Mannar Thirumalai Naicker College

(An Autonomous Institution Affiliated to Madurai Kamaraj University) (Founded by the Tamilnadu Naidu Mahajana Sangam)
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DEPARTMENT OF INFORMATION TECHNOLOGY

B.Sc (IT) – SYLLABUS

(For those who joined in 2015 and after)

PRINCIPAL

Dr. S. Nehru, M.Com., M.Phil., B.L., Ph.D.

DEPARTMENT OF INFORMATION TECHNOLOGY

S.No	Department Staffs Name	Designation
1.	Mrs. V.R. Soundaram, M.C.A., M.Phil., B.Ed.,	H.O.D & Lecturer
2.	Mr. V. Arun Rajkumar, M.C.A., M.Phil.,	Lecturer
3.	Mr. P. Muthu Selvam, M.Sc., M.Phil., B.Ed.,	Lecturer
4.	Mrs. M. Saroja, M.C.A., M.Phil.,	Lecturer

SEMESTER - I

Subject Code	Title of the Paper	No. Of Courses	Hrs / Week	Credits	Maximum Marks		
					INT.	EXT.	TOT
15UTAG11	**Part I : Tamil** ,f;fhyf;ftpijAk; rpWfijAk;	1	6	3	25	75	100
15UENG11	**Part II : English** Language Through Literature –I	1	6	3	25	75	100
	Part III: Core Subject						
15UITC11	Programming in C	1	5	4	25	75	100
15UITCP1	C Programming- Lab	1	5	4	40	60	100
15UITA11	**Part IV: Allied Subject** Mathematical Foundations	1	4	4	25	75	100
15UITSP1	**Part IV : Skill Subject** Ms Office- Lab	1	2	2	40	60	100
15UEVG11	**Part IV : Mandatory** Environmental Studies	1	2	2	25	75	100

SEMESTER – II

Subject Code	Title of the Paper	No. Of Courses	Hrs / Week	Credits	Maximum Marks		
					INT.	EXT.	TOT
15UTAG21	**Part I : Tamil** ,ilf;fhy ,yf;fpaKk; GjpdKk;	1	6	3	25	75	100
15UENG21	**Part II : English** Language Through Literature –II	1	6	3	25	75	100
	Part III: Core Subject						
15UITC21	Data Structures and C++ Programming	1	5	4	25	75	100
15UITC2P	Data Structures Using C++ - Lab	1	5	4	40	60	100
	Part IV: Allied Subject						
15UITA21	Digital Principles and Applications	1	4	4	25	75	100
	Part IV : Skill Subject						
15UITSP2	Visual Programming- Lab	1	2	2	40	60	100
15UVLG21	**Part IV : Mandatory** Value Education	1	2	2	25	75	100

SEMESTER – III

Subject Code	Subjects	No. of Courses	Hrs / Week	Credits	Maximum Marks		
					INT.	EXT.	TOT
15UTAG31	**Part I :Tamil** fhg;gpa ,yf;fpaKk; ehlfKk;	1	6	3	25	75	100
15UENG31	**Part II: English** Language Through Literature-III	1	6	3	25	75	100
	Part III: Core Subject						
15UITC31	Relational Database Management System	1	4	4	25	75	100
15UITCP4	Relational Database Management System - Lab	1	4	3	40	60	100
15UITC32	Java Programming	1	4	4	25	75	100
15UITCP3	Java Programming- Lab	1	4	4	40	60	100
15UCCN31	**Part IV:Non Major Elective** Fundamentals of Accounting	1	2	2	25	75	100

SEMESTER – IV

Subject Code	Title of the Paper	No. Of Courses	Hrs / Week	Credits	Maximum Marks		
					INT.	EXT.	TOT
15UTAG41	**Part I : Tamil** rq;f ,yf;fpaKk; ciueilAk;;	1	6	3	25	75	100
15UENG41	**Part II : English** Language Through Literature –IV	1	6	3	25	75	100
	Part III: Core Subject						
15UITC41	Computer Graphics	1	4	3	25	75	100
15UITCP5	Computer Graphics- Lab	1	4	4	40	60	100
15UITCP6	Open Source Systems- Lab	1	4	4	25	75	100
15UITA41	**Part IV: Allied Subject** Resource Management Techniques	1	4	3	25	75	100
15UCCN41	**Part IV:Non-Major Elective** Practical Banking	1	2	2	25	75	100
	Part V : Extension Activities	1	0	1	-	100	100

SEMESTER – V

Subject Code	Title of the Paper	No. Of Courses	Hrs / Week	Credits	Maximum Marks		
					INT.	EXT.	TOT
	Part III: Core Subject						
15UITC51	Operating System	1	5	4	25	75	100
15UITC52	Web Design	1	5	4	25	75	100
15UITC53	C# and .Net Technology	1	5	4	25	75	100
15UITCP7	.Net- Lab	1	6	5	40	60	100
15UITC54	Client Server Computing	1	5	4	25	75	100
	Part IV :Skill Subject						
15UITS51	Biometrics	1	2	2	25	75	100
15UITSP3	**Part IV : Skill Subject** Programming- Lab	1	2	2	40	60	100

SEMESTER – VI

Subject Code	Title of the Paper	No. Of Courses	Hrs / Week	Credits	Maximum Marks		
					INT.	EXT.	TOT
	Part III: Core Subject						
15UITC61	Software Engineering	1	6	5	25	75	100
15UITC64	Data Mining and Warehousing	1	6	5	25	75	100
	Part III : Allied Subject						
15UITA61	Cryptography	1	2	2	25	75	100
	Part III: Elective Subject						
15UITE61	Computer Networks	1	4	3	25	75	100
15UITE62	Mobile Computing						
15UITE63	System Software						
	Part IV :Skill Subject						
15UITS61	Numerical Aptitude	1	4	3	25	75	100
15UITSP4	Multimedia -Lab	1	2	2	40	60	100
15UITPR1	Project and Viva -voce	1	6	5	25	75	100

SEMESTER-I

Title of the Paper: Programming in C **Part III : Core**
Subject Code : 15UITC11 **Contact Hours : 05**

Course Objective:

- To understand and apply advanced programming concepts.
- To understand the concept like pointers, structures, files and link list.

Unit -I: Introduction to C Fundamentals

History of C – constants, variables and data types –operators and expressions.

Managing Input and Output Operations and Control Statements-Reading & writing a character – formatted Input / Output data – decision making and branching– decision making and looping

Unit -II: Arrays and Strings

Introduction – One dimensional array – two dimensional arrays – multidimensional arrays – character arrays and strings – declaring, reading strings – arithmetic operation on characters – string handling functions.

Unit- III: User Defined Functions

Introduction –Function definition – return values and their types –function calls – function declaration – categories of functions – nesting of functions – recursion –passing arrays to functions – passing strings to functions – The Scope, Visibility and Lifetime of variables – multifile programs

Unit -IV:

Structures and Unions: Introduction – structure definition –accessing structure members – structure initialization – copying and comparing structure variables – arrays of structures – array within structures – structures within structures – structures and functions –Unions – size of structures – bit fields.

Pointers: Introduction – understanding pointers – declaring and initializing pointers – pointers and arrays – pointers and character strings –pointers and structures.

Unit -V:

File Management: Introduction – Defining and opening a file – closing a file –I/O operations on files – error handling during I/O operation – random access to files – command line arguments.

Text book:

1. E.Balagurusamy, **Programming in ANSI C**, Tata McGraw – Hill Publishing company Limited, New Delhi, Third Edition, Fifth Reprint, 2004.

   Unit I Chapter 1-6
   Unit II Chapter 7, 8
   Unit III Chapter 9
   Unit IV Chapter 10, 11
   Unit V Chapter 12, 13

Reference Books:

1. Byron S.Gottfried, **Programming with C**, Tata McGraw, Hill Publications, New Delhi, 2nd Edition, 2001.
2. YashwantKanetkar, **Understanding Pointers in C**, BPB publications, New Delhi, 1995.

