

BACHELOR OF COMPUTER TECHNOLOGY REGULATIONS

ELIGIBILITY:

A candidate who has passed in Higher Secondary Examination with any Academic stream or Vocational stream as one of the subject under Higher Secondary Board of Examination and as per the norms set by the Government of Tamil Nadu or an Examination accepted as equivalent thereto by the Academic Council, subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the Bachelor of Computer Technology Degree Examination of this College after a course of study of three academic years.

OBJECTIVES OF THE COURSE:


The Curriculum is designed to attain the following learning goals which students shall achieve by the time of their graduation:

1. Demonstrating a significant understanding the Key Concepts of various Computer technologies.
2. To stimulate the interest among the learners on various technologies through Lab sessions.
3. Inculcating professional competence in technologies, software design, database and Quality Assurance.
4. To facilitate the learners to develop skills to meet the requirements of the corporate.
5. To develop competency in research and in current technologies.

SCHEME OF EXAMINATION

Course Code	Subject	Hrs of Instruction	Exam Duration (Hrs)	Max Marks			Credit Points
				CA	CE	Total	
First Semester							
Part - I							
16UTL11T/ 15UHL11H/ 15UML11M/ 15UFL11F	Tamil-I/ Hindi-I/ Malayalam-I/ French-I	6	3	25	75	100	4
Part - II							
16UEG12E	English -I	6	3	25	75	100	4
Part - III							
16UCT13A	Core - I : C Programming	4	3	25	75	100	4
16UCT13B	Core - II : Digital Fundamentals and Architecture	4	3	25	75	100	4
15UCT13P	Core Lab - I : Programming in C	3	3	40	60	100	4
16UMA1AB	Allied - I : Mathematical Structures for Computer Science	5	3	25	75	100	4
Part - IV							
15UFC1FA	Value Education: Environmental Studies	2	3	-	50	50	2
		30				650	26


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Second Semester							
Part - I							
16UTL21T/ 15UHL21H/ 15UML21M/ 15UFL21F	Tamil-II/ Hindi-II/ Malayalam- II/ French-II	6	3	25	75	100	4
Part - II							
16UEG22E	English -II	6	3	25	75	100	4
Part - III							
16UCT23A	Core - III : C++ Programmin g	5	3	25	75	100	4
16UCT23P	Core Lab - II : Programmin g in C++	4	3	40	60	100	4
15UCT23Q	Core Lab - III : Progra mming in Internet and Office Automation	2	3	20	30	50	2
16UMA2AB	Allied - II : Computer Based Optimizatio n Techniques	5	3	25	75	100	4
Part - IV							
15UFC2FA	Value Education: Human Rights	2	3	-	50	50	2
		30				600	24

Third Semester							
Part - III							
16UCT33A	Core - IV : Data Structures	5	3	25	75	100	4
15UCT33B	Core - V : Java Programmin g	5	3	25	75	100	4
15UCT33P	Core Lab - IV : Programmin g in Java	4	3	40	60	100	4
15UCT3AA	Allied - III : Microproces sor and ALP	5	3	20	55	75	3
Part IV							
15UCT3SA	Skill Based Subject - I : Web Technology	4	3	20	55	75	3
15UCT3SP	Skill Based Lab - I : Web Technology	3	3	20	30	50	2
	NMEC - I	2	3	-	50	50	2
15UFC3FA/ 15UFC3FB/ 15UFC3FC/ 15UFC3FD/ 15UFC3FE	Tamil / Advance Tamil / Yoga for Human Excellence / Women's Rights/ Constitution of India	2	3	-	50	50	2
		30				600	24

Fourth Semester							
Part - III							
15UCT43A	Core - VI : System Software and Operating Systems	5	3	25	75	100	4
16UCT43B	Core - VII : Relational Data Base Management System	6	3	25	75	100	4
16UCT43P	Core Lab - V : Relational Data Base Management System	5	3	40	60	100	4
16UCT43Q	Core Lab - VI : Linux Programming	5	3	40	60	100	4
15UCT4AA	Allied - IV : Network Security and Cryptography	5	3	20	55	75	3
Part IV							
	NMEC - II	2	3	-	50	50	2
15UFC4FA / 15UFC4FB / 15UFC4FC	Tamil / Advance Tamil / General Awareness	2	3	-	50	50	2
		30				575	23

Fifth Semester							
Part - III							
16UCT53A	Core - VIII: Data Communicatio n and Networks	5	3	25	75	100	4
16UCT53B	Core - IX: C#.Net Programming	6	3	25	75	100	4
16UCT53P	Core Lab - VII: Programming in C#. Net	5	3	40	60	100	4
	Elective - I :	5	3	20	55	75	3
Part- IV							
15UCT5SA	Skill Based Subject - II : Software Testing	5	3	20	55	75	3
15UCT5SP	Skill Based Lab - II : Software Testing	4	3	20	30	50	2
16UCT53T	Industrial Training	Grade A to C					
		30				500	20
Sixth Semester							
Part - III							
15UCT63A	Core - X: PHP & MySQL	5	3	25	75	100	4
15UCT63P	Core Lab - VIII : Programming in PHP & MySQL	5	3	40	60	100	4
16UCT63Q	Core Lab - IX: Hardware and Networking	5	3	40	60	100	4

16UCT63V	Core - XI : Project Work	5	3	30	45	75	3
	ELECTIVE- II :	5	3	20	55	75	3
	ELECTIVE-III :	5	3	20	55	75	3
Part-V							
16UEX65A	Extension Activity	-	-	50	-	50	2
		30				575	23
Grand Total						3500	140

ELECTIVE - I

(Student shall select any one of the following subject as Elective - I in fifth semester)

S. No.	Subject Code	Name of the Subject
1.	15UCT5EA	Software Engineering
2.	16UCT5EB/15UCT6EA	Cloud Computing

ELECTIVE - II

(Student shall select any one of the following subject as Elective - II in sixth semester)

S. No.	Subject Code	Name of the Subject
1.	16UCT6EA/15UCT5EB	Mobile Computing
2.	15UCT6EB	Computer Installation and Servicing

ELECTIVE - III

(Student shall select any one of the following subject as Elective - III in sixth semester)

S. No.	Subject Code	Name of the Subject
1.	16UCT6EC/15UCT63B	Data Mining
2.	15UCT6ED	Graphics and Multimedia

NON MAJOR ELECTIVE COURSES

- The department offers the following two papers as Non Major Elective Courses for other than the computer subjects related students.
- Student shall select any one of the following subject as Non Major Elective Courses during their III and IV semester

S. No.	Subject Code	Name of the Subject
1	15UED34K	Multimedia
2	15UED44K	ORACLE

FOR COURSE COMPLETION

Students shall complete:

- Language papers (Tamil/Malayalam/French/Hindi, English) in I and II semester.
- Environmental Studies and One Value Education in I and II semester respectively.
- Allied papers in I, II, III and IV semesters.
- One Value Education and General Awareness in III and IV semester respectively.
- Non Major Elective Courses in the III and IV semester respectively.
- Extension activity in VI semester.
- Elective papers in the fifth and sixth semesters.
- An in-house project at the end of VI semester.
- Students must undergo Industrial training for 15 – 30 days during IV Semester Summer Vacation. Evaluation of the Report done by the Internal and external Examiner in the V Semester. Based on their performance Grade will be Awarded as A To C.

