6.5

UNIT V : CHAPTER 9.1 -9.9,1.1 -1.6

Reference:

1. **“Computers Today”**, Basantra Galgotia Publications.
2. **“Computers & Commonsense”**, Roger-hunt.

Year : First

CORE PAPER - III

Semester : II

Hours : 6

**14UCTC21 -OBJECT ORIENTED PROGRAMMING
C++**

WITH

Credits : 4

UNIT I

Object Oriented Programming -Software Evolution -Basic Concepts -Benefits -Applications - Structure of C++ program -tokens -keywords -Identifiers and Constants -Basic Data Types -User Defined Data Types -Derived Data Types -Variables -Manipulators -Expressions and their types - Control Structures.

UNIT II

Functions -Main Function -Function Prototyping -Call by Reference -Return by Reference -Inline Functions -Default Arguments -Function Overloading. Classes and Objects -Specifying a Class - Defining Member Functions -A C++ program with Class -Static Members -Arrays of Objects - Objects as Function Arguments -Friendly Functions -Returning Objects.

UNIT III

Constructors and Destructors -Parameterized Constructors -Multiple Constructors in a Class - Copy Constructors -Destructors -Defining Operator Overloading -Overloading Unary Operators - Overloading Binary Operators -Using Friend Function -Rules for Overloading Operators.

UNIT IV

Inheritance -Defining Derived Classes -Single Inheritance -Multilevel Inheritance -Multiple Inheritance -Virtual Base Classes -Pointers to Objects -this pointer -Pointer to Derived Classes - Virtual Functions and Polymorphism -Pure Virtual Function.

UNIT V

Managing Console I/O Operations -C++ Streams -C++ Stream Classes -Unformatted I/O Operations -Formatted Console I/O Operations -Working with Files -Classes for File Stream Operations -Opening and Closing a File -Detecting End-of File -File Modes.

Text book:

1. E. Balagurusamy, **“Object-Oriented Programming with C++”**, 3rd edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, Third Edition.

UNIT I : CHAPTER 1,2,3

UNIT I : CHAPTER 4,5

UNIT III : CHAPTER 6,7

UNIT IV : CHAPTER 8M9

UNIT V : CHAPTER 10,11

Reference:

1. Robert Lafore, **“Object-Oriented Programming in Turbo C++”**, Galgotia Publications , New Delhi.
2. **“C++ The complete References”**, Herbert schildt, 4th edition, TMH.

Year : First

CORE PAPER - IV

Semester : II

Hours : 6

**14UCTC2P -OBJECT ORIENTED PROGRAMMING WITH C++
- LAB**

Credits : 4

1. Write a Program to implement the class and objects, Array of Objects.
2. Write a program to demonstrate Constructors and destructors.
3. Write a program to get the number and find the number is prime or not using Copy constructor.
4. Write a program to implement the oops inheritance.
 - a. Single Inheritance
 - b. Multiple Inheritance
 - c. Multilevel Inheritance
5. Write a program for FRIEND function.
6. To write a program to add two complex numbers using binary operator overloading
7. . To write a program for Unary operator overloading.
8. To calculate the area of circle, rectangle and triangle using function overloading.
9. Write a Program for Exception Handling Divide by zero
10. Write a Program for Exception Handling with Multiple Catch
11. To write a program to add, Subtract and multiplications of two matrix.
12. To write a program to transpose matrix
13. Write a C++ Program for Read & Write File Operation (Convert lowercase to uppercase)
14. Write a C++ Program for Static Data and Member Function
15. Write a program for string manipulation
16. To create a File and to display the contents of that file with line numbers

Year : First

ALLIED PAPER - II

Semester : II

Hours : 4

14UCTA21 -MATHEMATICAL FOUNDATIONS

Credits : 5

UNIT I

Set Theory: Relations, Equivalence Relations -Partial Order - Functions -Binary Operations - Group: Definitions and Examples - Elementary Properties.

UNIT II

Logic: Introduction -Connectives -Truth Table -Tautology Implication and Equivalence of Formulae.

UNIT III

Matrices: Elementary Transformation -Inverse of Matrix -Rank of a Matrix - Simultaneous linear Equation - Cayley Hamilton Theorem.

UNIT IV

Graph Theory: Introduction - Definition and Examples - Degrees and Sub Graphs -Matrices - Connectedness: Walks, Trails and Paths, Connectedness and Components.

UNIT V

Eulerian Graphs—Hamiltonian Graphs - Tree: Characterization of Trees, Centre of Tree.

Text Book:

1. **“Modern Algebra”**, S.Arumugam & A.Thangapandi Issac, A.Somasundram (for UNIT I,II)
2. **“Discrete Mathematics”**, Dr.M.K Venkaatraman,Dr.N.Sridharan, Dr.N.Chandresekaran (For Unit II)
3. **“Invitation to graph theory”**, S.ARamachandran,Scitech Publication, 2005,Chennai (For UNIT IV,V)

Year : First

NME PAPER - II

Semester : II

Hours : 2

14UCTN21 -INTERNET AND WEB PROGRAMMING

Credits : 2

UNIT I

Introduction to HTML : History of HTML - Structured of a HTML Program - HEAD and BODY Tags -Title Tag - Paragraph Tag -Heading Tag (H1 to H6) - Formatting Tags :Bold Tag - Italic Tag -Underline Tag - Strike Thru Tag -Subscript Tag - Super Script Tag.

UNIT II

Lists: Ordered List and Unordered List -Heading in a List -Nested Lists - Marquee Tag - Break Tag -Horizontal Ruler Tag -Font Tag - Data Definition Tag.

UNIT III

Tables : Table Building Tags and Attributes of Table - TABLE Tag - Table Header Tag - Table Row Tag - Table Data Tag -Row Span -Column Span -Coloring Table Cells -Some Sample Tables.

UNIT IV

Links: Linking Pages Using Anchor Tag - Attributes of Anchor Tag - Image Tag and Attributes - Frame Tag and Attributes.

UNIT V

Forms: Form Tag - Input Tag Types -Text Box, Radio Button, Submit Button, Check Box, Password - Internet and Browsers - E- Mail - Sample Web Page Creation.

Text Book:

1. **“World Wide Web design with HTML”**, C.Xavier, Tata McGraw Hill, 2000.

UNIT I : CHAPTER 1,2,3

UNIT I : CHAPTER 4,5,6

UNIT III : CHAPTER 7,8

UNIT IV : CHAPTER 9,10

UNIT V : CHAPTER 11,12

Reference Book:

1. **“HTML Complete Reference”**, BPB Publications, 2nd Edition.
2. **“Web Technology a Developer's Prospective”**, N.P.Gopalan, J.Akilandeswari, PHI 2010.