SEMESTER-I

Title of the Paper: Programming in C – Lab **Part III : Core**
Subject Code : 15UITCP1 **Contact Hours : 05**

1. Display the current date and time
2. Find the biggest number
3. Check for voting age
4. Student mark details
5. Perform Arithmetic operations
6. Display the Multidimensional array
7. Perform Matrix multiplication
8. Display Prime Numbers between 1 to 100
9. Perform Armstrong number checking
10. Find Factorial number
11. Display the Fibonacci series
12. Convert Decimal to binary
13. Perform sum of sine series
14. Perform sum of exponential series
15. Display the reverse of given number
16. Perform String handling functions
17. Check the Positive, negative and zero
18. Perform Swapping using pointer
19. Perform Sorting using structure
20. Display Floyds triangle
21. Merging the numbers
22. Display Pascal triangle
23. Identifying Vowels using file concept

SEMESTER-I

Title of the Paper: Mathematical Foundations **Part III : Allied**
Subject Code : 15UITA11 **Contact Hours : 04**

Course Objective:

- To understand arithmetic, algebraic, geometric, and problem-solving skills.
- To understand Graph Theory**.**

Unit -I:

Set Theory – Relations, equivalence relations – Functions – binary operations.

Unit -II:

Logic: Introduction – connectives – truth table – Tautology implication and equivalence of formulae.

Unit -III:

Matrices: Inverse of a matrix - Rank of a matrix – Simultaneous linear equations – Cayley Hamilton theorem.

Unit- IV:

Graph theory: Introduction – definition and examples – degrees and sub graphs – matrices - connectedness: walks, trials and paths, connectedness and components.

Unit -V:

Eulerian graphs – Hamiltonian graphs – Trees: Characterization of trees.

Text Books:

1. S.Arumugam and A. ThangapandiIssac, **Modern Algebra,** Scitech Publications, Edition, 2005. (for Units I and III)
2. M.K.Venkaatraman, N. Sridharan and N.Chandrasekaran, **Discrete Mathematics,** National Publishing Company, Reprinted June 2006. (for Unit II)
3. S. Arumugam and S. Ramachandran**, Invitation to Graph Theory**, Scitech Publications, Chennai, 2005. (for Units IV and V)

Chapters:

Unit I : Book 1: Chapter 1,
Chapter 2 Section 2.1 to 2.4,
Chapter -3 Section- 3.1,3.2
Unit II : Book 2 : Chapter 9
Unit III : Book 1 : Chapter 7,Section- 7.3 , 7.5 to 7.7
Unit IV : Book 3 : Chapters 2,Sections:.2.1, 2.2, 2.3, 2.8,
Chapter 4, Sections: 4. 0, 4.1, 4.2
Unit V : Book 3 : Chapters 5, 6

Reference Books:

1. Seymour Lipchitz, Marc Lipson, **Discrete Mathematics,** (Schaum's Outline Series), Tata McGraw Hill Publishing Company Ltd, New Delhi, Second Edition, 2009.
2. T.VeeraRajan, **Discrete Mathematics with Graph Theory and Combinations,** Tata McGraw Hill Publishing Company Ltd, New Delhi, 2006.

SEMESTER-I

Title of the Paper: Ms Office – Lab	**Part IV : Skill**
Subject Code : 15UITSP1	**Contact Hours : 02**

MICROSOFT WORD

1. Document using header,footer and border.
2. Insert Picture To Create Invitation
3. Mail Merge
4. Table Manipulation
5. To Create A College Application Form
6. Welcome Message Using Macros
7. Addition Operation Using Macros
8. Multiplication Operation Using Macros

MICROSOFT EXCEL

9. Student Mark Details With Chart
10. Electricity Bill Preparation
11. Company Budget Using Ms Excel
12. Multiple Worksheet

MICROSOFT POWERPOINT

13. Blank slide Preparation
14. Templates Presentation
15. Animation Of Cars

SEMESTER-I

Title of the Paper: Environmental Studies **Part IV : Mandatory Subject**
Subject Code : 15UEVG11 **Contact Hours: 02**

Unit- I : **EARTH AND ITS ENVIRONMENT:** Earth – Formation and Evolution of Earth over time –Structure of Earth and its components – Atmosphere, Lithosphere, Hydrosphere and Biosphere.
RESOURCES: Renewable Resources and Non-Renewable Resources.

Unit –II : **ECOLOGY AND ECOSYSTEM CONCEPTS:** Ecology-Definition – Ecosystem-Definition Structure and Function – Energy Flow – Food Chain and Food Web – Examples of Ecosystems.
BIOGEOCYCLES: Nitrogen, Carbon, Phosphorous and Water.

Unit- III : **BIODIVERSITY:** Definition – Values of Biodiversity – Threats to Biodiversity – Conservation of Biodiversity.
BIODIVERSITY OF INDIA: As a mega Diversity nation – Biogeographical Distribution – Hotspots of Biodiversity – National Biodiversity Conservation Board and Its functions.

Unit- IV : **POLLUTION ISSUES:** Definition – Causes – Effects and Control Measures of Air, Water, Soil, Marine, Noise, Thermal and Nuclear Pollution.
GLOBAL ISSUES: Global Warming and Ozone Layer Depletion

Unit- V : **SUSTAINABLE DEVELOPMENT:** Sustainable Agriculture – Organic farming – Irrigation – Water Harvesting – Water Recycling – Cyber Waste and Management.
DISASTER MANAGEMENT: Flood and Draught – Earth quake and Tsunami – Landslides and Avalanches – Cyclones and Hurricanes – Precautions, Warnings, Rescue and Rehabilitation.

Text Book:

Study Material for **Environmental Studies**, Publications Division, Madurai Kamaraj University, Madurai – 625 021.First Edition 2010.

Reference Books:

1. R.C. Sharma and GurbirSangha,**Environmental Studies**, Kalyani Publishers, 1, Mahalakshmi Street, T.Nagar, Chennai – 600 017.Madras Edition.2nd Revised & Enlarged Edition 2008.Reprinted 2009.
2. Radha,**Environmental Studiesfor Undergraduate Courses of all Branches of Higher Education, (Based on UGC Syllabus),**Prasanna Publishers & Distributors, Old No. 20, KrishnappaStreet, (Near SanthoshMahal), Chepak, Chennai – 600 005. First Edition 2011.
3. S.N.Tripathy and SunakarPanda,**Fundamentals of Environmental Studies**,Vrinda Publications (P) Ltd. B-5, Ashish Complex, (opp. To Ahicon Public School), MayurVihar, Phase-1, Delhi– 110 091. Third Edition 2010. Reprint 2011.
4. G.Rajah,**Environmental Studies** for All UG Courses, (Based on UGC Syllabus), Margham Publications, 24, Rameswaram Road, T.Nagar, Chennai – 600 017. First Edition 2008.Reprint 2011.

SEMESTER-II

Title of the Paper: Data Structures and C++ Programming **Part III : Core**
Subject Code : 15UITC21 **Contact Hours : 05**

Course Objective:

- To understand the abstract data types stack, queue, dequeue, and list.
- To be able to implement the ADTs stack, queue, and dequeue using Python lists.
- To understand the performance of the implementations of basic linear data structures.

Unit-I:

Basic concepts of object oriented programming-Benefits of OOP's-Application of OOP-Structure of C++ program-Basic data type-Derived data type-User defined data type, operators in C++, Control statements, inline function, function overloading-specifying a class-defining member function-nesting of member function-array of object-friend function-constructor-parameterized constructor-copy constructor-destructor.

Unit-II:

Defining operator overloading-overloading unary operator-overloading binary operator-rules for operator overloading-inheritance-single inheritance-multilevel inheritance multiple inheritance-hierarchical inheritance-hybrid inheritance-virtual base class-polymorphism-pointer-pointer to object-this pointer-virtual function-pure virtual function

Unit -III:

Arrays - Introduction – Linear Arrays – Representation of Linear arrays in memory – Traversing linear arrays – Sorting – Linear Search – Binary Search – Multidimensional array – Pointers – Records – Representation of records in memory - Matrices – sparse matrices.

Unit-IV:

Linked List – Introduction – representation of linked list in memory – Traversing a linked list – searching a linked list – memory allocation – insertion and deletion in a linked list – implementation of Stack using array and linked representation – an application of stack – recursion – Queues – Linked representation of queues.

Unit -V:

Trees – Introduction – Binary Trees – Types of Binary Trees – Representation of Binary Trees – Binary Tree Traversals – Binary search trees – searching and inserting in binary search trees.