A- 75marks and above

B- 60-74 marks

C- 40-59 marks

Below 40 marks - (Reappear)

Total Credit Distribution

Subjects	Credits	Total		Credits	Cumulative
Part I: Tamil	4	2 X 100 =	200	08	16
Part II: English	4	2 X 100 =	200	08	
Part III:					
Core	4	10 X 100 =	1000	40	110
Core Lab	2	1 X 50 =	50	02	
Core Lab	4	8 X 100 =	800	32	
Elective	3	3 X 75 =	225	09	
Project	3	1 X 75 =	75	03	
Allied Theory	4	2 X 100 =	200	08	
Allied Theory	3	2 X 75 =	150	06	
Skill Based Subject	3	2 X 75 =	150	06	
Skill Based Lab	2	2 X 50 =	100	04	
Part IV:					
Value Education	2	2 X 50 =	100	04	12
Environmental	2	1 X 50 =	50	02	
General	2	1 X 50 =	50	02	
NMEC	2	2 X 50 =	100	04	
Part V:					
Extension	1	1 X 50 =	50	02	02
Total			3500	140	140

**Earning Extra credits is not mandatory for course completion
Extra credits**

Part	Subject	Credit	Total credits
1	BEC/ Self study courses	1	1
2	Hindi / French/ Other foreign Language approved by certified Institutions	1	1
3	Type Writing / Short Hand Course	1	1
4	Diploma/certificate/CPT/ ACS Inter/ NPTEL Course	1	1
5	Representation - Academic/Sports /Social Activities/ Extra Curricular / Co-Curricular activities at University/ District/ State/ National/ International	1	1
	Total		5

Rules:

The students can earn extra credits only if they complete the above during the course period (I to V sem) and based on the following criteria. Proof of Completion must be submitted in the office of the Controller of Examinations before the commencement of the VI Semester. (Earning Extra credits are not mandatory for Course completion)

1. Student can opt BEC course/ Self study course to earn one credit. They have to Enroll and complete any one of the course during their course period before fifth semester (I sem to V sem).

Self study paper offered by Computer Technology Department

S. No.	Semester	Course Code	Course Title
1.	I Sem. to V Sem.	16UCTSS1	Personality Development
2.		16UCTSS2	Social Networking

2. Student can opt Hindi/ French/ Other foreign Language approved by certified Institutions to earn one credit. The certificate(Hindi) must be obtained from **Dakshina Bharat Hindi Prachar Sabha** and He/ she has to enroll and complete during their course period (**first to fifth semester**)
3. Student can opt for Type writing /short hand course to earn one extra credit. He/she has to enroll and complete the course during their course period to obtain certificate through **Tamil Nadu Board of Technical Education**
4. Student can opt for Diploma/certificate/CPT/ACS Inter/ NPTEL Course to earn one extra credit. Student who opt for Diploma/ Certificate course have to enroll any diploma/certificate course offered by Bharathiar University through our Institution. Student who opt for CPT/ ACS/CMA have to enroll and complete the foundation level during the course period. Students who opt for NPTEL course should complete the course certificate through NPTEL.
5. Award Winners in Academic/ Representation in Sports /Social Activities/ Extra Curricular/ Co-Curricular Activities at University/ District/ State/ National/ International level can earn one extra credit.

16UCT13A	CORE - I : C PROGRAMMING	SEMESTER - I
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Total Credits: 4
Hours Per Week: 4

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To develop problem-solving strategies, techniques and skills that can be applied to computers and problems in other areas.
2. To help students develop the logic, ability to solve the problems efficiently using C programming.
3. To learn various concepts and techniques for problem solving and will implement those ideas using C programs.

CONTENTS

UNIT - I

Overview of C: History of C – Importance of C – Basic structure of C programs. Constants, variables and data types: Character set – C Tokens – Keywords and identifiers – Constants – Variables – Declaration of storage classes – Assigning values to variables Defining symbolic constants. Operators and expression – Evaluation of expressions – Precedence of arithmetic operators – Type conversions in expressions – Operator precedence and associativity – Mathematical functions. Managing input and output operations: Reading and writing a character – Formatted input and output.

UNIT - II

Decision making and branching: Simple IF, IF-ELSE, Nesting of IF-ELSE, ELSE-IF ladder, Switch statements – GOTO statements. Decision making and looping: WHILE statement – DO statement – FOR statement – Jumps in loops. Arrays: Definition & Declaration – One dimensional – Two dimensional – Multi dimensional arrays.

UNIT - III

Character arrays and strings: Introduction - Declaring and initializing string variables - Reading strings from terminal - Writing strings to screen - String handling functions. User Defined functions: Introduction - Needs & Elements of User Defined function -Definition - Return values and their types - Function calls - Function declaration - Category of functions - Nesting of functions - Recursion - Passing arrays and Strings to functions - The scope, lifetime & Visibility of Variables.

UNIT - IV

Structures and Unions: Introduction - Defining a structure - Declaring structure variables - Accessing structure members - Structure initialization - Arrays of structures - Arrays within structures - Structures within structures - Structures and functions - Unions - Bit fields. Pointers: Introduction - Understanding pointers - Accessing the address of a variable - Initializing of pointer variables. Pointers and arrays - Pointers and character strings - Pointers as function arguments.

UNIT - V

File Management: Introduction - Defining and opening a file -Closing a file - Input/Output operation on files - Error handling during I/O operations - Random access files - Command line arguments.

TEXT BOOK :

1. Programming in ANSI C, *E. Balagurusamy* Tata McGraw Hall, New Delhi, 5th Edition.

REFERENCE BOOKS:

1. C: The complete Reference —, *Herbert Schildt*, *Mc Graw Hill*, New Delhi, 4Th Edition
2. PROGRAMMING IN C, *B.L.JUNEJA*, Cengage Learning India

16UCT13B	CORE - II : DIGITAL FUNDAMENTALS AND ARCHITECTURE	SEMESTER - I
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Total Credits: 4
Hours Per Week: 4

OBJECTIVES:

To inculcate the knowledge on the

1. Digital behavior of the computer system
2. Ideas behind the organization of various core component of the computer system

CONTENTS

UNIT - I

Digital Logic Circuits: Digital Computers -Logic Gates - Boolean Algebra-Map Simplification- Combinational Circuits- Flip flops

Digital Components: Integrated Circuits- Decoders - Multiplexers - Registers - Shift Registers

UNIT - II

Data Representation: Data Types - Complements -Fixed Point Representation - floating Point Representation - Other Binary Codes - Error Detection Codes

UNIT - III

Central Processing Unit: Introduction - General Register Organization - Stack Organization - Instruction Formats - Addressing Modes - Data Transfer and Manipulation - Program Control

UNIT - IV

Input - Output Organization: Peripheral Devices - Input - output interface- Asynchronous data transfer-Modes of Transfer- Priority Interrupt - Direct Memory Access - Input- Output Processor

UNIT - V

Memory Organization: Memory Hierarchy - Main Memory- Auxiliary Memory - Associative memory- Cache Memory- Virtual Memory

TEXT BOOKS :

1. *M. Morris Mano.* 1993,Third Edition . "COMPUTER SYSTEM ARCHITECTURE, PHI.