Year : Second

CORE PAPER - V

Semester : III

Hours : 6

14UCT31 -FUNDAMENTALS OF DATA STRUCTURES

Credits : 4

UNIT I

Introduction to Data Structures: Need for Data Structures - Data Types - Abstract Data Types (ADT) - Definition of Data Structure - Types of Data Structures - Algorithm Analysis - Need - Benefits - Problem Solving - Categories of Problem Solving - Problem Solving Strategies - Modular Design - Bottom up Design- Top Down Design.

UNIT II

Stacks: Definition - Primitive Operations - Push - Pop -Implementation of Stack - Arrays and Linked Lists - Applications - Well Formedness of Parenthesis - Evaluation of Postfix Expressions - Conversion of Infix to Postfix Forms - Recursive Functions - Tower of Hanoi.

Queues: Definition - Primitive Operations -Insert -Delete - Implementation of Queues - Arrays and Linked Lists - Circular Queues -Dequeue.

UNIT III

Trees: Hierarchical relations - Definition - Binary Trees - Types of Binary Trees - Complete, Almost Complete and Strictly Binary Trees - Skew Trees - Representation using Arrays and Linked Lists - Binary Tree Traversals - Inorder, Preorder and Post Order Traversals - Breadth First Traversal - Expression Trees. Binary Search Trees - Binary Search - Binary Search Tree (BST) - Primitive Operations on BST - Creation - Insertion -Searching -Deletion.

UNIT IV

Sorting: Definition - Types - Bubble Sort -Insertion Sort -shell Sort -Selection Sort-Merge Sort - Quick Sort - Heap Sort - Radix Sort - Complexity of Sorting Algorithms -Comparison.

UNIT V

Graphs: Introduction -Representation of Graphs Adjacency Matrix - Adjacency Lists -Operations on Graphs -Insertion -Traversal - Breadth First Search - Depth First Search - Shortest Path - Dijkstra's algorithm -All Pairs Shortest Path - Minimum Spanning Trees -Kruskal's Algorithm - Prim's Algorithm.

Text Books:

1. A.Chitra, P.T.Rajan, "**Data Structures**", 1st Edition.Vijay Nicole Publishers, 2005

Reference:

- 1.Sartaj Sahni, "**Data Structures and Applications in C++**", MC-Graw Hill,2000
- 2.Trembley, J.P., and Sonerson , P.G., "**An Introduction to Data Structures with Applications**", 2nd Edition ,Tata McGraw Hill Publication Company Ltd ., New Delhi , 2002

Year : Second

CORE PAPER - VI

Semester : III

Hours : 6

**14UCT3P -DATA STRUCTURES AND VISUAL
PROGRAMMING LAB**

Credits : 4

Data Structures Using C++ Lab

1. Program for Linear Search
2. Program to Perform Binary search
3. Implementation of Stack operations using Array
4. Implementation of Queue operations using Linked list
5. Program for Implementing the Following
 - a. Bubble sort
 - b. Insertion sort
 - c. Selection sort
 - d. Merge sort
6. Singly linked list Implementation
7. Sparse matrix Implementation (addition, subtraction)
8. Binary tree traversal (pre order, post order, in order)
9. Graph traversal(BFS,DFS)

Visual Programming Lab

1. Designing of a Calculator.
2. Design a Number puzzle and picture puzzle
3. Using file .directory, drive list boxes, to load a text file into a rich text box.
4. Design a text editor using rich text box.
5. Functions of common dialogue box (open, save, color).
6. Design a screen saver.
7. Animation of picture.
8. Use list box, combo box to change the font, font size of the given text.
9. Display a pop up menu in the form when you click the right mouse button.
10. Database access using DAO, ADO, ODBC.

Year : Second

ALLIED PAPER - III

Semester : III

Hours : 6

14UCTA31 -RESOURCE MANAGEMENT TECHNIQUES

Credits : 4

UNIT I

Operations Research -Nature and Features of Operations Research -Advantages and Limitations
Operations Research - Linear Programming Problem (LPP) - Mathematical Formulation of the Problem -Graphical Solution of LPP.

UNIT II

General LPP -Canonical and Standard Forms of LPP -The Computational Procedure –Simplex Method - Two Phase Simplex Method.

UNIT III

Transportation Problem -Introduction -LPP Form of Transportation Problem -Solutions of a Transportation Problem - Finding Initial BFS - NWC rule -LCM - VAM (Balanced Only).
Assignment Problem -Introduction -Mathematical Form of Assignment Problem -Hungarian Assignment Method (Balanced Only).

UNIT IV

Sequencing Problems: Introduction -Processing of n Jobs through Two Machines -Processing of n Jobs Through k Machines - Replacement Problem: Introduction -Replacement of Equipment / Asset that Deteriorates Gradually -Replacement Policy when Value of Money Changes with Time.

UNIT V

Network Scheduling by PERT / CPM -Basic Concept -Construction of Networks -Critical Path Analysis -Probability Considerations- in PERT -Comparison of PERT and CPM.

Text Book:

1. Kanti Swarup, P.K. Gupta and Man Mohan, “**Operations Research**”, Sultan Chand and Sons Publishers, New Delhi, 1992.

Unit I	: Chapters 1 & 2, Chapter 3 (3.1 -3.3)
Unit II	: Chapter 3 (3.4, 3.5), Chapter 4 (4.1- 4.4,4.7)
Unit III	: Chapter 10 (10.1, 10.2, 10.8, 10.9,10.13), Chapter 11 (11.1 -11.4)
Unit IV	: Chapter 12 (12.1 -12.5), Chapter 18 (18.1, 18.2, 18.2.1, 18.2.2)
Unit V	: Chapters 25(25.1-25.7)

References:

1. “**Operation Research An Introduction**”, Taha .H.A, 7th edition, Pearson education,2004

Year : Second

SKILLBASED PAPER - I

Semester : III

Hours : 2

14UCTS31 -PC HARDWARE LAB

Credits : 2

Digital Electronics

1. Operations of basic logic gates
 - a. AND Gate
 - b. OR Gate
 - c. NOT Gate
2. .Universal Gates
 - a. NAND Gate
 - b. NOR Gate
3. Combinational Gates
 - a. X-OR Gate
 - b. X-NOR Gate

Pc Maintenance

1. Identifying external parts, Cards, Ports and Interfacing.
2. Preventive of PC maintenance, Hard disk partition, and understanding BIOS
3. Installing OS, system Utilities, Software and anti virus - Software's
4. Understanding Control panel settings
5. Working with backups and archival utilities

Year : Second

CORE PAPER - VII

Semester : IV

Hours : 6

14UCTC41 -RELATIONAL DATABASE MANAGEMENT
SYSTEM

Credits : 4

UNIT I

Data and Information Process: Introduction - Definition of Information - Quality of Information - Information Processing - Integrated Management Information - Information as the Competitive Weapon. Secondary Storage Devices: Advantages - Magnetic Tapes - Magnetic Disks - Optical Disks - Magneto - Optical Drives - File Organization and File Structure - Operations on Files - File Storage Organization - Storage Media - File Structure - Record Types.