Text Book:

1. E. Balagurusamy, **Object Oriented Programming with C++,** Tata McGraw Hill, New Delhi, Third Edition, 2006.

   Unit I & II – Chapter 1 – Section : 1. 5, 1. 6, 1. 8
   Chapter 2 – Section : 2. 6
   Chapter 3 – Section : 3.5, 3. 6, 3. 7,3.13, 3.24
   Chapter 4 – Section : 4.6, 4.7
   Chapter 5 – Section : 5.3,5.4, 5.7, 5. 15
   Chapter 6 – Section : 6 2,6.3, 6.7,6.11
   Chapter 7 – Section : 7.2,7.3,7.4, 7.7
   Chapter 8 – Section : 8.3, 8.5,8.6, 8.7, 8. 8, 8.9
   Chapter 9 – Section : 9.1, 9.2,9.3, 9.4, 9.6, 9.7

2. G. A. V. Pai, Seymour Lipschutz, **Data Structures,** Tata McGraw Hill, New Delhi, 2nd Edition, 2006.

Unit III – Chapter 4 (Full)

Unit IV – Chapter 5 – Section : 5. 1, 5. 2, 5. 3, 5. 4, 5. 5, 5. 6, 5. 7, 5. 8
Chapter 6 – Section : 6. 2, 6. 3, 6. 4, 6. 6, 6. 7, 6. 10, 6.11

Unit V – Chapter 7 – Section : 7.1, 7. 2, 7. 3, 7. 4, 7. 7, 7. 8

Reference Books:

1. A.Chitra, P.T. Rajan**, Classical Data Structures,**Vijay Nicole Imprints**,** 1st Edition,2006.
2. D. Samanta, **Classical Data Structures,** PHI Learning Private Limited, New Delhi, 2nd Edition, 2008.
3. PoornachandraSarang, **Object-Oriented Programming With C++,** PHI Learning Private Limited, New Delhi, 2nd Edition, 2009.
4. Alok Kumar Jagadev, Amiya Kumar Rath and SatchidanandaDehuri, **Object-Oriented Programming Using C++,** Prentice-Hall of India Private Limited, New Delhi, 2007.

SEMESTER-II

Title of the Paper: Data Structures Using C++ – Lab **Part III : Core**
Subject Code : 15UITC2P **Contact Hours : 05**

1. To perform Area calculation using Function overloading (Min three functions).
2. To perform String manipulation (three different types) using function overloading.
3. To swap two values between two class objects using friend function.
4. To find minimum of two numbers between two class objects using friend function.
5. To overload unary minus operator which changes sign of given vector (3 elements)
6. To overload Binary + operator which adds two complex numbers.
7. To process students mark list using multiple inheritance
8. Process employee details using hierarchical inheritance
9. To process family details using hybrid inheritance
10. To process electricity billing using binary file.
11. To process mark listing using binary file.
12. To perform stack operations.
13. To perform queue operations.
14. To manipulate singly linked list
15. To perform tree traversals

SEMESTER-II

Title of the Paper: Digital Principles and Applications **Part III : Allied**
Subject Code : 15UITA21 **Contact Hours : 04**

Course objective:

- To know the different techniques of digital circuit analysis.
- To understand the working of different digital circuits

Unit I: Number System and Discrete logic Circuits

Number systems and discrete logic circuits – Binary numbers –Binary to decimal conversion- Decimal to Binary conversion- – Octal numbers – Hexadecimal numbers– ASCII code-Excess 3 code – Gray code –Transistor invertors – OR gates – AND gates – NAND gates – NOR gates

Unit II: Circuit Analysis and Design

Boolean laws and theorems – Sum of product method –K-map truth tables – Pairs,Quads,Octets – K-map simplifications – Don't care – Product of sum method – products of sum simplifications

Unit III: Combinational Logic and Arithmetic Circuits

Multiplexer – Demultiplexer – Decoder: BCD to decimal decoder, Seven segment decoders-Encoders Exclusive OR gates –Parity generators checkers – Binary addition, Binary subtraction, 1'sComplement,2's complement,Representation,Arithmetic, Building blocks

Unit IV: Flip – Flops and Timers

RS Flip–Flop – D Flip-Flop – JK Flip-Flop – JK master slave Flip-Flop – 555 Timer to table – 555 Timer monostable

Unit V: Shift Registers and Counters

Types of Registers – Serial in Serial out – Serial in Parallel out – Parallel in Serial out – Parallel in Parallel out – Ring counters – Ripple counters – Synchronous Counter – MOD Counters

Text Book:

Albert Paul Malvino, Donald P.Leach, **Digital Principles and Applications**, Tata McGraw Hill Publishing Company Limited, New Delhi, 4th Edition, 1991.
Unit I – Chapter 1, 4
Unit II – Chapter 2
Unit III – Chapter 3, 5
Unit IV – Chapter 8, 9
Unit V – Chapter 10,11

Reference Books:

1. Morris Mano, **Digital Logic and Computer Design**, PHI Learning Private Limited, New Delhi, 3rd Edition, April 2005.
2. Floyd, **Digital Fundamentals,** Pearson Education, Eight Edition Reprint, 2006.

SEMESTER-II

Title of the Paper: Visual Programming – Lab	**Part IV : Skill**
Subject Code : 15UITSP2	**Contact Hours : 02**

List of Programs:

1. Adam number
2. Add or Remove number
3. Arithmetic operation
4. Armstrong number
5. Ascending & Descending order
6. Average number
7. Car animation
8. Circle using random method
9. Count a number of digits
10. Currency exchange value
11. Display time & date
12. Factorial value
13. Fibonacci series
14. Generate the colors
15. Maximum of value
16. Multiplication table
17. Pass by reference
18. Pass by value
19. Positive, negative or zero
20. Prime number
21. Program using select case
22. Rectangle using random method
23. Reverse the given number
24. Simple interest
25. String function
26. Sum of columns
27. Sum of rows
28. Swapping the number
29. Types of lines

SEMESTER-II

Title of the Paper: Value Education **Part IV: Mandatory Subject**
Subject Code : 15UVLG21 **Contact Hours : 02**

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 **Religions and Values:** Objectives – Introduction to Religious Values – Karma Yoga in Hinduism – Love and Justice in Christianity – Brotherhood in Islam – Compassion in Buddhism – Ahimsa in Jainism – 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.

Text Book:

Text Module for **Value Education**, Publications Division, Madurai Kamaraj University, Madurai – 625 021.First Edition 2010.

Reference Books:

1. N.S.Raghunathan, **Value Education**, Margham Publications, 24, Rameswaram Road, T.Ngar, Chennai – 600 017. First Edition 2010. Reprint 2012.

2. Dr.P.Saravanan, and P.Andichamy, **Value Education**, Merit India Publications, (Educational Publishers), 5, Pudumandapam, Madurai-625001. First Edition 2011.

SEMESTER-III

Title of the Paper: Relational Database Management System **Part III : Core**
Subject Code : 15UITC31 **Contact Hours : 04**

Course Objective:

1. To study about the underlying concepts and functions of relational databases.
2. To know about Codd's relational model theory—including relational structures, integrity constraints, data manipulation, the relational algebra, and normalization.

UNIT I:

Introduction to DBMS - Data Models - Database languages –Entity Relationship Models: Basic Concepts - Keys – Entity Relationship Diagram. Relational Model: Structure of Relational Database – The Relational Algebra – Extended Relational Algebra Operations – Modification of the Database – Views – SQL: Basic structures – Set Operations – Aggregate Functions – Null Values – Nested Subqueries – Views – Complex Queries – Modification of the database – Joined Relations – Data-Definition Language – Embedded SQL – Dynamic SQL.

UNIT II:

Integrity and Security: Domain Constraints – Referential Integrity – Assertions – Triggers – Relational Database Design: Functional Dependencies – Decomposition – Desirable properties of Decomposition.

UNIT III:

First Normal Form – Third Normal Form – Boyce-Codd Normal Form – Fourth Normal Form – More Normal forms. Introduction to SQL: The Basic parts of speech in SQL – The Basics of Object Relational Databases – Playing the numbers – Dates – Grouping Things together – The Sub Queries – Changing Data – Creating, Dropping, Altering Tables and Views.

UNIT IV:

PL/SQL – Loops – Conditional Logic – Cursor for Loops – Triggers – Procedures – Functions and Packages.