REFERENCE BOOKS :

1. *V. K. Puri.* 2004. DIGITAL ELECTRONICS CIRCUITS AND SYSTEMS, Tata McGraw Hill Publication.
2. *M. Carter.* 2006. COMPUTER ARCHITECTURE, Schaum's outline series, Tata McGraw Hill Publication

15UCT13P	CORE LAB - I: PROGRAMMING IN C	SEMESTER - I
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Total Credits: 4
Hours Per Week: 3

CONTENTS

1. Program to find the sum, average, standard deviation for a given set of numbers.
2. Program to generate n-prime numbers.
3. Program to generate Fibonacci series.
4. Program to print magic square of order n where $n > 3$ and n is odd.
5. Program to sort the set of n-numbers in ascending order.
6. Program using pointer to check whether the given string is a palindrome or not.
7. Program to count the number of Vowels in any sentence.
8. Program to find the factorial of a number using recursive function.
9. Program to print the student's Mark sheet assuming roll no, name, and marks in 5 subjects as array of structures and print the mark sheet in the university pattern.
10. Program to use function pointers to add two matrices and to return the resultant matrix to the calling function.
11. Program receiving two filename as arguments and check whether the file contents are same or not, and to delete the duplicate file.
12. Program to take 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 characters ii) no. of words and iii) no. of lines.

16UMA1AB	ALLIED - I: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE	SEMESTER - I
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Total Credits: 4
Hours Per Week: 5

OBJECTIVE:

1. On successful completion of this subject the students should have Understanding the concepts of mathematics.
2. To know about the applications of statistical and numerical methods for Computer Science.

CONTENTS

UNIT - I

Matrices - Introduction - Determination - Inverse of a matrix - Rank of a Matrix - Eigen Value and Eigen vector Problems - Cayley's Hamilton Theorem.

UNIT - II

System of Simultaneous Linear algebraic Equation: Gauss elimination - Gauss Jacobi Gauss Jordon - Gauss Seidal methods.

UNIT - III

Numerical Differentiations - Newton's forward Difference - Backward Difference -Stirling's formula.

UNIT- IV

Numerical Integration - Trapezoidal Rule & Simpson's rule - Numerical solutions of ordinary differential Equations -Taylor series for first order derivative.

UNIT - V

Measures of central tendency: Mean - Median - Mode - Measures of dispersion: Range - Mean deviation - Quartile deviation - Standard deviation.

TEXT BOOKS:

1. *Navanitham, P.A.* 2013. **Business Mathematics & Statistics.** Jai Publishers,Trichy
2. (Unit I and V).
3. *Venkataraman , M.K.* 2004. **Numerical Methods in science & Engineering .** NPC . Revised Edition - (Unit II , III &IV)

REFERENCE BOOKS :

1. *Gupta, S.P. and Gupta, M.P .* 2002. **Business Statistics .** Sultan Chand and Sons.
2. *Kandasamy,P.and Thilagavathi ,K.* 2004. **Numerical Methods** S.Chand and Company Ltd., New Delhi.

16UCT23A	CORE - III: C++ PROGRAMMING	SEMESTER - II
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Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

To instill the knowledge on the

1. Basic Object-oriented programming concepts
2. Object Oriented Programming Language C++

CONTENTS

UNIT -I

Introduction to C++ - key concepts of Object-Oriented Programming - Advantages - Object Oriented Languages.

I/O in C++: Streams in C++-Predefined Streams-Buffering - Stream Classes- Formated and Unformated data- Unformated Console I/O Operation - Type casting with cout statements- C++ Declarations.

Control Structures: - Decision Making and Statements: If Else, jump, goto, break, continue, Switch case statements. **Loops in C++:** For, While, Do.

UNIT- II

Functions in C++: Parts of Function - Passing Arguments - Inline functions -Function overloading .

Classes and Objects: Classes in C++- Declaring Objects - Defining Member Functions - Static Member variables and functions - array of objects -friend functions - Overloading member functions.

Constructor and Destructor: Constructor and Destructor - Characteristics -Application with constructors-Overloading Constructor-Destructors.

UNIT- III

Operator Overloading: The Keyword Operator- Overloading unary, binary operators - Overloading Friend functions - type conversion.

Inheritance: Types of Inheritance - Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance - Virtual base Classes - Abstract Classes.

UNIT- IV

Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes.

Arrays: Characteristics – Initialization of arrays using functions-Memory models – new and delete operators – dynamic object.

Virtual Functions: Rules for Virtual Functions -Pure Virtual Functions.

UNIT- V

String – Declaring and Initializing string objects – String Attributes.
Files – File stream classes – file modes – Sequential Read / Write operations- Error Handling Functions-Exception Handling.

TEXT BOOKS:

1. *Ashok N. Kamthane.* 2013. OBJECT-ORIENTED PROGRAMMING WITH ANSI AND TURBO C++, Pearson Education Publication.

REFERENCE BOOKS:

1. *E. Balagurusamy.* 1998. OBJECT-ORIENTED PROGRAMMING WITH C++, Tata Mc-Graw Hill Publication.
2. *Yashvant. P. Kanetkar.* 2007. Let us C++, BPB, New Delhi.

16UCT23P	CORE LAB - II: PROGRAMMING IN C++	SEMESTER - II
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Total Credits: 4
Hours Per Week: 4

CONTENTS

1. Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable and the Member functions ADD (), SUB (), MUL (), DIV () to perform addition, subtraction, multiplication, division respectively. Using a member function to get and display values.
2. Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.
3. Program to create a class FLOAT that contains one float data member, overloading all the four Arithmetic operators so that they operate on the object FLOAT.
4. Program to create a class STRING, with a Member Function to initialize, get and display strings, overload the Operator + to Concatenate two Strings, == to Compare two strings
5. Program to create a class, which consists of EMPLOYEE Detail(E_Number, E_Name, Department, Basic, Salary, Grade), with a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.

6. Program to create a class SHAPE with two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGE from class Shape and Calculate Area and Perimeter of each class separately and display the result.
7. Program to create two classes; each consists of two private variables, an integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes as arguments and the integer and float values of both objects separately and display the result.
8. Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.
9. Program to check whether the given string is a palindrome or not using Pointers.
10. Program to count number of vowels and spaces in a string.
11. Program to create a File and to display the contents of that file.
12. Program to merge two files into a single file.

15UCT23Q	CORE LAB - III : PROGRAMMING IN INTERNET AND OFFICE AUTOMATION	SEMESTER - II
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Total Credits: 2
Hours Per Week: 2

INTERNET

1. Creating e-mail ID.
2. Composing and sending a mail with attachment.
3. Forwarding a mail and to reply a mail with large number of recipients using cc and bcc options.
4. Searching newspaper sites, TV program schedules using Internet.
5. Verifying university /college details in their websites.
6. Upload resume in any job portal.

OFFICE AUTOMATION

1. Creating and formatting resume using MS WORD.
2. Creating a class time table using MS WORD
3. Preparing mail merge document for a parent meet using MS WORD
4. Preparing Student mark sheet using MS EXCEL
5. Creating a chart for result analysis using MS EXCEL
6. Preparing mark list with following conditions using data filter and data sort in MS EXCEL
7. Mark list in ascending order.
8. Average greater than or equal to 60.
9. Average between 50 and 60.
10. d) Average below 40.
11. Designing organizational chart for Arts and Science College using POWER POINT
12. Creating a power point presentation to advertise a product using Slide Transition and Custom animation
13. Creating a database to student's Mark sheet using MS Access
14. Creating a data base to employee pay roll using MS Access

16UMA2AB	ALLIED - II COMPUTER BASED OPTIMIZATION TECHNIQUES	SEMESTER- II
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Total Credits: 4
Hours Per Week: 5

OBJECTIVE:

1. On successful completion of this subject the students should have: -
Understanding various mathematical applications in industries.
2. Decision making for real time environment.