UNIT II

Introduction to DBMS: Introduction - Characteristics of Data - Database Management System- Types of DBMS Software Development Life Cycle: Introduction to SDLC. Database Development Life Cycle: A relational Approach to Database Design. Introduction to RDBMS: RDBMS Terminology - The Relational Data Structure - Relational Data Integrity- Relational Data Manipulation - CODD's Rules.

UNIT III

ER Modeling and Normalization: Introduction - Components of ER Model - ER Modeling Symbols. Enhanced Entity Relationship Model: Enhanced Entity Relational Model - Super Class and Sub Class Entity Types - Attribute Inheritance -Specialization - Generalization- Categorization. Data Normalization: 1NF, 2NF, 3NF-BCNF-4NF and 5NF. Domain Key Normal Form - De-Normalization

UNIT IV

Relational Algebra and Relational Calculus: Relational Algebra - Relational Algebraic Operations - Relational Calculus - Tuple Relational Calculus - Domain Relational Calculus. Introduction to Structured Query Language -Characteristics -Advantage - SQL Data Types and Literals - Types SQL Commands - SQL Operators: Arithmetic Operator - Comparison Operator - Logical and Set Operators - Operator Precedence.

UNIT V

Tables, Queries and Sub Queries and Aggregate Function: Tables -Views -Indexes - Nulls in Action. Queries - Sub Queries - Aggregate Function - Insert, Update, Delete Operations -Cursors - Cursor Operations - Cursor Positions. Join and Unions.

Text Book:

1. **“Database Management Systems”**, Alexis Leon, Mathews Leon ,Leon Vikas.
Unit I Chapters: 1, 2, 3 Unit IV Chapters: 12and14.
Unit II Chapters: 5, 6, 7 Unit V Chapters: 15to 21
Unit III Chapters 9, 10, 11.

Reference :

1. **“Database Systems Using Oracle”** -Nilesh Shah, 2nd edition, PHI.
2. **“Database system concepts”** –Abraham, Silberschatz, Henry.F.Korth and S.sudarshan. 5th edition -TMH

Year : Second

CORE PAPER - VIII

Semester : IV

Hours : 6

**14UCTC4P -RELATIONAL DATABASE MANAGEMENT
SYSTEM LAB**

Credits : 4

1. Data Definition Language Statements
 - a. Without constraint
 - b. With constraint
2. Data Manipulation Language Statements (insert, update, select, delete and truncate)
3. a) Transaction Control Statements(commit, save point, rollback)
b) Data Control Statement (grant and revoke)
4. Data Projection Statements(multi column, alias name, arithmetic operations, distinct record, concatenation, where clause)
5. Data Selection Statements(between.. and, in, not in, like, relational operator, logical operators)
6. Aggregate Functions(count, maximum, minimum, sum, average, order by, group by, having)
7. Join Queries(inner joins, outer joins(left, right, full), equi-join, non-equi join, self-join and Cartesian join or cross-join)
8. Sub-queries(in, not in, some, any, all, exists, not exists)
9. Set Operations(union, union all, intersect, minus)
10. Database Objects(Synonym, Sequences, Views, Index)
11. Cursors
12. a) Functions
b) Procedures
13. Triggers
14. Exceptions
15. Packages

Year : Second

ALLIED PAPER - IV

Semester : IV

Hours : 4

14UCTA41 -COMPUTER ORIENTED NUMERICAL
METHODS

Credits : 5

UNIT I

Computer Arithmetic: Introduction - Floating Point Representation of Numbers - Arithmetic Operations with Normalized Floating Point Numbers - Consequences of Normalized Floating Point Representation of Numbers - Pitfalls in Computing - Errors in Numbers

UNIT II

Algebraic and Transcendental Equations: Errors in Numerical Computations - Iteration Method - Bisection Method - Regular - False Position - Newton-Raphson Method. Simultaneous Equations - Back Substitution - Gauss Elimination Method and Gauss - Jordan Methods - Iterative Methods: Gauss Jacobi and Gauss - Seidel Methods - Calculation of Inverse of a Matrix - Curve Fitting: Method of Least Squares

UNIT III

Interpolation and Approximation: Newton's Interpolation Formula - Newton's Forward Interpolation and Newton's Backward Interpolation - Central Difference Interpolation Formula - Gauss Forward, Gauss Backward and Sterling's Formula - Lagrange's Interpolation Formula.

UNIT IV

Numerical Differentiation and Integration: Derivatives and Problems using Newton's Forward Difference, Backward Difference and Central Difference Formulas - Maxima and Minima of the Interpolating Polynomial Numerical Integration - Trapezoidal - Simpson's 1/3 Rule and Simpson's 3/8 Rule.

UNIT V

Numerical Solutions of Ordinary Differential Equations: Taylor Series Method - Picard's Method - Euler and Modified Euler Methods - First, Second, Third and fourth Order Runge - Kutta Methods.

Text Books:

1. "Computer Oriented Numerical Methods", V.Rajaraman 3rd edition
2. "Numerical methods", S.Arumugam, A.Thangapandi ISAAC and A.Somasundaram 2nd edition.

Unit I(CONM)	Chapter 2.1 to 2.7.
Unit II(Numerical Methods)	Chapter 3.0 to 3.5. Chapter 4.0 to 4.5 Chapter 2.4.
Unit III	Chapter 7.0 to 7.3
Unit IV	Chapter 8.0 to 8.5
Unit V	Chapter 10.0 to 10.4

Reference

1. "Numerical Methods Problems and Solutions", M.K.Jain, S.R.K Iyengar and R.K.Jain
2. "Numerical Methods" (Revised Edition), Kandasamy, P.Thilagavathy, K. Gunavathy, S.Chand and Company, New Delhi, 2003
3. "Introductory Methods of Numerical Anaysis", S.S.Saatry, 3rd edition, Printice Hall of India Pvt.Ltd., New Delhi,1999

Year : Second

SKILLBASED PAPER - II

Semester : IV

Hours : 2

14UCTS41 -MULTIMEDIA LAB

Credits : 2

Photoshop

1. (i) Handling different file formats and interchanging them, changing the resolution, color, grayscales and size of the images
(ii) Using brushes and creating multicolor real life images
2. Cropping, rotating, overlapping, superimposing, pasting photos on a page
3. Creation of a single image from selected portions of many images
4. Developing a commercial brochure with background tints
5. Creating an image with multi-layers of images and texts.
6. Applying masks and filtering on images

Flash

Develop an image(s) and do the following.