UNIT V:

Transaction Management: Transaction State – Implementation of Atomicity and Durability – Concurrent Executions – Serializability – Recoverability – Implementation of Isolation – Concurrency Control: Lock Based protocols – Timestamp-Based protocols – Validation-Based protocols – Multiple Granularity – Multiversion schemes – Deadlock

Handling.

Text Books:

1. Abraham Silberschatz, Henry F. Korth, S.Sudarshan, **Data Base System Concepts** (Fourth Edition) McG.Hill International Editions, 2002
   Unit I Chapters – 1.4,1.5,2.1,2.3,2.5,3.1 to 3.5,4.2 to 4.13
   Unit II Chapters – 6.1 to 6.4,7.3 to 7.5
   Unit III Chapters – 7.1,7.7,7.6,7.8,7.9
   Unit V Chapters – 15.1 to 15.8,16.1 to 16.6

2. Kevin Loney, George Koch, Oracle 9i The Complete Reference, Tata McGrawHill1995.
   Unit III Chapters – 3,4,8,9,11,15,18
   Unit IV Chapters – 27,28,29

Reference Books:

1. C.J.Date, **An Introduction to Database Systems Vol.1,** Narosha Publishing House, New Delhi, 1995.
2. Raghu Ramakrishnan, Johannes Gehrke, **Database Management Systems**(Third Edition), McGraw-Hill Education, New Delhi, 2003

SEMESTER-III

Title of the Paper: Java Programming	**Part III : Core**
Subject Code : 15UITC32	**Contact Hours : 04**

Course objective:

- To understand the concept of object oriented programming.
- To understand the concept of multithreading, package and exception.
- To acquire programming knowledge in Java

UNIT – I

Java Evolution: Java Features – How Java Differs from C and C++ - Java and Internet – Hardware and Software Requirements – Java Support Systems – Java Environment.

Overview of Java Language: Simple Java Program – Java Program Structure – Java Tokens – Java Statements – Implementing a Java Program – Java Virtual Machine – Command Line Arguments – Constants, Variables – Giving Values to Variables – Scope of Variables – Symbolic Constants – Type Casting.

UNIT - II

Operators and Expressions: Arithmetic Operators – Relational Operators – Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operators – Bitwise Operators – Special Operators – Arithmetic Expressions, Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity -Mathematical Function.

Decision Making and Branching: Decision Making with If Statement – Simple if Statement – If-Else Statement – Nesting of If-Else Statement – The Else If Ladder – Switch Statement-The ?: Operator.

Looping Statement: The While Statement – The Do Statement – For Statement – Jumps in Loops.

UNIT- III

Classes Object and Methods: Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – constructors- Method Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods.

Arrays, Strings and Vectors: One Dimensional Array – Creating an Array - Two Dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types.

Interfaces: Defining Interfaces -Extending Interfaces- Implementing Interfaces – Accessing Interface Variables.

UNIT - IV

Packages: Java API Packages - Using System Packages – Naming Conversions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – Hiding Classes – Static Import.

Multithreaded Programming: Creating Threads – Extending The Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implement the Runable Interface.

UNIT - V

Managing Errors and Exception: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements - Using Finally Statement – Throwing Our Own Exceptions – Using Exceptions for Debugging.

Applet Programming: How Applet Differ from Applications – Preparing to Write Applet – Building Applet Code – Applet Life Cycle – Creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to HTML – Running The Applet.

Text Book:

1. Balagurusamy. E, **Programming With Java**, Tata McGraw Hill Private Limited, Fourth Edition, New Delhi, 2013.

UNITS	**CHAPTERS**
Unit I:	Chapters - 2 - Section 2.2 to 2.9.
	Chapters - 3 - Section 3.2, 3.5 to 3.7, 3.9 to 3.11.
	Chapters - 4- Section 4.2 , 4.3, 4.6 – 4.9.
Unit II:	Chapters – 5 - Section 5.2 – 5.15.
	Chapters - 6 - Section 6.2 - 6.8.
	Chapters - 7 - Section 7.2 - 7.5.
Unit III:	Chapters - 8 - Section 8.2 -8.18.
	Chapters – 9 - Section 9.2 - 9.8.
	Chapters - 10 - Section 10.2 - 10.5.
Unit IV:	Chapters - 11 - Section 11.2 - 11.10.
	Chapters - 12 - Section 12.2 – 12.10
Unit V:	Chapters - 13 - Section 13.2 - 13.8
	Chapters - 14 - Section 14.2 to 14.10.

Reference Books:

1. P.Radha Krishna, **Object Oriented Programming With Java**, University Press India Private Limited, 3rd Edition, Hyderabad, 2008.

2. Debasish Jana**, Java Object Oriented Programming Paradigm**, Prentice Hall of India Private Limited, 3rd Edition, New Delhi, 2008.

SEMESTER-III

Title of the Paper: Java Programming Lab **Part III : Core**
Subject Code : 15UITCP3 **Contact Hours : 04**

1. List out odd and even numbers
2. Vote programming
3. Find the Weeks, days
4. Print n values
5. To check the biggest among three numbers
6. To prepare the Student mark list
7. To find the Factorial value
8. To check Armstrong number
9. To check Adam number
10. To generate the prime numbers
11. To check Palindrome
12. To generate Fibonacci series
13. To find surface area and volume of sphere
14. To find out sum of array elements
15. To display the minimum & maximum number.
16. Matrix multiplication
17. Student details using multilevel inheritance
18. Exception handling
19. Key events
20. Displaying shapes using applet
21. Applet program using parameter tag
22. To count the number of characters ,words & lines in a file

SEMESTER-III

Title of the Paper: Relational Database Management System - Lab Part III : Core
Subject Code : 15UITCP4 Contact Hours : 04

List Of Programs:

1. Execute the DDL,DML Commands
2. Scalar Functions
3. Student Mark List
4. Generation of Odd and Even Numbers
5. Biggest Among Three Numbers
6. Leap Year or Not
7. Armstrong Number
8. Sum of N Numbers
9. Factorial Value
10. Prime Number Generation
11. Perfect or Not
12. Reverse the Given Number
13. Palindrome
14. Fibonacci Series
15. Sum of Odd and Even Numbers
16. Sum of Digits
17. E-B Bill Calculation
18. Simple Interest
19. Quadratic Equation (Nature of Roots)
20. Exception Handling Using Zero Division

SEMESTER-III

Title of the Paper: Fundamentals Of Accounting **Part IV : NME**
Subject Code : 15UCCN31 **Contact Hours : 02**

Objectives

- To educate the learners about fundamentals of accounting
- To equip the students with skills for recording various kinds of business transactions.
- To enable the students to acquire skills in preparing final accounts.

Unit -I

Meaning and definition of Book keeping and accounting **–** Functions of accounting **–** Objectives of accounting – Advantages & limitations of accounting **–** Double entry system of book keeping – Advantages of double entry system **–** Difference between single entry system and double entry system.

Unit-II

Journal **–** Meaning-advantages of journal – Types of accounts – Rules **–** Practical exercises for the preparation of journal.

Unit -III

Ledger-Meaning – Advantages – Difference between journal and ledger – Balancing of accounts in the ledger – Practical exercises for the preparation of ledger.

Unit-IV

Trial balance- Meaning – Objectives – Practical Problems.

Unit -V

Final accounts **–** Meaning of final accounts – Objectives – Distinction between trial balance and balance sheet – Format of trading, profit and loss account and balance sheet. Simple Adjustments in final accounts (outstanding, prepaid, depreciation) **–**Practical Problems.

80% of marks must be allotted to problem solving questions.
20% of marks must be allotted to Theory questions.

Text book:

1. S.P.Jain and K.L.Narang, **Financial Accounting**, Kalyani Publisher, New Delhi 2014.

Reference Books:

1. T.S.Reddy and A.Murthy, **Advanced Accountancy,** Volume 1, Margham Publisher, Chennai, 2014.

2. S.N.Maheswari, **Advanced Accountancy,** Sultan and Sons, New Delhi, 2010.

SEMESTER-IV

Title of the Paper: Computer Graphics **Part III : Core**
Subject Code : 15UITC41 **Contact Hours: 04**

Course objective:

1. To describe the general software architecture of programs that use 2D computer graphics.
2. To know about the basic geometric transformation.

UNIT –I

Overview of Graphics System: Video Display Devices-Raster Scan Systems- Random Scan Systems-Graphics Monitors and Workstations -Input Devices-Hard Copy Devices-Graphics Software.