CONTENTS

UNIT - I

Linear Programming -Mathematical formulations of linear Programming
-Graphical method - Simplex method.

UNIT - II

Transportation problem - Assignment problem - Traveling Salesman Problem.

UNIT - III

Game Theory -Concept of Pure and Mixed Strategies -Solving 2 X 2 matrix with and without saddle point -n x 2 -2 x m games.

UNIT - IV (Derivations not included)

Queueing Theory : Introduction – Queueing system – Characteristics of Queueing system – symbols and Notation – Classifications of queues – Problems in (M/M/1) : (∞ /FIFO).

UNIT - V

PERT & CPM -Network representation -Backward pass -Forward pass - Computation -PERT Network -Probability factor .

TEXT BOOK :

1. *Manmohan, Gupta, P.K and Kanthiswarup.* 1997. **Operations Research.** S. Chand & sons.

REFERENCE BOOKS :

1. *Hamdy A Taha.* 2002. **Operations Research.** Pearson Education. 7th edition.
2. *Gupta, P.K. and Hira, D.S.* 2004. **Problems In Operations Research.** S. Chand Publication.

16UCT33A	CORE - IV: DATA STRUCTURES	SEMESTER - III
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Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

1. To understand and analyze algorithms
2. To learn fundamentals of linear and non-linear Data structures
3. To be familiar with searching and sorting

CONTENTS

UNIT - I

Introduction: Introduction of Algorithms, Performance Analysis. Arrays and structures: Representation of Arrays, Array creates, inset and delete of data elements - sparse Matrices.

Stacks and Queues: Stacks - Queues - Circular Queues - Evaluation of Expression -Infix to Postfix Conversion.

UNIT - II

Linked List: Singly Linked List: Insertion - Deletion - reverses the elements - Linked Stacks and Queues - Polynomial Addition - Circular Linked Lists - Doubly Linked List.

UNIT - III

Trees: Basic Terminology and Representation - Binary Trees - Binary Tree Representations - Binary Trees Traversals - Threaded Binary Trees - Binary Search Trees - Search, Inert, Delete.

UNIT - IV

Graphs: Terminology and Representations - Traversals: Depth First Search, Breath First Search - Minimum cost Spanning Trees- Shortest Paths and Transitive Closure

UNIT - V

Searching: Linear and Binary Search Sorting: Bubble sort - Insertion Sort - Quick Sort - Merge Sort - Heap Sort - Hashing Techniques : Static Hashing : Hash Tables - Hashing Functions .

TEXT BOOK :

1. *Horowitz, Shani, Anderson - Freed* Fundamentals of Data Structures in C [2nd Edition] Universities Press. (Unit I - Unit - V).

REFERENCE BOOKS:

1. *Ellis Horowitz, Sartaj Shani, "Data and File Structures"*. Galgotia Publication (Unit IV - Unit - V).
2. *Malik,D,S., 2003. "Data structures using C++"*. [1st Edition] Cengage learning
3. *Vaughan H.Patil, 2012. "Data Structures Using C++"*. [1st Edition] Oxford Higher Education

15UCT33B	CORE - V: JAVA PROGRAMMMING	SEMESTER - III
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Total Credits: 4
Hours Per Week: 5

OBJECTIVES:

To inculcate the knowledge on the

1. Basic Object-oriented programming concepts
2. Object Oriented Programming Language Java

CONTENTS

UNIT - I

Introduction to Object-Oriented Programming - The Java language - Variable Declarations and Arrays - Operators in Java. Control Statements: Introduction - Selection Constructs - Iteration Constructs - Jump Constructs. Introduction to Classes: Instance variables - Class variables - Instance Methods - Constructors - Class Methods - Declaring Objects.

UNIT - II

Classes and Methods in Detail: Method Overloading - Constructor Overloading - The this Reference - Using Objects in Method - Recursion - Access Modifiers - Inner Classes - Command Line Arguments. Inheritance: Basics of Inheritance - Super Class Variable and Subclass Object - The super reference - Constructor Chaining - Method Overriding - The final Keyword. Abstract Classes and Interfaces: The abstract Classes and Methods - Defining Interface - Implementing Interfaces - Extending Interface - Interface Reference. Exception Handling: Types of Exceptions-Uncaught Exceptions - Handling Exceptions - User Defined Exceptions

UNIT - III

Multithreaded Programming: Concept of Threads - Thread Creation - Thread's Life Cycle - Thread Scheduling - Synchronization and Deadlock. Packages and Access Modifiers: Packages - An Introduction - The package Declaration - The import Statement - Illustration Package - The Java Language Packages. Handling Strings: Creating Strings - Operations on Strings - Character Extractor Methods - String Comparison Methods

UNIT - IV

Input Output Classes: Input and Output Operations - Hierarchy of classes in java.io Package - File class - InputStream and OutputStream-RandomAccessFile Class.

Applets: Applet Basics - Applet Life Cycle - Running Applets - Methods of the Applet Class

UNIT - V

Abstract Windowing Toolkit : AWT classes - Hierarchy of Classes - Control Fundamentals - Component Class - Basic Component Classes - Various Container Classes - Frame Window in an Applet - Menus. Layout Management and Event Handling: Layout Management Policies - Standard Layout Managers - Handling Events - Hierarchy of Event Classes - Event Delegation Model - Event Classes - Event Listener Interfaces - Adapter Classes

TEXT BOOK :

1. Instructional Software Research and Development (ISRD) Group.2007. "Introduction to Object Oriented Programming through Java", Tata McGraw-Hill Publishing Company Limited, New Delhi.

REFERENCE BOOKS :

1. *E.BalaGurusamy*, 2007. Third Edition.“ Programming with JAVA - A Primer”, Tata McGraw-Hill Publishing Company Limited, Third Edition.
2. *John R. Hubbard*. 2007. “ Schaum’s Outline of Programming with Java”, Tata McGraw- Hill Publishing Company Limited, Second Edition.

15UCT33P	CORE LAB - IV: PROGRAMMMING IN JAVA	SEMESTER - III
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Total Credits: 4
Hours Per Week: 4

CONTENTS

1. Program to implement STACK operations.
2. Program to implement Linked List.
3. Program to implement Quick Sort.
4. Program to implement the concept of multiple inheritance using Interfaces.
5. Program to creating an Exception called payout-of-bounds and throw the exception.
6. Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.
7. Program to draw several shapes in the created windows.
8. Program to create a frame with four text fields 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.
9. Program to demonstrate the Multiple Selection List-box.
10. 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. Program to draw circle, square, ellipse and rectangle at the mouse click positions.
12. Program which open an existing file and append text to that file.