1. Basic Drawing and Painting.
2. Working with Strokes and Fills
3. Creating Custom Colors, Gradients, and Line Styles Transforming and Grouping Objects
4. Creating and Managing Multiple Layers
5. Converting Text into Shapes
6. Animate using motion, shape, Twining, and actions

Year : Third

CORE PAPER - IX

Semester : V

Hours : 6

14UCTC51 -JAVA PROGRAMMING

Credits : 4

UNIT I

Fundamentals of Object Oriented Programming - Object - Oriented Paradigm - Basic Concepts of Object - Oriented Programming - Benefits of Object - Oriented Programming - Application of Object - Oriented Programming. Java Evolution: History - Features - How Java Differs from C and C++ - Java and Internet - Java and WWW - Web Browsers. Overview of Java: Simple Java Program - Structure - Java Tokens - Statements - Java Virtual Machine.

UNIT II

Constants, Variables, Data Types - Operators and Expressions -Decision Making and Branching: If, If ..Else, Nested If, Switch, ? : Operator - Decision Making and Looping: While, do, For - Jumps in Loops - Labeled Loops - Classes, Objects and Methods.

UNIT III

Arrays, Strings and Vectors - Interfaces: Multiple Inheritance - Packages: Putting Classes Together - Multithreaded Programming.

UNIT IV

Managing Errors and Exceptions - Applet Programming - Graphics Programming.

UNIT V

Managing Input / Output Files in Java : Concepts of Streams- Stream Classes - Byte Stream Classes - Character Stream Classes - Using Streams - I/O Classes - File Class - I/O Exceptions - CREATION of files - Reading / Writing Characters, Byte-Handling Primitive Data Types - Random Access Files.

Textbooks:

1. “**Programming With Java -A Primer**”, E. Balagurusamy, 3rd Edition, TMH.

Reference:

1. “**The Complete Reference JAVA 2**”, Patrick Naughton, 3rd Edition, TMH Publ.
2. “**Programming With JAVA - A Primer**”, E. Balagurusamy, 3rd Edition, TMH.

Year : Third

CORE PAPER - X

Semester : V

Hours : 6

14UCTC52 -OPERATING SYSTEMS

Credits : 4

UNIT I

Introduction: Computer System Organization - System Architectures - OS Structure - Operations - Process Management - Memory Management - Storage Management: OS Services and Interface - System Calls - Types - System Programs.

UNIT II

Process Concept: Process Scheduling - Operations on Process - Interposes Communications. Multithreaded Programming: Models -Thread Issues. Process Scheduling: Basic Concepts - Criteria - Algorithms - Multiprocessor Scheduling - Thread Scheduling.

UNIT III

Synchronization: The Critical Section Problem - Semaphores. Deadlocks: System Model - Deadlock Charecteration - Methods of Handling Deadlocks - Prevention - Avoidance - Detection and Recovery from Deadlock.

UNIT IV

Memory Management: Swapping -Contiguous Memory Allocation - Paging -Structure of the Page Table -Segmentation File System: File Concept -Access Methods -Directory Structure -File System Mounting -File Sharing -Protection.

UNIT V

Secondary Storage Structure: Disk Structure - Disk Attachment - Disk Scheduling - Disk Management - Swap Space Management. Case Study: Linux Systems.

Text book:

1. **“Operating System Principles”**, Abraham Silberschatz, Peter Baer Galvin, Greg Gagine, 7th edition , Jhon Wiley & Sonsing.

UNIT I	CHAPTER	1.1 to 1.8, 2.1 to 2.5
UNIT II	CHAPTER	3.1 to 3.4, 4.1,4.2,4.4,5.1 to 5.5
UNIT III	CHAPTER	6.1 to 6.3,6.5, 7.1 to 7.7
UNIT IV	CHAPTER	8.1 to 8.6, 10.1 to 10.6
UNIT V	CHAPTER	12.1 to 12.6, 21.1 to 21.10

Year : Third

CORE PAPER - XI

Semester : V

Hours : 5

14UCTC5P - JAVA PROGRAMMING LAB

Credits : 4

1. Write a Java Applications to extract a portion of a character string and print the extracted string.
2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.
3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.
4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.
5. Write a Java Program to draw several shapes in the created windows.
6. Write a Java Program to create a frame with four text fields as name, street, city and pin code with suitable tables. Also add a button called “my details”, When the button is clicked its corresponding values are to be appeared in the text fields.
7. Write a Java Program to demonstrate the Multiple Selection List-box.
8. Write a Java Program to create a frame with three text fields for name, age and qualification and a text field for multiple lines for address.
9. Write a Java Program to create Menu Bars and pull down menus.
10. Write a Java Program to create frames which respond to the mouse clicks. For each events with mouse such as mouse up, mouse down, etc., the corresponding message to be displayed.
11. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.
12. Write a Java Program which open an existing file and append text to that file.

Year : Third

CORE PAPER - XII

Semester : V

Hours : 5

14UCTC5Q - WEB DESIGN LAB

Credits : 3

HTML

1. Design the website using various HTML tags.
2. Create a page for Job vacancy using HTML tags.

JavaScript

3. Write a HTML program using JavaScript and apply some Mathematical functions.
4. Write a HTML program using JavaScript and apply various built-in functions and user-defined functions.
5. Write a HTML program using JavaScript for Hospital Management System.

VBScript

6. Write a HTML program using VBScript and apply the Form validation.

XML

7. Write a XML program to maintain the student database.
8. Write the XML program to implement the Internal DTD and External DTD.

ASP

9. Develop the webpage using ASP.
10. Develop the Browser capability Components using ASP.

Year : Third

ELECTIVE PAPER - I

Semester : V

Hours : 4

14UCTE51 - WEB TECHNOLOGY

Credits : 5

UNIT I

Fundamentals: A Brief Introduction to the Internet - Internet Services and Accessibility - Uses of the Internet - Protocols - Web Concepts - Internet Standards - Internet Protocols - Host Names - Internet Applications and Application Protocols.

UNIT II

Introduction to HTML: SGML - Outline of HTML Document - Head Section - Body Section - HTML Forms. JavaScript: Introduction - Language Elements - Objects of JavaScript - Other Objects - Arrays - Worked Examples.