UNIT- II

Output Primitives: Line Drawing Algorithms -Circle Generating Algorithms- Ellipse Generating Algorithms – Filled Area Primitives - Character Generation.

UNIT –III

Attributes of Output Primitives: Line Attributes, Curve Attributes, Area-Fill Attributes, Character Attributes, Bundled Attributes- Inquiry Functions.

UNIT-IV

Two-Dimensional Geometric Transformation: Basic Transformation-Matrix Representation and Homogenous Co-ordinates-Composite Transformations-Other Transformations.

UNIT-V

Two-Dimensional Viewing: The Viewing Pipeline-Viewing Coordinates Reference Frame-Window-to-Viewport Coordinates Transformation-Two Dimensional Viewing Function- Clipping Operations- Point Clipping- Line Clipping-Polygon Clipping-Curve Clipping-Text Clipping.

Text Book :.

1. Donald Hearn and M.Pauline Baker, **Computer Graphics,** Second Edition, Prentice Hall of India Private Limited, New Delhi, 2007.

UNITS CHAPTERS

UNIT I Chapters - 2
UNIT II Chapters – 3-Sec 3.2, 3.5, 3.6, 3.11, 3.14
UNIT III Chapters – 4 - Sec 4.1, 4.2, 4.4, 4.5, 4.6, 4.7
UNIT IV Chapters - 5- Sec 5.1 To 5.4
UNIT V Chapters – 6 – Sec 6.1 To 6.10.

Reference Books:

1. Roy A Plostock, Zhigang Xiang., **Schaum's Outline of Computer Graphics**, Tata McGraw Hill, New Delhi, 2001.

2. Newman William H, **Principles of Interactive Computer Graphics**, Tata McGraw Hill, New Delhi,Second Edition, 2013.

SEMESTER-IV

Title of the Paper: Computer Graphics Lab	**Part III : Core**
Subject Code : 15UITCP5	**Contact Hours : 04**

List Of Programs:

1. DDA line drawing algorithm
2. Bresenham line drawing algorithm
3. Bresenham circle drawing algorithm
4. Bresenham Ellipse drawing algorithm
5. Flood fill algorithm
6. Boundary fill algorithm
7. Animations using delay
8. Basic transformation of line segment
9. Basic transformation of polygon.
10. Basic transformation of circle.
11. Basic transformation of scaling.
12. Basic transformation of rotation.

SEMESTER-IV

Title of the Paper: Open Source Systems - Lab	**Part III : Core**
Subject Code : 15UITCP6	**Contact Hours : 04**

List of Programs:

LINUX:

1. Basic Commands
2. Number Checking
3. Multiplication Table
4. Roman Letter Conversion
5. Checking File or Directory
6. File Operations
    a. Create
    b. Copy
    c. Delete
    d. Rename

PHP:

7. Basic program
8. Declaration and accessing variable
9. Decision making
10. Control structure
11. Types of arrays
12. Basic connection program

SEMESTER-IV

Title of the Paper: Resource Management Techniques **Part III : Allied**
Subject Code : 15UITA41 **Contact Hours : 04**

Aim and Objective:

To understand the concepts of mathematics which are essential for better understanding as well as development of the computer science subjects and its applications?

UNIT-I

Development of OR – Definition of OR – Modeling – Characteristics & Phases – tools-Techniques & Methods – Scope of OR.

UNIT-II

Linear Programming –formulation of the LPP – Mathematical Formulation of LPP – Solution of LPP – Graphical Method.

UNIT- III

The Simplex Method – Computational Procedure – Artificial Variable Techniques - The Big M Technique.

UNIT -IV

Transportation Problems – Transportation Model – Determining the starting solution of Transportation Model, North – West Corner Rule, Least– Cost Method and Vogel's Approximation Method – Determining the optimum solution of Transportation Problems.

UNIT -V

Assignment Problems -Introduction- Mathematical formulationof Assignment Problems – Solution to Assignment Problems.

Text Books:

1. KantiSwarup, P.C.Gupta, Manmohan, **Operations Research,** Sultan Chand and Sons , New Delhi, Reprint 2011.
2. Dr. S. Arumugam, **Topics in Operations Research,** New Gamma Publishers Pvt. Ltd, Palayamkottai, Tirunelveli, 2010.
   Unit I : Book 1: Chapter 1 (Full).
   Unit II : Book 2: Chapter 3 – Sections: 3.1 – 3.4
   Unit III : Book 2: Chapter 3 – Sections: 3.5, 3.6
   Unit IV : Book 2: Chapter 4 – Sections: 4.1 – 4.2
   Unit V : Book 2: Chapter 5 – Sections: 5.1 – 5.2

Reference Books:

1. Rathindra P. Sen**, Operations Research Algorithms and Applications**, PHI, EEE, New Delhi, 2010.
2. R. PanneerSelvam, **Operations Research,** PHI, New Delhi, Second Edition, 2010.
3. Nita H. Shah, Ravi M. Gor and Hardik Soni, **Operations Research,** PHI, EEE, New Delhi, 2010.

SEMESTER-IV

Title of the Paper: Practical Banking **Part IV : NME**
Subject Code : 15UCCN41 **Contact Hours : 02**

Course Objectives:

T o enable the learners to

- Know the banking concepts
- Understand the various types of deposits
- Develop the skills regarding types of various forms.

Unit-I

Banking: Definition of Banking – Definition of Banker and customer- Procedure for opening an account.

Unit -II

Deposits: Types –Saving Bank Account – Current Bank Account – Fixed Deposit Account – Recurring Deposit Account.

Unit -III

Negotiable Instruments: Cheque – Definition –Specimen of a Cheque-Types of cheques – Anti-dated –Post dated – Stale cheque.

Unit-IV

E-Banking –Mobile Banking –Internet Banking.

Unit-V

Electronic Payment System- ATM-Debit Card –Credit Card –Smart Card – NEFT, RTGS.

Self study for Assignment:

1. Filling up of pay in slip and withdrawal slip.
2. Filling up of Account opening form and writing of Cheque.

Text Book:

1. Gordon and Natarajan, **Banking Theory Law and Practice**, Himalaya Publishing House, Mumbai, 2014.

Reference Books:

1. S.Gurusamy, **Banking Theory Law and Practice**, Tata McGraw Hill Education Private Limited, New Delhi, 2012.

2. Sundharam K.P.M. and Varshney P.N., **Banking Theory, Law & Practice,** Sultan Chand and Sons, New Delhi, 2014.

SEMESTER-V

Title of the Paper: Operating System **Part III : Core**
Subject Code : 15UITC51 **Contact Hours : 05**

Course Objective:

- To understand Operating System Concepts.
- To become familiar with memory management and other related concepts
- To become familiar with file management

Unit I:

Introduction**:** What is an OS? – Mainframe System – Desktop system – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real-Time Systems – Handheld Systems - Operating System Structures: System Components-Operating System Services-System Calls-System Structure -Virtual Machines.

Unit II:

Process Management**:** Process Concept-Process Scheduling - Inter Process communication – Threads**:** Overview-CPU Scheduling**:** Basic concepts-Scheduling Criteria-Scheduling Algorithms-Deadlocks**:** System model-Deadlock Characterization-Methods of handling Deadlocks-Deadlock prevention –Deadlock Avoidance-Deadlock Detection.

Unit III:

Memory Management: Background – Swapping-Contiguous memory allocation – Paging – Segmentation-Segmentation with paging-Virtual Memory: Background – Demand Paging.

Unit IV:

File System Interface**:** File concept -Access Methods-Directory Structure-File Sharing-File System Implementation**:** File system Structure-File System Implementation-Mass Storage Structure**:** Disk Structure-Disk Scheduling.

Unit V

Security**:** The Security Problem-User Authentication-Program Threats-System Threats-Security System and facilities.