15UCT3AA	ALLIED - III: MICROPROCESSOR AND ALP	SEMESTER - III
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Total Credits: 3
Hours Per Week: 5

OBJECTIVE :

1. To inculcate the knowledge on various microprocessors

CONTENTS**UNIT - I**

Introduction to microprocessors : Evolution of microprocessors - Single-chip Microcomputer - Embedded Microprocessors - Bit- Slice processors - Microprogramming - RISC and CISC Processors - Scalar and Superscalar Processors - Vector Processors - Array Processors - Symbolic Processors - Digital Signal Processors Intel 8086 - Pin Description of Intel 8086 - Operating modes of 8086 - Register organization of 8086 - BIU and EU - Interrupts - 8086 based computer system - Addressing Modes of 8086

UNIT - II

8086 Instruction Set - Instruction Groups - Addressing Mode Byte - Segment Register Selection - Segment Override - 8086 Instructions Assembly Language Programs for 8086: Largest Number, Smallest Number in a Data Array - Numbers in Ascending and Descending order - Block Move or Relocation - Block Move using REP instruction - Sum of a series - Multi byte Addition

UNIT - III

Intel 386 and 486 Microprocessors: Intel 386 and 486 Microprocessor - 486DX Architecture - Register Organization of 486 Microprocessor - Memory Organization - Operating Modes of Intel 486 - Virtual Memory - Memory Management Unit - Gates - Interrupts and Exceptions - Addressing Modes of 80486 - Pin Configuration

UNIT - IV

Input devices - Output devices - Memory and I/O addressing - 8086 Addressing and Address Decoding - Programmable I/O Ports - DMA Data Transfer. Other Microprocessors - PowerPC Microprocessors - Pentium Microprocessors - Pentium Pro microprocessor - Alpha Microprocessor - Cyrix Microprocessor - MIPS Microprocessor - AMD Microprocessor

UNIT - V

MOTOROLA 68000, MOTOROLA 68020, MOTOROLA 68030, MOTOROLA 68040 Interfacing of A/D Converter and Applications: Introduction - Interfacing of ADC 0808 or ADC 0809 to Intel 8086 - Bipolar to Unipolar Converter - Sample and Hold Circuit, LF 398 - Microprocessor-based Measurement and Control of Physical Quantities.

TEXT BOOK :

1. *Badri Ram*. Fourteenth reprint. 2007. **ADVANCED MICROPROCESSORS AND INTERFACING**, Tata McGraw-Hill Publishing Company Limited.

REFERENCE BOOK :

1. *A.K. Ray, K.M. Bhurchandi*. Second Edition. 2007. **ADVANCED MICROPROCESSORS AND PERIPHERALS**, Tata McGraw-Hill Publishing Company Limited.

15UCT3SA	SKILL BASED SUBJECT - I: WEB TECHNOLOGY	SEMESTER - III
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Total Credits: 3
Hours Per Week: 4

OBJECTIVES :

1. To understand the concepts of Hyper Text Markup Language
2. To understand the concept of Extended Markup Language

CONTENTS

UNIT - I

HTML: Programming in HTML - Classifications of Tags - Use of Padded & Unpadded Tags - Formatting Tags - Meaning of Forms - Uses of Forms - Creation of Tables -Meaning of frames-Creation of frames- Graphics in HTML.

UNIT - II

DHTML: Meaning of DHTML-Comparison between HTML and DHTML: Static and Dynamic, Procedural and Non-procedural -Programming in DHTML-Cascading style sheets.

UNIT - III

VB Script: Introduction to Visual Basic language-Introduction to scripting language-Introduction to VB Script-Features of VB Script-Data types in VB script- Client Side Programming.

UNIT - IV

Arrays: Singular arrays- Multiple array - Array handling Mechanism - Examples of arrays-Data Validation Techniques.

Strings: Meaning of strings-Meaning of functions-String functions (or) String Manipulation mechanism.

UNIT - V

Extensible Markup Language: Introduction to XML-Comparison of XML with other Web Designing Languages-Creating XML documents-XML Style sheets-XML Document Object Model-XML Query Language-Hyperlinks in XML Documents.

TEXT BOOK :

1. *M.Sulochana, S.Brinda.* 2013. Fourth Edition . “WEB PROGRAMMING”, Kalyani Publishers.

REFERENCE BOOKS:

1. *Deitel, Deitel, Nieto, Lin & Sadhu.* 2001. XML HOW TO PROGRAM, Pearson Education.

15UCT3SP	SKILL BASED LAB -1 : WEB TECHNOLOGY	SEMESTER - III
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Total Credits: 2
Hours Per Week: 3

CONTENTS

1. Creating a static web page with multiple links and images.
2. Creating a static web page with forms and frames.
3. Creating a web page using CSS.
4. Creating a XML document that marks up a letter.
5. Creating a XML document for a database with DTD.
6. Creating a Microsoft XML Schema document for any XML document and validate.
7. Creating a XML document with Extensible style sheet.
8. Constructing a DTD and a Corresponding XML document with simple links.
9. Program to swap images using VB Script.
10. Program using VB Script for data validation in student register form.

15UCT43A	CORE - VI: SYSTEM SOFTWARE AND OPERATING SYSTEMS	SEMESTER - IV
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Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. To instill the concepts of the functionalities of various system software
2. To inculcate the common functionality of operating system

CONTENTS

UNIT - I

Assembler: Elements of assembly Language programming-A simple assembly scheme-Pass structure of assemblers-Design of Two Pass assembler. Macros and macro processor: Macro Definition and call-Micro Expansions-Nested macro calls. Compilers and Interpreters: Aspects of compilation-Memory allocation-Compilation of expressions - Compilation of control structures-Code optimization-Interpreters.

UNIT - II

Evolution of OS Functions: OS Functions-Evolution of OS functions-Batch processing systems-Multiprogramming systems-Time sharing systems-Real time operating systems-OS structure. Processes: Process definition - Process Control- Interacting Processes-Implementation of Interacting Processes-Threads.

UNIT - III

Scheduling: Scheduling policies-Job scheduling-Process Scheduling - Process management in unix-Scheduling in multiprocessor OS. Deadlocks: Definition-Resource status modeling-Handling deadlocks-Deadlock detection and resolution-deadlock Avoidance-Mixed approach to deadlock handling.

UNIT - IV

Process Synchronization: Implementing control synchronization-Critical sections-Classical process synchronization problems-Evolution of Language features for process synchronization-Semaphores-Critical regions-Conditional critical regions-Monitors. Inter-process Communication: Inter-process messages-Implementation issues-Mailboxes

UNIT - V

Memory Management: Memory allocation preliminaries-Contiguous memory allocation-Non contiguous memory allocation-Virtual memory using paging-Virtual memory using segmentation. File Systems: Directory Structures-File production-Allocation of Disk space-Implementing file access-File sharing-File system reliability- Unix File System.

TEXT BOOK :

1. *D M Dhamdhare*.1999.2nd Revised Edition ,**"SYSTEMS PROGRAMMING AND OPERATING SYSTEMS"**, Tata McGraw-Hill Publishing.

REFERENCE BOOKS :

1. *Leland L. Beck*. Third Edition. 2003. **SYSTEM SOFTWARE-AN INTRODUCTION TO SYSTEMS PROGRAMMING**, Pearson Education Publishers.
2. *H.M. Deitel*. Second Edition. 2003. **OPERATING SYSTEMS**, Pearson Education Publication.
3. *Achyut S. Godbole*. 2002. **OPERATING SYSTEMS** , Tata McGraw Hill Publications.

16UCT43B	CORE - VII: RELATIONAL DATABASE MANAGEMENT SYSTEM	SEMESTER - IV
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Total Credits: 4
Hours Per Week: 6

OBJECTIVE :

1. To inculcate knowledge on RDBMS concepts and Programming with Oracle.

CONTENTS

UNIT - I

Database Concepts: A Relational approach: Database - Relationships - DBMS - Relational Data Model - Integrity Rules - Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling - Dependency - Database Design - Normal forms - Dependency Diagrams - De-normalization - Another Example of Normalization.