UNIT III

VBScript: Introduction - Comments - Variables, Array Variables - Operators - Procedures - Conditional Statements - Looping Constructs - Objects and VBScript - Cookies. DHTML: Introduction - Cascading Style Sheets(CSS) - DHTML Document Object Model and Collections - Event Handling - Filters and Transition - Data Binding

UNIT IV

XML: Introduction - HTML versus XML - Syntax - XML Attributes - XML Validation - XML DTD - Building Blocks of XML Documents - DTD Elements - DTD Attributes - DTD Entities - DTD Validation - XSL - XSL Transformation - XML Name Spaces - XML Schema.

UNIT V

JSP: Advantages of JSP - Developing a JSP Program - Components of JSP - Reading Request Information - Retrieving a Data Posted From HTML File to a JSP File - JSP Sessions - Cookies - Disabling Sessions. ASP: Introduction - Advantages - Processing ASP Scripts with Forms - Variables and Constructs - Sub Routines - Include / Virtual - ASP Cookies - ASP Objects - Connecting to Data with ASP.

Text Books:

1. **“Web Technology A Developer's Prospective”**, N.P.Gopalan, J.Akilandeswari, PHI 2010

UNIT I :	CHAPTER	1,2
UNIT I :	CHAPTER	4,5
UNIT III :	CHAPTER	6,7
UNIT IV :	CHAPTER	8
UNIT V :	CHAPTER	11,12

Reference Book :

1. **“Web Design -A Beginners Guide”**, Wendy Willard, Tata McGraw Hill.
2. **“World Wide Web Designing”**, C.Xavier, Tata McGraw Hill, 2000.

Year : Third

ELECTIVE PAPER - I

Semester : V

Hours : 4

14UCTE52 - COMPUTER GRAPHICS

Credits : 5

UNIT I

Output Primitives: Points and Lines -Line-Drawing algorithms -Loading frame Buffer -Line function -Circle-Generating algorithms -Ellipse-generating algorithms. Attributes of Output Primitives: Line Attributes -Curve attributes -Color and Grayscale Levels -Area-fill attributes -Character Attributes.

UNIT II

2D Geometric Transformations: Basic Transformations -Matrix Representations -Composite Transformations -Other Transformations. 2D Viewing: The Viewing Pipeline -Viewing Co-ordinate Reference Frame -Window-to-Viewport Co-ordinate Transformation -2D Viewing Functions -Clipping Operations -Point, Line, Polygon, Curve, Text and Exterior clippings.

UNIT III

3D Concepts: 3D Display Methods -3D Graphics Packages. 3D Object Representations: Polygon Surfaces -Curved lines and Surfaces -Quadric Surfaces -Super Quadrics -Blobby Objects -Spline representations. 3D Geometric Modeling and Transformations: Translation -Rotation -Scaling -Other Transformations -Composite Transformations -3D Transformation functions..

UNIT IV

Visible-Surface Detection Methods: Classification of Visible-Surface algorithms -Back-Face Detection -Depth-Buffer Method -A-Buffer method- Scan-Line Method -Depth- Sorting Method -BSP-Tree Method -Area-Subdivision Method -Octree Methods -Ray- Casting Methods -Curved Surfaces -Wire Frame Methods -Visibility-Detection Functions.

UNIT V

Illumination Models: Properties of Light -Standard Primaries and the Chromaticity Diagram -Intuitive color Concepts -RGB Color Model -YIQ Color Model -CMY Color Model -HSV Color Model -Conversion between HSV and RGB models -Color selection and Applications.

Text books:

1. “Computer Graphics”, Donald Hearn, M. Pauline Baker, 2nd edition, PHI.

UNIT I : CHAPTER 3.1 -3.6,4.1-4.5

UNIT II : CHAPTER 5.1-5.4,6.1-6.11

UNIT III : CHAPTER 9.1,9.2,10.1- 10.6,11.1-11.6

UNIT IV : CHAPTER 13

UNIT V : CHAPTER 15

Reference books:

1. “Principles of Interactive Computer Graphics”, William M. Newman & Robert F. Sproull, 2007, TMH.

Year : Third

ELECTIVE PAPER - I

Semester : V

Hours : 4

14UCTE53 - EMBEDDED SYSTEMS

Credits : 5

UNIT I

Introduction to Embedded System: An Embedded System -Processor in the System -Other Hardware units -Software embedded into a system -Example of embedded system. Processor and Memory organization - Processor selection - Memory selection.

UNIT II

Devices and Buses for Device Networks: I/O type and Examples -Timer and Counting Devices - Serial Bus Communication Protocols. Device Drivers and Interrupts Servicing Mechanism: Interrupt Servicing Mechanism -Multiple Interrupts - Context and the Periods for Context-Switching, Interrupt Latency and Dead-line.

UNIT III

Programming concepts and Embedded Programming in C and C++: Software Programming in ALP and C -C Program Elements -Header and Source Files and Processor Directives - Macros and Functions -Data Types -Data Structures -Modifiers -Statements -Loops and Pointers.

UNIT IV

Program Modeling Concepts: Program Model -DFG Models - Programming Models for Event Controlled Program Flow - Modeling of Multiprocessor - UML Modeling. Interprocess Communication and Synchronization of Processes, Tasks and Threads: Multiple Processor - Multiple Threads -Task, Task States and Data -Concepts of Semaphores - Interprocess Communication - Signal Functions -Semaphores Function.

UNIT V

Real time Operating Systems: Operating System Services -Process Management -Timer Function -Event Function -Memory Function -Device, File and I/O Subsystem -Interrupt Routine in RTOS Environment and Handling of Interrupt Source Calls - Real Time and Embedded Operating systems.

Text Book:

1. Raj Kamal, “**Embedded Systems Architecture, Programming and Design**”, 2nd edition, Tata McGraw Hill, 2008.
Unit 1 Chapters: 1.1 to 1.5, 2.4, 2.8 & 2.9.
Unit 2 Chapters: 3.1, 3.6 & 3.10, 4.4 to 4.6.
Unit 3 Chapters: 5.1 to 5.4.
Unit 4 Chapters: 6.1 to 6.5, 7.1 to 7.5 & 7.7 to 7.11.
Unit 5 Chapters: 8.1 to 8.8.

Reference Book:

1. Tammy Noergaar, “**Embedded Systems Architecture**”, A Comprehensive Guide for Engineers and Programmers, Elsevier, 2005.

Year : Third

SKILLBASED PAPER - III

Semester : V

Hours : 2

14UCTS51 – BIO METRICS

Credits : 2

UNIT I

Authentication And Biometrics Overview: How Authentication Technologies Work -Passwords And Pins -Cards And Tokens -Multifactor Authentication -Subverting The System -Deploying The Authentication System -Economics Of Authentication, How Biometrics Work: History And Uses Of Biometrics -Key Elements Of Biometric System -User Training.