Text Book:

1. Silberchatz A Peterson J.L.GalvinP, **Operating System Concepts,** Addison Wesley United States, Sixth Edition, 2001.

UNITS CHAPTERS

Unit IChapters - 1.1 – 1. 8, 3.1,3.2,3.3,3.5,3.6
Unit II Chapters - 4.1, 4.2, 4.5, 5.1, 6.1,6.2,6.3, 8.1, 8.2,8.3,8.4,8.5,8.6
Unit III Chapters - 9.1, 9.2 - 9.6, 10.1,10.2
Unit IV Chapters - 11.1,11.2, 11.3, 11.5, 12.1, 12.2, 14.1, 14.2
Unit V Chapters - 19.1 to 19.5

Reference Books:

1. Milan MilanKovic, **Operating System Concepts and Design,** Tata McGraw Hill,New Delhi, 1997.
2. Harvey M. Deitel, **Operating System**, Pearson Education, New York, Third edition, 2008.

SEMESTER-V

Title of the Paper: Web Design **Part III : Core**
Subject Code : 15UITC52 **Contact Hours: 05**

Objectives:

- To understand the concept of Internet.
- To enrich the knowledge about HTML, Java Script and VBScript.

Unit-I

Introduction to the Internet: Computer in Business – Networking –Internet – Email – Resource sharing – Gopher – WWW – Usenet – Telnet. **Internet Technologies:** Modem – Internet Addressing – Physical Connections –Telephone lines. **Internet Browsers:** Internet Explorer – Netscape navigator.

Unit-II

Introduction to HTML: History of HTML – HTML Generations – HTML Documents – Anchor Tag – Hyper Links. **Head and Body Sections:** Header Section – Title – Prologue – Links –Colorful Web Page – Comment Lines .**Designing the Body Section:** Heading Printing – Aligning the Headings – Horizontal Rule – Paragraph – Tab Settings – Images and Pictures. **Ordered and Unordered Lists**: Lists – Unordered Lists – Heading in a List – Ordered Lists –Nested Lists.

Unit-III

Table Handling: Tables – Tables Creation in HTML –Width of the Table and Cells – Cells Spanning Multiple Rows/Columns – Coloring Cells – Column Specification. **Frames:** Frameset Definition – Frame Definition – Nested Framesets. **Forms:** Action Attribute – Method Attribute – Enctype attribute – Drop Down List – Sample Forms.

Unit-IV

JAVASCRIPT: Introduction – Language Elements – Objects of JavaScript – Other Objects – Arrays – Worked Examples.

Unit-V

VBSCRIPT: Introduction – Embedding VBScript Code in an HTML Document – Comments – Variables – Operators – Procedures – Conditional Statements – Looping Constructs – Objects and VBScript – Cookies.

Text Books:

1. C.Xavier, **World Wide Web Design with HTML**, Tata McGraw-Hill Publishing Company Limited, New Delhi, 2000.
2. N.P. Gopalan and J. Akilandeswari, **Web Technology: A Developer's Perspective,** PHI Learning Private Limited, Delhi, 2007.

Text Book1:

UNITS CHAPTERS

Unit I Chapters – 1.1 - 1.9, 2.1 - 2.4, 3.1 - 3.2

Unit II Chapters – 4.1 - 4.6, 5.1 - 5.6, 6.1-6.6, 7.1- 7.5

Unit III Chapters – 8.1 - 8.6, 10.1 - 10.3, 12.1 - 12.4

Text Book2:

Unit IV Chapters - 5

Unit V Chapters – 6

Reference Books:

1. Steven Holzner**, HTML Black Book,** Dream Tech Press, Tata McGraw Hill,New Delhi,2001.
2. Ivan Bayross, HTML, JavaScript, DHTML and PHP, BPB Publications, New Delhi, 4th Revised Edition,2005

SEMESTER-V

Title of the Paper: C# And .Net Technology **Part III : Core**
Subject Code : 15UITC53 **Contact Hours : 05**

Course objective:

- Giving the students the insights of the Internet programming and how to design and implement complete applications over the web.

- It also concentrates on the usage of recent platforms used in developing web applications such as the .Net environment like C#, XML, and ASP.Net.

Unit-I:

Introducing C#-Understanding .NET: The C# Environment-Overview of C#-Literals, Variable and Data Types-Operators and Expressions-Decision Making and Branching-Decision Making and Looping.

Unit –II:

Methods in C#- Handling Arrays –Manipulating Strings- Structures and Enumerations.

Unit-III:

Classes and Objects-Inheritances and Polymorphism-Interfaces: Multiple Inheritance

Unit-IV:

Operator Overloading-Delegates and Events.

Unit-V:

Managing Console I/O Operations-Managing Errors and Exceptions.

Text Book :

1. Balagurusamy .E ,**Programming in C #** , Tata McGraw Hill, New Delhi, Second Edition, 2008.

UNITS CHAPTERS

Unit I Chapters - 1 to 7
Unit II Chapters - 8 to 11
Unit III Chapters - 12 to 14
Unit IV Chapters - 15, 16
Unit V Chapters - 17, 18

Reference Books:

1. Rober Powell, Richard Weeks, **C# and .NET Framework**, Tech Media Publication, New Delhi,2008.
2. E.Balagurusamy, **Programming in C# and .NET**, Tata McGraw Hill, New Delhi, 2010.

SEMESTER-V

Title of the Paper: .NET LAB **Part III : Core**
Subject Code : 15UITCP7 **Contact Hours : 06**

1. C# program for printing the following format:

```
    1
  0   1
1   0   1
0   1   0   1
```

2.C# program for boxing and unboxing.

3. C# program for properties.

4. C# program for inheritance.

5. C# program for the different parameter passing methods.

6. C# program for delegate.

7. C# program for the preparation of menu card.

8. C# program to implement the various user interface.

9. C# program for base class constructor.

10. C# program for operator overloading.

11. C# program for window application.

12. C# program for pascal triangle.

13. C# program for class and object.

14. C# program for method overloading and overriding.

15. C# program for user and pre-defined exception.

SEMESTER-V

Title of the Paper: Client Server Computing **Part III : Core**
Subject Code : 15UITC54 **Contact Hours : 05**

Course Objective:

- To understand Client Server Computing Benefits
- To know about Graphical User Interface Environments

Unit-I

Overview of client/server computing: What is client/server computing-Benefits of client/server computing-Evolution of C/S computing: Hardware trends-Software trends-Evolution of operating systems-Networking trends-Business considerations.

Unit-II

Overview of Client / Server Applications: Components of Client / Server Applications-Classes of Client / Server Applications-Categories of Client / Server Applications. Understanding Client / Server Computing: Dispelling the myths-Obstacles-Upfront and Hidden-Opensystems and Standards – Standard – Setting Organizations-Factors for success.

Unit-III

Client Hardware and Software: Client Components-Client Operating Systems-what is a GUI? -Database Access-Client Software Products: GUI Environments –Converting 3270/5250 Screens-Database Access Tools-Client Requirements-GUI Design Standards-Interface Independence-Testing Interfaces.

Unit-IV

The Server: Categories of Servers –Features of Server Machines-Classes of Server machines-Server Environment: N/W Management Environment-N/W computing Environments-Extensions-Network Operating System-Loadable Modules.

Unit-V

Server operating system: OS/2 2.0 - Windows new technology-Unix based Operating Systems -Server requirements: Platform Independence-Transaction Processing-Connectivity-Intelligent Database-Stored Procedures – Triggers - Load Leveling - Optimizer-Testing and Diagnostic Tools-Backup and Recovery Mechanisms.

Text book:

1. Dawna Travis Dewire, **Client/Server Computing,** Tata McGraw Hill, New Delhi, 2003.

UNITS CHAPTERS

Unit I	Chapters – 1,2
UnitII	Chapters - 3,4
Unit III	Chapters - 5.1,5.2,5.3,5.5,6.1,6.2,6.3,7.1,7.3,7.4
UnitIV	Chapters - 8.2,8.3,8.4,9.2,9.3,9.4,9.5,9.6
Unit v	Chapters - 10.1,10.2,10.3,11.1 to 11.9,11.11

Reference Books:

1. Patrick Smith,**Client/server computing (Professional reference series),** Paperback , 1997.
2. Joe Salemi, **Client/Server Databases**, Tata MC Graw Hill Publications, New Delhi,1997.

SEMESTER-V

Title of the Paper: Biometrics	**Part IV : Skill**
Subject Code : 15UITS51	**Contact Hours : 02**

Course Objective:

- To enhance the security infrastructure in the industry and generally in information sensitive environments.

UNIT I:

How Authentication technologies work – How Biometrics work.