UNIT - II

Oracle9i: Overview: Personal Databases - Client/Server Databases - Oracle9i an introduction - SQL *Plus Environment - SQL - Logging into SQL *Plus - SQL *Plus Commands - Errors & Help - Alternate Text Editors - SQL *Plus Worksheet - iSQL *Plus. Oracle Tables: DDL: Naming Rules and conventions - Data Types - Constraints - Creating Oracle Table - Displaying Table Information - Altering an Existing Table - Dropping, Renaming, Truncating Table - Table Types - Spooling - Error codes.

UNIT - III

Working with Table: Data Management and Retrieval: DML - adding a new Row/Record - Customized Prompts - Updating and Deleting an Existing Rows/Records - retrieving Data from Table - Arithmetic Operations - restricting Data with WHERE clause - Sorting - Revisiting Substitution Variables - DEFINE command - CASE structure. Functions

and Grouping: Built-in functions -Grouping Data. Multiple Tables: Joins and Set operations: Join - Set operations.

UNIT - IV

PL/SQL: A Programming Language: History - Fundamentals - Block Structure - Comments - Data Types - Other Data Types - Declaration - Assignment operation - Bind variables - Substitution Variables - Printing - Arithmetic Operators. Control Structures and Embedded SQL: Control Structures - Nested Blocks - SQL in PL/SQL - Data Manipulation - Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors - Implicit & Explicit Cursors and Attributes - Cursor FOR loops - SELECT...FOR UPDATE - WHERE CURRENT OF clause - Cursor with Parameters - Cursor Variables - Exceptions - Types of Exceptions.

UNIT - V

PL/SQL Composite Data Types: Records - Tables - arrays. Named Blocks: Procedures - Functions - Packages -Triggers.

TEXTBOOK :

1. *Nilesh Shah* .2005. 2nd edition DATABASE SYSTEMS USING ORACLE, PHI. (UNIT-I: Chapters 1 & 2 UNIT-II: Chapters 3 & 4 UNIT III: Chapters 5 & 6 UNIT-IV: Chapters 10 & 11 UNIT-V: Chapters 12,13 & 14)

REFERENCE BOOKS :

1. *Arun Majumdar & Pritimoy Bhattacharya*. 2007. DATABASE MANAGEMENT SYSTEMS , TMH.
2. *Gerald V. Post*. 2004. 3rd edition DATABASE MANAGEMENT SYSTEMS , TMH.

16UCT43P	CORE LAB - V: RELATIONAL DATABASE MANAGEMENT SYSTEM	SEMESTER - IV
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Total Credits: 4
Hours Per Week: 5

CONTENTS

1. a. Create DEPARTMENT, DESIGNATION, EMPLOYEE tables with required constraints.
DEPARTMENT :Deptid (pk) : varchar2, Deptname (nn) : varchar2
DESIGNATION :Desid (pk): varchar2, Designation (nn): varchar2
EMPLOYEE :
Empid(pk): varchar2
Empname (nn): varchar2
Deptid(fk): varchar2
Desid(fk): varchar2
Gender(nn): char
Dob (nn): date
Doj (nn): date
Contactnumber: number
Bpay (nn): number
- b. Add a new column mailid of varchar type in the EMPLOYEE table
2. a. Insert necessary records in the above tables.
b. Update the designation id of the employee with empid 'e5' as 'CLS'.
3. a. Display the details of the employees whose designation is manager.
b. Display the employee details in ascending order based on their name.
4. a. Find the maximum salary of the employee of each department.
b. Display the name of the employee and their designation.
5. Create a view to display the details of the employee whose designation is junior assistant in sales department.

6. Create a report to display the details of the employee of the accounts department.
7. Create a cursor to display all employee IDs and names from the EMPLOYEE table.
8. Write a procedure to update the basic pay.
Senior Manager: 25% , Junior Manager : 20% , Junior Clerk: 15%,
Senior Clerk: 12%, Senior Assistant: 10%, Junior Assistant: 8%.
9. Create a function to find sum of salaries of all employees working in sales department.
10. Write a database trigger before delete for each row not allowing deletion on employee table and give appropriate message.
11. Write a Database trigger before insert for each row on the table EMPLOYEE not allowing transaction on Saturday / Sunday.
12. Display the constraint details of all the above three tables

16UCT43Q	CORE LAB - VI: LINUX PROGRAMMING	SEMESTER - IV
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Total Credits: 4
Hours Per Week: 5

1. Shell program to check whether the given file is an ordinary file or directory file. If it is an ordinary file check that the file has read permission, if it has read permission then display the contents of it, then check for write permission, if it has write permission update its content.
2. Shell program to read three filenames. Check all the files for read permission, if it has read permission then merge the file content to the new file.
3. Shell program to list the files in the current folder using for loop
4. Shell program to count number of ordinary files and directory files in the given folder
5. Shell program to count total number of files that has read and write permission in the present working directory
6. Shell Program to develop a scientific calculator
7. Shell Program to print given numbers sum of all digit
8. Shell Program to convert decimal number to hexadecimal number
9. Shell Program to count number of words, characters, white spaces and special symbols in a given text
10. Shell Program to display number pattern
11. Shell Program to check whether the string is palindrome or not
12. Shell Program to sort the number in ascending order

15UCT4AA	ALLIED - IV: NETWORK SECURITY AND CRYPTOGRAPHY	SEMESTER - IV
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Total Credits: 3
Hours Per Week: 5

OBJECTIVES :

1. To understand the various risks involved with network computers
2. To understand the various security tools and techniques

CONTENTS

UNIT - I

Attacks on computers and computer security: Introduction -Need for security - Security approaches -principles of security -Types of attacks. Cryptography : Concepts and techniques - introduction - plain text and cipher text -substitution techniques - transposition techniques encryption and decryption - symmetric and asymmetric key cryptography-possible type of attacks.

UNIT - II

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)- Advanced Encryption Standard (AES) Asymmetric Key Algorithms: RSA - Digital Signature

UNIT - III

Digital certificate: Introduction - digital certificates. Internet Security Protocols : Introduction - basic concepts - Secure Socket Layer - (SSL) - Transport Layer Security(TLS) - Secure Hyper Text Transfer Protocol (SHTTP) - Time Stamping Protocol (TSP) - Secure Electronic Transaction (SET) - SSL Versus SET - 3-D secure Protocol - Electronic Money - Email security - Wireless Application Protocol (WIP)

UNIT - IV

User Authentication and Kerberos: Introduction – Authentication basics - Passwords – Authentication Tokens – Certificate based Authentication – biometric authentication – Kerberos – Key distribution centre – Security handshake Pitfalls – Single sign on (SSO) Approaches.

UNIT - V

Data Base Security- Network Security Firewalls - Virtual Private Networks (VPN): Introduction – Brief introduction to TCP/IP – Fire walls – IP security – Virtual Private networks (VPN) – Intrusion.

TEXT BOOK :

1. *Atul Kahate*. Second Edition. 2003. CRYPTOGRAPY AND NETWORK SECURITY, Tata McGraw-Hill.

16UCT53A	CORE - VIII : DATA COMMUNICATION AND NETWORKS	SEMESTER - V
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Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. To instill the knowledge on network communication.
2. To inculcate the knowledge on internet working concepts.