UNIT II

Types Of Biometrics: Finger Print a Hand Geometric: History Of Finger Prints -Finger Print Cards -Manual Matching Of Finger Prints -First And Second Age Of Authentication -Template Extraction And Size -Accuracy And Vulnerabilities. Hand Geometry: History of Hand Geometry - The Technology -Uses of Hand Geometry - Accuracy and Vulnerabilities.

UNIT III

Types of Biometrics: Facial and Voice Recognition: Applications of Facial Recognition -Facial Recognition Technology -Research and Other Related Technologies. Voice Verification: History And Applications -How Speaker Recognition Works Eye Biometrics And Retina Scanning: Iris Scanning -Retina Scanning. Signature Recognition and Keystroke Dynamics:

UNIT IV

Types Of Biometrics: Esoteric Biometrics: Vein Pattern -Facial Thermography -DNA -Sweat Pores -Hand Grip -Fingernail Bed -Body Odor -Ear -Gait- Skin Luminescence -Brain Wave Pattern -Footprint Foot Dynamics -The Future.

UNIT V

Biometrics In Large Scale System: Documenting And Measurement Process -Specifying The System -Sample Afis Rfp Overview Biometrics Testing And Evolution: Who Test And Who Benefit -The Three Bears Principle -Procedures For Testing -Types Of Testing.

Text Book:

1. **“Biometrics “-** The Ultimate Reference By John D.Woodward, Nicholas M.Orlans, Peter T.Higgins , Dreamtech Publishing.

Unit I Chapters 1, 2

Unit II Chapter 3

Unit III Chapters 4, 5, 6

Unit IV Chapter 7

Unit V Chapters 9, 11

Reference:

1. **“Biometrics”:** Personal Identification In Networked Society Edited By Anil K. Jain, Ruud Bolle, Sharath Pankanti,, Kluwer Academic Publishers
2. **“Handbook of Biometrics”** By Anil K. Jain, Patrick Flynn, Arun A. Of Springer Science & Business Media

Year : Third

ENVIRONMENTAL STUDIES

Semester : V

Hours : 2

14UEVS51 – ENVIRONMENTAL STUDIES

Credits : 2

UNIT I

Earth and its Environment:

- a) Earth- Formation and Evolution of Earth over time-Structure of Earth and its components: Atmosphere, Lithosphere, Hydrosphere, and Biosphere.
- b) Resources -Renewable resources

UNIT II

Ecology and Ecosystem Concepts:

- a) Ecology: Definition -Ecosystem: Definition - Structure and Function- Energy flow- Food Chain and food web- One example for an eco system
- b) Biogeochemical cycles- Nitrogen, Carbon, Phosphorus, Water

UNIT III

Biodiversity and India:

- a) Introduction -Definition- Values of Biodiversity- Threats to Biodiversity - Conservation of Biodiversity
- b) Biodiversity of India - As a mega diversity nation –Bio geographical distribution- Hotspots of biodiversity- National Biodiversity Conservation Board and its function

UNIT IV

Pollution and Global Issues:

- a) Definition, Causes, Effects and Control Measures of Air, Water, Soil, Marine, Noise, Thermal and Nuclear pollution.
- b) Global issues: Global Warming and Ozone Layer Depletion

UNIT V

Development and Disaster Management:

- a) Sustainable Development - Sustainable Agriculture- Organic Farming. Irrigation -Water Harvesting and Water Recycling- Cyber Waste and Management
- b) Disaster Management -Flood and Drought-Earthquake and Tsunami - Landslides and Avalanches - Cyclones and Hurricanes - Precautions, Warnings, Rescue, Rehabilitation

Text Book:

1. “Environmental studies”, Dr.Kumaraguru, Mr. Allah baks, Mku Publications.

Year : Third

CORE PAPER - XIV

Semester : VI

Hours : 6

14UCTC61 – SOFTWARE ENGINEERING

Credits : 5

UNIT I

Introduction to Software Engineering: Definitions, Size factors - Quality and Productivity Factors -Managerial Issues -Planning a Software Project: Defining the Problem -Developing a Solution Strategy -Planning the Development Process -Planning an Organizational Structure.

UNIT II

Software Cost Estimation: Software Cost Factors -Software Cost Estimation Techniques - Staffing Level Estimation -Estimating Software Maintenance Costs -Software Requirements Definition: The Software Requirements Specification -Formal Specification Techniques -State Oriented Notations.

UNIT III

Software Design: Fundamental design concepts -Modules and Modularization criteria -Design Notations -Design Techniques.

UNIT IV

Implementation Issues: Structured coding techniques -Coding Style -Modern programming language Features: Type checking -User-defined data types -Data abstraction -Scoping Rules.

UNIT V

Verification and Validation Techniques: Quality Assurance -Walkthroughs and Inspections -Unit Testing and Debugging -System Testing -Formal Verification -Software Maintenance: Enhancing Maintainability during development -Managerial Aspects of Software maintenance.

Text Book:

1. Richard E.Fairley, “**Software Engineering Concepts**”, Tata McGraw Hill, 30th Reprint, 2008.

Unit 1 Chapter: 1, 1.1 to 1.4, 2.1 to 2.4.

Unit 2 Chapter: 3.1 to 3.4, 4.1 to 4.2.

Unit 3 Chapter: 5.1 to 5.4.

Unit 4 Chapter: 6.1 to 6.2, 7.1 & 7.3 to 7.5.

Unit 5 Chapter: 8.1 to 8.2, 8.5 to 8.7, 9.1 to 9.2.

Reference:

1. Roger S. Pressman, “**Software Engineering: A Practitioner’s Approach**”, TMH, 4th edition.

Year : Third

CORE PAPER - XIV

Semester : VI

Hours : 6

14UCTC6P – DOT NET PROGRAMMING LAB

Credits : 5

HTML

1. To Write a Time Table Program by using Html Tags.
2. To Create a E-Mail Registration Form by using Html Tags.

VB DOT NET

3. To Write a Constructor & Destructor Program by using Console Application in Vb.net.
4. To Write a Inheritance Program by using Console Application in Vb.net.
5. To Create a Procedure by using Windows Application in Vb.net.
6. To Create a Validation Form by using Windows Application in Vb.net

ASP DOT NET

7. To Write a Validation Control Program by using Asp.net.
8. To Create a Calendar Control by using Asp.net
9. To Create a Ad rotator Control by using Asp.net.
10. To Create Web Service by using Asp.net.