UNIT II:

Fingerprint and Hand Geometry – Facial and Voice Recognition

UNIT III:

EyeBiometrics – Iris and Retina Scanning – Signature Recognition and Keystroke Dynamics.

UNIT IV:

Esoteric Biometrics.

UNIT V:

Biometrics in large scale systems – Biometric Testing and Evaluation.

Text Book:

1. John D.Woodward, Jr , Nicholas M.Orlans, Peter T. Higgins, **Biometrics – The Ultimate Reference**, Dream Tech Publishers, New Delhi, 2003.

UNITS	**CHAPTERS**
Unit I	Chapters - 1,2
Unit II	Chapters - 3,4
Unit III	Chapters - 5,6
Unit IV	Chapters - 7
Unit V	Chapters - 9,11

Reference Book:

1. Paul Reid,**Biometrics for Network Security**, Prentice Hall Series in Computer Networking and Distributed, New Delhi, 2004.
2. James L. Wayman (Editor), Anil Jain (Editor), DavideMaltoni , Dario Maio, **Biometric Systems: Technology, Design and Performance Evaluation**,Springer Publications, London, 2005.

SEMESTER-V

Title of the Paper: Unix Programming Lab	**Part IV : Skill**
Subject Code : 15UITSP3	**Contact Hours : 02**

List Of Programs:

1. Basic Commands in Unix
2. File Commands
3. Basic Arithmetic Operation
4. Filter Commands
5. Pattern Searching Commands
6. Armstrong Number
7. Sum of Digits
8. To Reverse A Number
9. Factorial Value
10. Fibonacci Series
11. Leap Year
12. Students Mark List
13. Pay-Bill
14. Swapping Two Numbers
15. To Compare Two Strings
16. Identification of Character

SEMESTER-VI

Title of the Paper: Software Engineering	**Part III : Core**
Subject Code : 15UITC61	**Contact Hours : 06**

Course Objective:

1. To understand principles, concepts, methods, and techniques of the software engineering approach to producing quality software (particularly for large, complex systems).
2. To organize and manage a medium-sized software development project, including project plans and documentation, schedule and cost estimates, and quality assurance activities.

UNIT I:

Introduction to Software Engineering**:** Some Definitions –Some Size Factors -Quality & Productivity Factors - Managerial Issues - Planning a Software Project**:** Defining the Problem - Goals & Requirements - Developing a Solution Strategy - Planning the Development Process - Planning an Organizational Structure - Other Planning Activities.

UNIT II:

Software cost Estimation**:** Software Cost Factors - Software Cost Estimation Techniques - Staffing Level Estimation - Estimating Software Maintenance Costs.

UNIT III:

Software Requirements Definition**:** The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT IV:

Software design –Fundamental Design concepts - Modules And Modularization Criteria - Design Notations - Design Techniques -Detailed Design Considerations - Real Time and Distributed System Design - Test Plans - Milestones, Walkthroughs and Inspections - Design Guidelines Implementation Issues : Structured coding Techniques - Coding Style - Standards and Guidelines - Documentation Guidelines.

UNIT V:

Verification and Validation Techniques**:** Quality Assurance – System Testing – Software Maintenance**:** Enhancing maintainability during Development – Managerial aspects of software maintenance – Configuration Management – Source Code metrics.

Text Book:

1. Richard E. Fairly, **Software Engineering Concepts**, Tata MC GrawHill, New Delhi, 1997.

Units Chapters

Unit I	Chapters - 1.1,1.2,1.3,1.4,2.1 to 2.5
Unit II	Chapters - 3.1 to 3.4
Unit III	Chapters - 4.1 to 4.3
Unit IV	Chapters - 5.1 to 5.9, 6.1 to 6.4
Unit V	Chapters - 8.1,8.6,9.1,9.2,9.3,9.4

Reference Books:

1. Roger S. Pressman,**Software Engineering: A Practical Approach,** Tata MC Graw Hill, New Delhi, 1987.
2. K.K.Aggarwal, Yogesh Singh, **Software Engineering**, Second Edition, New Age International Pvt Ltd, New Delhi, 2005.

SEMESTER-VI

Title of the Paper: Data Mining and Warehousing **Part III : Core**
Subject Code : 15UITC64 **Contact Hours : 06**

Course Objective:

- To understand Data warehousing architecture, OLAP operations and Schema.
- To learn Basic concepts and introduction to techniques in Data Mining and Knowledge Discovery.
- To study both basic and advanced techniques for uncovering interesting data patterns hidden in large data sets.

UNIT I

Data Warehousing – Introduction – Datawarehouse Architecture – Dimensional Modelling – Categorisation of hierarchies – Aggregate Function.

UNIT II

Data Mining – Data Mining Definition – KDD Vs Datamining – DBMS Vs DM – Other related areas – DM techniques – other mining problems – Issues and challenges in DM – DM application areas – DM applications – Case Studies – Association Rules:Apriori algorithm – Partition algorithm – Pincer search algorithm – Border algorithm.

UNIT III

Clustering Techniques – Clustering Paradigms – Partitioning algorithms – K-Medoid Algorithms - CLARA – CLARANS – Hierarchical clustering- DBSCAN – Categorical clustering algorithm – STIRR. **Decision trees :**Tree Construction Principle – Best split – splitting indices – splitting criteria – decision tree construction algorithms – CART – ID3.

UNIT IV

Genetic algorithm – Basic steps of GA - Other techniques – What is a Neural network – Support Vector Machines.

UNIT V

Web Mining : Introduction – Web Content Mining – Web Structure Mining – Web Usage Mining – Text mining – Hierarchy of categories – Text clustering.

Text Book:

1. Arun K. Pujari, **Data Mining Techniques**, Universities Press, Hyderabad, Third Edition, 2013.

UNITS	**CHAPTERS**
Unit I	Chapter 2 - Section: 2.1-2.5
Unit II	Chapter 3 – Section 3.2 - 3.11
	Chapter 4 - Section: 4.4-4.6, 4.13
Unit III	Chapters 5 - Section: 5.2 – 5.08, 5.11 – 5.12.
	Chapters 6 - Section: 6.3 – 6.9.
Unit IV	Chapters 8 - Section: 8.2.
	Chapters 9 - Section: 9.2– 9.6.
Unit V	Chapter 10 - Section: 10.1-10.6, 10.9, 10.10

Reference Books:

1. M. H. Dunham, **Data Mining: Introductory and Advanced Topics**,Pearson Education, New Delhi, 2001.

2. D. Hand, H. Mannila and P. Smyth, **Principles of Data Mining**, PrenticeHall, New Delhi, 2001

SEMESTER-VI

Title of the Paper: Cryptography **Part III : Allied**
Subject Code : 15UITA61 **Contact Hours : 02**

Course Objective:

- To become familiar with the basics of cryptography
- To know about computer security.

Unit I:

Attacks on Computers and Computer Security- Introduction-The need for security-Security Approaches-Principles of security-Types of attacks.

Unit II:

Cryptography: Concepts and Techniques-Introduction-Plain Text and Cipher Text-Substitution Techniques-Transposition Techniques-Encryption and Decryption-Symmetric and Asymmetric Key Cryptography-Steganography-Key Range and Key Size-Possible types of Attacks.

Unit III:

Symmetric Key Algorithms and AES-Introduction-Algorithm Types and Modes-An Overview of Symmetric Key Cryptography- Data Encryption Standard (DES) -International Data Encryption Algorithm(IDEA)-RC5-Blow fish-Advanced Encryption Standard(AES)

Unit IV:

Asymmetric Key Algorithms, Digital Signatures and RSA -Brief History of Asymmetric Cryptography-An Overview of Asymmetric Key Cryptography-The RSA Algorithm-Symmetric and Asymmetric Key Cryptography Together-Digital Signatures-Knapsack Algorithm-Some Other Algorithms

Unit V:

Digital Certificate and Public Key Infrastructure (PKI)-Digital Certificates- Private Key Management- The PKIX Model- Public Key Cryptography Standards (PKCS).

Text book:

Atul Kahate ,**Cryptography and Network Security**, Tata MC Graw Hill, New Delhi, Second Edition, 2003.