CONTENTS

UNIT - I

Introduction to Data Communications and Networking – Information Encoding – Analog and Digital Transmission Methods.

UNIT - II

Modes of Data Transmission and Multiplexing -Transmission Errors: Introduction -Error Classification -Types of error- Error Detection and Correction

Transmission Media: Guided Media, Unguided Media – Network Topologies: Mesh, Star, Tree, Ring, Bus – Switching: Circuit switching, Message switching, Packet switching.

UNIT - III

Routing Algorithms: Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms-Network Protocols and OSI Model-Integrated Services Digital Network (ISDN).

UNIT - IV

Internetworking Concepts: Introduction – The Problems in Internetworking - Internetworking Devices- Introduction to TCP / IP, IP, ARP, RARP, ICMP

UNIT - V

TCP: Features of TCP, Relationship between TCP and IP, Ports and Sockets, TCP connections, What makes TCP Reliable, TCP Packet Format - User Datagram Protocol (UDP): UDP Packet, Difference between UDP and TCP - Domain Name System (DNS) - Electronic Mail (Email) - File Transfer Protocol (FTP).

TEXT BOOK :

1. *Achyut S.Godbole. 2007 . DATA COMMUNICATIONS AND NETWORKS*, Tata McGraw Hill Publications.

REFERENCE BOOKS :

1. *Behrouz A. Forouzan. 19th reprint, 2007. DATA COMMUNICATIONS AND NETWORKING - SECOND EDITION UPDATE*, Tata McGraw-Hill Publication.
2. *Andrew S. Tanenbaum. 3rd Edition, 2000. COMPUTER NETWORKS*, Prentice Hall of India.

16UCT53B	CORE - IX : C#.NET PROGRAMMING	SEMESTER - V
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Total Credits: 4
Hours Per Week: 6

OBJECTIVE:

1. To enable the students to acquire basic knowledge in Dot net Programming.
2. To understand the goals and objectives of the .NET Framework.
3. To get basic knowledge and programming skill of the . NET Framework C# programming language.

CONTENTS

UNIT - I

Understanding .NET: The C# environment - Over view of C# - Literals, Variables and Data Types - Methods in C#

UNIT - II

Handling Arrays-Manipulating Strings - Structures and Enumerators - Classes and Objects

UNIT - III

Inheritance and Polymorphism Interface-Operator Overloading - Delegates and Events

UNIT - IV

Managing Errors and Exceptions - Multithreading in C# - Windows and Web-based Application Development on .NET

UNIT - V

Web Forms in C# - Buttons - Text boxes - Labels - Literals - File Upload - Place holders - Check box - Radio buttons - Tables - Panels - Images - Image Buttons - Image Maps - List boxes - Drop-down list - hyperlinks -

link buttons - Tree view - Menu - Validation Controls - Validation Groups

TEXT BOOKS:

1. *Balagurusamy, E.* 1999. **PROGRAMMING IN C# A PRIMER**, [II Edition], Tata McGraw Hill.(Unit I - IV)
2. *Geff Ferguson* .2007. **C# Programming Bible**,[1st Edition] Willy India

REFERENCE BOOKS:

1. *Art Gittleman.*2008. **C#.NET ILLUSTRATED** , Viva Bark Pvt. Ltd.
2. *Matt Telles* **C# 2005 PROGRAMMING** - Black Book dreamtech press. (Unit V)

16UCT53P	CORE LAB - VII : PROGRAMMING IN C#.NET	SEMESTER - V
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Total Credits: 4
Hours Per Week: 5

CONTENTS

1. Program to implement Array List Methods
2. Program to display current time using delegate, event and Inheritance
3. Program to display flod's triangle
4. Program to handle exceptions
5. Program to load an image; format the background color using windows application.
6. Program to demonstrate hash table
7. Program to find factorial and prime number using windows form application
8. Develop a simple calculator.
9. Develop a Student registration form and validate its control
10. Develop a Window Application with menu and dialog boxes
11. Developing a for Employee details
12. Program to implement key press events

15UCT5SA	SKILL BASED SUBJECT - II: SOFTWARE TESTING	SEMESTER - V
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Total Credits: 3
Hours Per Week: 5

OBJECTIVES :

1. To understand the concepts of Various Software Development Lifecycles
2. To understand the concept of Test Development Life Cycle and various types of testing

CONTENTS

UNIT - I

Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing – Challenges in White-Box Testing.

UNIT II

Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? - When to do Black-Box Testing? - How to do Black-Box Testing? - Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing - Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash

UNIT - III

System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT - IV

Performance Testing: Factors governing Performance Testing - Methodology of Performance Testing - tools for Performance Testing - Process for Performance Testing - Challenges. Regression Testing: What is Regression Testing? - Types of Regression Testing - When to do Regression Testing - How to do Regression Testing - Best Practices in Regression Testing.

UNIT - V

Test Planning, Management, Execution and Reporting: Test Planning - Test Management - Test Process - Test Reporting -Best Practices. Test Metrics and Measurements: Project Metrics - Progress Metrics - Productivity Metrics - Release Metrics.

TEXT BOOK :

1. *Srinivasan Desikan, Gopalswamy Ramesh.* 2006. **SOFTWARE TESTING PRINCIPLES AND PRACTICES**, Pearson Education.

REFERENCE BOOKS :

1. *WilliamE.Perry.* 2007. 3rd Edition. **EFFECTIVE METHODS OF SOFTWARE TESTING**, Wiley India.
2. *Renu Rajani, Pradeep Oak.* 2007. **SOFTWARE TESTING**, TMH.

15UCT5SP	SKILL BASED LAB - II : SOFTWARE TESTING	SEMESTER - V
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Total Credits: 2
Hours Per Week: 4

CONTENTS

1. Performing a test in the Win Runner Testing Tool to analyze the suitable problem and displaying the results.
2. Performing a test in the Load Runner Testing Tool to analyze the suitable problem and displaying the results.
3. Creating 10 TEST CASES for the following programs. Test cases can be for Input data, Conditional expressions, control transfer, output, etc. Run-Test-Debug- until all the test cases are in success status. Marks distribution as follows:
 1. List of Test Descriptions (at least 10) for the Program. (20%)
 2. Test Cases (40%)
 3. Program with all test case results success (30%)
 4. Record (10%)

TEST CASE Example:

Test-Id	Test Description	Test Steps	Expected Output	Actual Output	Status
TC-01	Acceptance of 10 digit input data	Input 10 Digit Number	Accepting 10 digit number	Accepted 10 digit number	Success
TC-02	Non-acceptance of character data	Input a character data 'X'	Character X should not be accepted	Accepting Character data	Failure
Modify PIC X(10) into PIC 9(10) and then run program for Test-id TC-02 again					

TC-02	Non-acceptance of character data	Input a character data 'X'	Character X should not be accepted	Character data not accepted	Success
TC-03	Digit sum of 10 digit is in single digit	Output data	Single digit sum	Single digit Sum	Success

4. Creating test cases and testing the functionality of calculator.
5. Creating test cases and testing the C Program which generates sum of an individual digit of a 5-digit number until a single digit is produced.
6. Testing the C program: Sort and store the elements two arrays of integers into the third list.
7. Testing the C program: Experiment the operations of STACK using array implementation.
8. Testing the C++ Program: Palindrome string checking program. (Using Pointers)

15UCT63A	CORE - X : PHP & MySQL	SEMESTER - VI
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Total Credits: 4
Hours Per Week: 5

OBJECTIVES :

1. To implement the web applications using PHP
2. To know about PHP in a detailed manner.

CONTENTS

UNIT - I

Essential PHP: Enter PHP - Creating your development environment-creating and running first PHP-mixing HTML and PHP - printing some text - adding comments to PHP code - working with variables - creating variable variables - creating constants - internal data types - Operators - Control Structure Statements- Branching and Looping.