C# DOT NET

11. To write a Program to Print Fibonacci Numbers below 100 in C#.net
12. To Write a Program to Reverse a String in C#.net
13. To Write a Program to find a LCM of 2 Numbers in C#.net
14. To Write a Program that implements Bubble Sort in C#.net.

Year : Third

ELECTIVE PAPER - II

Semester : VI

Hours : 5

14UCTE61 – COMPUTER NETWORKS

Credits : 5

UNIT I

Introduction: Business Applications -Social Issues -Network Hardware -Network Software - Protocol Hierarchies -Connection-Oriented Versus Connectionless Service -The OSI Reference Models -The TCP/IP Reference Models -Comparison of the OSI and TCP/IP Reference Models.

UNIT II

The Physical Layer: Guided Transmission Media -Wireless Transmission -The Mobile Telephone System.

UNIT III

The Data Link Layer: Data Link Layer Design Issues -Error Detection and Correction -Sliding Window Protocols -Multiple Access Protocols -ALOHA, CSMA, Collision free Protocols.

UNIT IV

The Network Layer: Network Layer Design Issues -Routing Algorithms -Shortest path, Flooding, Hierarchical and Broadcast.

The Transport Layer: The Transport Service -Services Provided to the Upper Layers -Transport Service Primitives - Elements of Transport Protocols.

UNIT V

The Application Layer: DNS -The Domain Name System -Electronic Mail -The World Wide Web -Architectural Overview -HTTP-The Hypertext Transfer Protocol

Text Book:

- 1.Andrew S.Tanenbaum and David J.Wetherall, “**Computer Networks**”, 5th Edition, Pearson Educatuion.

Unit I -Chapter 1.1.1, 1.1.4, 1.2, 1.3.1, 1.3.3, 1.4.1, 1.4.2, 1.4.4

Unit II -Chapter 2.2, 2.3, 2.7

Unit III -Chapter 3.1, 3.2, 3.4, 4.2.1, 4.2.2, 4.2.3

Unit IV -Chapter 5.1, 5.2.2, 5.2.3, 5.2.6, 5.2.7, 6.1.1, 6.1.2, 6.2

Unit V -Chapter 7.1, 7.2.1, 7.2.3, 7.2.4, 7.2.5, 7.3.1, 7.3.4

Reference:

- 1.William Stallings, “**Data and Computer Communications**”,Prentice Hall of India,New Delhi, 2002.
- 2.“**Data Communications and Networking**” -Behrouzan A.Forouzan, TMH, 2005

Year : Third

ELECTIVE PAPER - II

Semester : VI

Hours : 5

**14UCTE62 – ARTIFICIAL INTELLIGENCE AND EXPERT
SYSTEMS**

Credits : 5

UNIT I

Introduction: AI Problems - AI techniques - Criteria for success. Problems, Problem Spaces, Search: State space search - Production Systems - Problem Characteristics - Issues in design of Search.

UNIT II

Heuristic Search Techniques: Generate and Test - Hill Climbing - Best-First, Problem Reduction, Constraint Satisfaction, Means-end analysis.

UNIT III

Knowledge Representation Issues: Representations and Mappings - Approaches to Knowledge Representations - Issues in Knowledge Representations - Frame Problem.

UNIT IV

Using Predicate Logic: Representing Simple Facts in Logic - Representing Instance and Is-a Relationships - Computable functions and Predicates - Resolution - Natural Deduction.

UNIT V

Representing Knowledge Using Rules: Procedural Vs Declarative Knowledge - Logic Programming - Forward Vs Backward Reasoning - Matching - Control Knowledge

Expert systems: Representing and using Domain Knowledge - Expert System Shells -Explanation - Knowledge Acquisition.

Text Book:

1. Elaine rich and Kelvin Knight, “**Artificial Intelligence** “, Tata McGrawhill Publication, 2nd Edition, 1991.

Unit I Chapters 1, 2

Unit II Chapter 3

Unit III Chapter 4

Unit IV Chapter 5

Unit V Chapters 6, 20

Reference Book:

1. “**Artificial Intelligence a modern Approach** “- Stuart Russell & Peter Norvig, 2nd Edition Pearson Education.

Year : Third

ELECTIVE PAPER - II

Semester : VI

Hours : 5

14UCTE63 – DATA MINING

Credits : 5

UNIT I

Introduction -Data Mining As A Subject -What Is Data Warehouse? Definition -Multi Dimensional Data Model -OLAP Operations- Warehouse Schema -Data Warehousing Architecture -Ware House Server -Metadata -OLAP Engine -Data Warehouse Backend Process .

UNIT II

What Is Data Mining? -Definitions- KDD Vs. Data Mining , DBMS Vs DM -Other Related Areas-DM Techniques -DM Application Areas- What Is An Association Rule? -Methods To Discover Association Rules- A Priori Algorithm -Partition Algorithm -Pincer Search Algorithm - Dynamic Itemset Counting Algorithm- Rapid Association Rule Mining - Eclat And Declat.

UNIT III

Clustering Paradigms -Partitioning Algorithms -K-Medoid Algorithms -CLARA –CLARANS- Hierarchical Clustering- CUBE -Categorical Clustering Algorithms -STIRR -ROCK

UNIT IV

Web Mining -Web Content Mining -Web Structure Mining -Web Usage Mining -Text Mining - Unstructured Text -Episode Rule Discovery For Texts.

UNIT V

What Is Temporal Data Mining? Temporal Association Rules -Sequence Mining -The Gsp Algorithm- Spatial Mining -Spatial Mining Tasks -Spatial Clustering.

Text Book:

1. **“Data Mining Techniques”** -Arun K Pujari, University Press, 2001.
 - Unit I Chapter 1.1, 1.2, 2.1 to 2.11
 - Unit II Chapter 3.1 to 3.7, 3.10, 4.1 to 4.7, 4.9, 4.10
 - Unit III Chapter 5.1 to 5.7, 5.10, 5.11 to 5.13
 - Unit IV Chapter 9.1 to 9.8
 - Unit V Chapter 10.1 to 10.5, 10.12-10.14

Reference:

1. J. Han and M. Kamber. **“Data Mining: Concepts and Techniques”**, 2nd Ed. Morgan Kaufman. 2006.
2. M. H. Dunham. **“Data Mining: Introductory and Advanced Topics.”** Pearson Education. 2001.

Year : Third

SKILLBASED PAPER - IV

Semester : VI

Hours : 2

14UCTS61 - NUMERICAL APTITUDES

Credits : 2

UNIT I

Arithmetical ability- Number –HCF and LCF- Decimal Functions - Simplifications- Square root and Cube roots.

UNIT II

Average –Problem on Number - Problem of Ages - Percentage.

UNIT III

Time and work –Time and Distance -Problem on Times - Simple Interest –Compound Interest.