UNITS	**CHAPTERS**
Unit I	Chapters – 1.1-1.5
UnitII	Chapters – 2.1-2.9
Unit III	Chapters – 3.2-3.5, 3.7-3.9
Unit IV	Chapters – 4.2-4.8
Unit V	Chapters – 5.2-5.5

Reference books:

1. Behrouz A Forcizan **Cryptography and Network Security**: Tata MC Graw Hill, New Delhi, 2008.
2. WilliamStallings, **Cryptography and Network Security: Principles and Practices**, fourth edition, Pearson Education,New Delhi,2006.

SEMESTER-VI

Title of the Paper: Computer Networks	**Part III : Elective**
Subject Code : 15UITE61	**Contact Hours : 04**

Course Objective:

1. To know about the goals of networking and the web.
2. To know about the Host-to-Host communication, packet switching and the logical connections.

UNIT I:

Introduction: Uses of computer networks – Network Hardware – Network Software – Reference Models – Example Networks.

UNIT II:

The Physical Layer: Transmission media – Wireless Transmission – The Telephone system.

UNIT III:

The Data Link Layer & The Medium Access Layer: Data Link Layer Design Issues – Error Detection and Correction - Elementary Data Link Protocols – **Multiple Access Protocols:** ALOHA – Carrier Sense Multiple Access Protocols - Ethernet, Token bus, Token ring.

UNIT IV:

The Network Layer & The Transport Layer: Network Layer Design Issues – Routing Algorithms – Shortest path routing- Flooding- Flow Based Routing- Distance Vector Routing- Broadcast Routing- The Transport Service – Elements of Transport Protocols.

UNIT V:

The Application Layer: Network Security – Electronic mail – The World Wide Web.

Text Book:

1. Andrew S. Tanenbaum,**Computer Networks** ,PHI , United States, Third Edition, 1996.

Units	**Chapters**
Unit I	Chapters - 1.1, 1.2, 1.3, 1.4, 1.5
Unit II	Chapters - 2.2, 2.3, 2.4
Unit III	Chapters - 3.1, 3.2, 3.3, 4.2.1, 4.2.2, 4.3.1, 4.3.2, 4.3.3
Unit IV	Chapters - 5.1, 5.2, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.9, 6.1, 6.2
Unit V	Chapters - 7.1, 7.4, 7.6

Reference Books:

1. Behrouz A. Forouzan,**Data communication and Networking**, MGH Publisher, New York, II Edition, 2001.
2. Kenneth C.Mansfield Jr. and James L.Antonakes,**An Introduction to Computer Networking**, Prentice Hall of India Private Ltd, New Delhi, 2002.

SEMESTER-VI

Part III : Elective

Title of the Paper: Mobile Computing

Subject Code : 15UITE62 **Contact Hours : 04**

Course Objective:

- To study the specifications and functionalities of various protocols/standards of mobile networks.
- To understand GSM communication.

Unit I:

Introduction-Mobility of Bits and Bytes-Wireless The beginning-The Mobile Computing Dialogue Control-Networks-Middleware and Gateways-Applications and services-Developing Mobile Computing Application-Security in Mobile Computing-Standards-Why are they necessary-Standards bodies-Players in the Wireless Space.

Unit II:

Mobile Computing Architecture: History of Computers-History of internet-Internet-The ubiquitous network-Architecture for mobile computing- Three tier architecture-design consideration for mobile computing-Mobile computing through internet-making existing applications mobile enabled.

Unit III:

Global system for mobile communication-Global system for mobile communications-GSM architecture-GSM entities-call routing in GSM-PLMN interfaces-GSM address and identifiers-Network aspects in GSM-GSM frequency allocations-Authentication and Security.

Unit IV:

General Packet Radio Service: Introduction-GPRS and Packet Data Network-GPRS Network Architecture-GPRS Network Operations-Data Services in GPRS-Applications for GPRS-Limitations of GPRS-Billing and Charging in GPRS.

Unit V:

Wireless Application Protocol-Introduction-WAP-MMs-GPRS Applications-CDMA and 3G: Introduction-Spread Spectrum Technology-Is95-CDMA Vs GSM-Wireless Data-Third Generation Network-Applications on 3G.

Text Book:

1. Asoke k Talukder, Roopa R Yavagal, **Mobile Computing, Technology Applications and Service Creation**,TMH Publishing Company, New Delhi,2010.

UNITS	**CHAPTERS**
Unit I	Chapters - 1
Unit II	Chapters – 2
Unit III	Chapters - 5
Unit IV	Chapters – 7.1 To 7.8.
Unit V	Chapters – 8.1 To 8.4, 9.1 To 9.7.

Refernce Books:

1. Tomasz Imielinski, Henry F. KorthSpringer, **Introduction to Mobile Computing,** Murray Hill, US,1996.
2. Jochenschiller, **Mobile Communication,** Pearson, New York, 2nd Edition, 2003.

SEMESTER-VI

Title of the Paper: System Software **Part III : Elective**
Subject Code : 15UITE63 **Contact Hours : 04**

Course objective:

- To understand about Loaders, Linkers, Macros and Compiler.
- To acquire knowledge about Assemblers.

Unit-I:

Background: Introduction - System Software and Machine Architecture- The Simplified Instructional Computer(SIC) –Traditional(CISC) Machines - RISC Machines.

Assemblers:

Basic Assembler Functions-Machine-Dependent Assembler Features -Machine Independent Assembler Features-Assembler Design Options-Implementation Examples.

Unit –II:

Loader and Linkers: Basic Loader Functions-Machine Dependent Loader Features- Machine Independent Loader Features-Loader Design Options-Implementations Examples.

Unit-III:

Macro Processors: Basic Macro Processor Functions-Machine-Independent Macro Processor Features-Macro Processor Design Options-Implementation Examples.

Unit-IV:

Compilers: Basic Compiler Functions-Machine-Dependent Compiler Features-Machine-Independent Compiler Features-Complier Design Options-Implementation Examples.

Unit-V:

Other System Software: Database Management Systems-Text Editors-Interactive Debugging Systems.

Text Book:

1. Leland L.Beck, D.Manjula, **System Software- An Introduction to Systems Programming**, Pearson Education Publication. Third Edition, 2007.

UNITS CHAPTERS

Unit-I Chapters - 1,2
Unit II Chapters - 3
Unit III Chapters - 4
Unit IV Chapters - 5
Unit V Chapters - 7

Reference Books:

1. Damhere, **An Introduction to System Software**, Tata McGraw Hill, New Delhi, 1997.
2. Morris Mano, **Computer System Architecture**, Hill Publication, New Delhi.Third Edition, 2001

SEMESTER-VI

Title of the Paper: Numerical Aptitude **Part IV :Skill**
Subject Code : 15UITS61 **Contact Hours : 04**

Unit–I

Numbers, HCF and LCM of Numbers.

Unit - II

Average, Problems on numbers.

Unit - III

Problems on ages, Percentages.

Unit - IV

Profit and Loss, Ratio and Proportion.

Unit - V

Time and Work, Time and Distance.

Text Book:

1. R.S Aggarwal, **Quantitative Aptitude for Competitive Examinations,** S.Chand and Company Ltd, New Delhi, Reprint 2011.
   Unit I : Chapters 1, 2.
   Unit II : Chapters 6, 7.
   Unit III: Chapters 8,10.
   Unit IV: Chapters 11,12.
   Unit V : Chapters 15, 17.

Reference books:

1. AbhigitGuha, **Quantitative Aptitude,** fourth edition, Tata McGraw Hill Publication, New Delhi, 2011.

2. U. Mohan Rao, **Quantitative Aptitude,** Scitech Publications, Chennai, Reprint, 2013

SEMESTER-VI

Title of the Paper: Multimedia Lab **Part IV : Skill**
Subject Code : 15UITSP4 **Contact Hours: 02**

Course Objectives:

- To understand the basic usage of flash
- To understand the masking in flash
- To understand about the Photoshop

Using flash:

1. Text masking using flash

2. Text blur using flash

3. Photo masking using flash.

4. Animation frame by frame using flash

5. Vector drawing using flash

6. Rotating ball using button using flash

7. Bouncing ball using flash

8. Four functions calculator using flash

Using Photoshop:

9. Radiation effect using Photoshop

10. 3D text using Photoshop

11. Glow effect using Photoshop

12. Realistic clouds using Photoshop

13.Digital background using Photoshop

SEMESTER-VI

Title of the Paper: Project and Viva – Voce		**Part IV**	**: Skill**
Subject Code	**: 15UITPR1**	**Contact Hours**	**: 06**

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