UNIT IV

Area-Volume & Surface Area -Calendar - Clock.

UNIT V

Probability -Odd man out and Series –Tabularation.

Text Book:

1. **“Quantitative Aptitude”** -R.S. Aggarwal -S. Chand and Company ltd, 7th edition 2008

UNIT I Chapter 1, 2,3,4,5

UNIT II Chapter 6, 7, 8, 10

UNIT III Chapter 15, 17,18,21,22

UNIT IV Chapter 24,25,27,28

UNIT V Chapter 31, 35, 36

Reference:

1. **“Quantitative Aptitude”** –GUHA 2nd edition.

Year : Third

SKILLBASED PAPER - V

Semester : VI

Hours : 2

14UCTS62 - SYSTEM SOFTWARE

Credits : 2

UNIT I

Introduction: System software and Machine Architecture -The Simplified Instructional Computer (SIC) Machine Architecture -Complex Instruction Set Computers(CISC) Data and Instructions Formats -Addressing Modes -RISC Machines Instruction Sets -I/O and Programming.

UNIT II

Assemblers: Basic assembler Functions -A Simple SIC Assembler -Assembler Algorithm and Data structures -Machine Dependent Assembler Features -Instruction Formats and Addressing Modes -Program Relocation.

UNIT III

Machine Independent Assembler Features: Literals -Symbols -Defining Statements -Expressions -One pass Assembler and Multipass Assemblers - Implementation example - MASM Assembler SPARC Assembler.

UNIT IV

Loaders and Linkers: Basic Loader Functions - Design of an Absolute Loader - A Simple Bootstrap Loader - Machine dependent Loader Features - Relocation - Program Linking - Algorithm and Data Structures for Linking Loader.

UNIT V

Machine Independent Loader Features: Automatic Library Search - Loader Option - Loader Design Options - Linkage Editors - Dynamic Linking - Bootstrap Loaders - Macro processor Definition and Expansion - Algorithm and Data structure.

Text book:

1. “System Software”, A.C.Shalini SCITECH Publication (India) Pvt Ltd.

UNIT I	Chapter 1.1 - 1.26
UNIT II	Chapter 2.1 -2.22
UNIT III	Chapter 2.26 -2.61
UNIT IV	Chapter 3.1 -3.14
UNIT V	Chapter 3.17 -4.3

Reference:

1. “System Software”, J.Nithyashri, TMH Publication

Year : Third

SKILLBASED PAPER - VI

Semester : VI

Hours : 2

14UCTS63 - GRID COMPUTING

Credits : 2

UNIT I

Introduction: Early Grid Activities - Current Grid activities - An Overview of Grid Business areas - Grid Applications - Grid Infrastructure.

UNIT II

The Anatomy Of The Grid: The Concept of Virtual Organizations - Grid Architecture - Grid Architecture and Relationship to other Distributed Technologies - The Grid Computing Road map - Autonomic Computing - Business on Demand and Infrastructure Virtualization - Service-Oriented Architecture and Grid - Semantic Grids.

UNIT III

The Open Grid Services Architecture: Introduction - OGSA Architecture and Goal - OGSA Platform Components - Native Platform Services and Transport Mechanisms - OGSA Hosting Environment -Core Networking Services Transport and Security - OGSA Infrastructure - OGSA Basic Services.

UNIT IV

The Open Grid Services Infrastructure: Grid Services - Technical Details of OSGI Specification, Service Data Concepts - How to Declare service Data with Port Type - Service Data Structure - How Mutability Attributes Affect Service Data - Types of Service Data Elements and Service Data Values - Qualifying Service Data Element with Lifetime Attributes.

UNIT V

Grid Service: Naming and Change Management Recommendations - Grid Service Instance Handles, References, and Usage Models - Recommended GSR Encoding WSDL - Life Cycle of a Grid Service Instance - Service life Cycle Management using a Soft - State Approach - Grid Service Interfaces - Grid Service - Provided Service Data Query Capabilities - Grid service - Provided Service Data Update Capabilities.

Text Book:

1. Joshy Joseph, Craig Fellenstein, **“Grid Computing”**, Pearson Education, New Delhi 2004.

Unit I	Chapter 1
Unit II	Chapter 3, 4
Unit III	Chapter 6, 8
Unit IV, V	Chapter 9

References:

1. Ian Foster, Carl Kesselman, **“ The grid2 Blueprint for a new computing infrastructure”**, Morgan Kaufman, New Delhi 2004.
2. Ahmar Abbas **“Grid Computing Practical Guide to Technology and Applications”**, Delmar Thomson Learning USA 2004
3. Fran Bermn, Geoffrey Fox, Anthony Hey J G, **“Grid Computing Making the Global Infrastructure a Reality”**, Wiley USA, 2003.

Year : Third

VALUE EDUCATION

Semester : VI

Hours : 2

14UVED61 - VALUE EDUCATION

Credits : 2

UNIT I

Values and the Individual: Values -Meaning - The Significance of Values - Classification of Values - Need for Value Education - Values and the Individual: Self - discipline, Self-confidence, Self initiative, Empathy, Compassion, Forgiveness, Honesty and Courage.

UNIT II

Values and Religion: Karma Yoga in Hinduism - Love and Justice in Christianity - Brotherhood in Islam - Compassion in Buddhism - Ahimsa in Jainism and Courage in Sikhism - Need for Religious Harmony.

UNIT III

Values and Society: Definition of Society- Democracy - Secularism - Socialism - Gender Justice - Human Rights - Socio Political Awareness - Social Integration - Social Justice.

UNIT IV

Professional Values: Definition - Accountability - Willingness to Learn - Team Spirit - Competence Development - Honesty - Transparency - Respecting others- Democratic Functioning - Integrity and Commitment.

UNIT V

Role of Social Institutions in Value Formation: Social Institutions - Role of Family - Educational Institutions - Society - Peer Groups - Mass Media

Reference:

1. **“Value Education”** - Raghu Nathan N.S., margham publications
2. **“Values in Education”** -SubramanyamK., Madurai;ramana publications, 1995
3. **“Indian Social Institutions”** - Doss. A.G.,Delhi: forward publishing company, 2000
4. **“A Creative Response to Consumerism and Communalism “**- Joseph.K.P,hyderabad: national institute of Peace and value education, 2003
5. **“What Went Wrong... and Continues “**- Bedikiran, delhi:UBS Publishers and distributors pvt.ltd., 2005
6. **“Personality “**- Tagore Rabindranath, New delhi: macmillanindia ltd.
7. **“Quest for Harmony”:** An Anthology of Religions in Dialogue - Sekar, Vincent, , bangaloreclaretian publications, 2001