UNIT - II

Strings and Array: The string functions, converting to and from strings - formatting text strings - building yourself some arrays - modifying the data in arrays - deleting array elements Creating Functions - Creating function in PHP, Passing functions some data - introducing variable scope in PHP - Accessing global data, working with static variables - PHP conditional functions - PHP variable functions - nesting functions - creating include files - returning errors from functions.

UNIT - III

Reading Data in Web Pages - Setting up web pages to communicate with PHP- handling text fields- handling text areas - handling check boxes - handling radio buttons - handling list boxes -handling password controls - handling hidden controls - handling image maps - handling file uploads - handling buttons.

UNIT - IV

PHP Browser : Handling Power – using PHP server variable, using HTTP Headers- getting browser type, redirecting browsers with HTTP headers- Dumping a form's data all once- Handling form data with custom array- performing data validation- checking the user entered data, requiring numbers- requiring text- persisting user data. File handling : fopen, feof, fgets, file_get_contents, reading a file into an array with file, file_exists, filesize, fread, fscanf,, parse_ini_file, getting file info with stat, fseek, copy, unlink, fwrite, reading and writing binary files, fwrite, file_put_contents, locking files.

UNIT - V

Working with databases: What is database, creating a MySQL database- creating a new table- putting data into the new database - accessing the database in PHP- updating databases- inserting into database- deleting records- creating new table- creating new database- sorting your data.

TEXT BOOK :

1. *Steven Holzner*, 2008. **COMPLETE REFERENCE PHP**, Tata Mc Graw Hil.,

REFERENCE BOOKS :

1. *Steve Suehring, Tim Converse, Joyce Park*. 2009. **PHP6 MySQL** (Bible).
2. *Vikram Vaswani*.2004. **THE COMPLETE REFERENCE OF MYSQL**, Tata McGraw Hill Publications

15UCT63P	CORE LAB - VIII : PROGRAMMING IN PHP & MySQL	SEMESTER - VI
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Total Credits: 4
Hours Per Week: 5

CONTENTS

1. Program to send an HTML formatted Email in PHP.
2. Program to do different types of Sorting in PHP.
3. Program to do String Manipulation in PHP.
4. Program to get color code from the user which displays the color name.
5. Program to do calculator functions
6. Program to upload a file in PHP.
7. Program for login authentication using PHP and MySQL
8. Creating a Pay slip for an employee using PHP and MySQL
9. Creating a Electricity bill using PHP and MySQL, and generate the reports
10. Creating a student data base with DML queries.
11. Program to demonstrate how a web page can communicate with a web server while a user type characters in an input field
12. Download a small project module and convert into our Requirement

Example website:

1. www.phpclasses.com
2. www.codeguru.com

16UCT63Q	CORE LAB - IX : HARDWARE AND NETWORKING	SEMESTER - VI
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Total Credits: 4
Hours Per Week: 5

CONTENTS

Hardware :

1. Study of various DOS Commands.
2. Study & identification of various parts of a PC.
3. Installation of operating system
4. Formatting & partitioning of a hard disk drive.
5. Configuring Dual Boot in windows / ubuntu
6. Configuring Remote Desktop Connection.
7. Creation and administration of user accounts.

Network :

8. Program to get IP address of a host
9. Program to client to server chat
10. Program to implement Asynchronous Communication
11. Program to implement Remote Method Invocation
12. Write a program to implement Stop & Wait Protocol

16UCT63V	CORE - XI : PROJECT WORK	SEMESTER - VI
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Total Credits: 3
Hours Per Week: 5

CONTENTS

1. Each student should carry out individually one Project Work and it may be a work using the software packages that they have learned or the implementation of Concepts from the papers studied or implementation of any innovative idea.
2. The Project work should be compulsorily done in the college only under the supervision of the Department staff concerned
3. No candidate will be allowed to change the title of the Project work.
4. Final Viva-Voce will be conducted Both the Internal (Respective Guides) and External Examiners.

15UCT5EA	ELECTIVE - I : SOFTWARE ENGINEERING	SEMESTER - V
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Total Credits: 3
Hours Per Week: 5

OBJECTIVE S:

1. To understand the concepts of software Development Lifecycle
2. To understand the concepts of various software engineering concepts

CONTENTS

UNIT - I

The Evolving role of software – Software – Software Crises & Myths – Software Engineering : Layered Technology – The Software Process Model – Evaluating Software Process Models – Components Based Development – The Formal Methods Model – 4GT – Software Scope – Resources – Software Project Estimation – Decomposition Techniques – Empirical Estimation Models.

UNIT - II

Analysis Concepts & Principles: Requirement Analysis – Analysis Principles – Software Prototyping – Specification. Analysis Modeling: Data Modeling – Functional Modeling & Information Flow – Behavioral Modeling.

UNIT - III

Design Concepts & Principles: The Design Process – Design Principles – Design Concepts – Effective Modular Design.

UNIT - IV

User Interface Design: The Golden Rules – UID – Task analyzing and modeling – Interface Design Activities – Implementation Tools – Design Evaluation.

UNIT - V

Component Level Design: Structured Programming - Comparison of Design Notations. Object oriented design: Design for Object Oriented Systems - the System design process - The Object Design Process.

TEXT BOOK :

1. *Roger S Pressman*. 2005. 5th Edition. **SOFTWARE ENGINEERING
A PRACTITIONER'S APPROACH**, TMH.

16UCT5EB/15UCT6EA	ELECTIVE - I: CLOUD COMPUTING	SEMESTER - V
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Total Credits: 3
Hours Per Week: 5

OBJECTIVE :

1. To understand the concepts of Cloud Computing
2. To understand the concepts of Cloud Application Development

CONTENTS

UNIT - I

Cloud Computing Basics - Cloud Computing Overview-Applications-Intranets and the cloud-First Movers in the cloud. When you can use cloud computing-benefits-Limitations - Security concerns.

UNIT - II

Cloud Computing Services -operational, economic, staffing benefits - Thomson Reuters. Cloud Computing Technology: Hardware and Infrastructure : Clients - Security-Network-Services

UNIT - III

Accessing the cloud: Platforms - web applications - Web API- Web browsers. Cloud Storage: Overview- providers - Standards: Applications-Client - Infrastructure-Service.

UNIT - IV

Cloud Computing at work: Software as a Service: overview - driving forces - company offerings - industries. Software Plus Services: Overview - Mobile device integration - Providers -Microsoft Online

UNIT - V

Developing Applications: Google-Microsoft-Intuit Quick Base- Cast Iron Cloud -Bungee Connect- Development -trouble shooting -Application Management-Virtualizations -Server solutions-Cloud Service-Best Practices

TEXT BOOK :

1. *Anthony T.Velte, Toby.J.Velte, Robert Elsenpeter.2009. CLOUD COMPUTING- A LAB APPROACH* , Tata McGraw-Hill

16UCT6EA/ 15UCT5EB	ELECTIVE - II : MOBILE COMPUTING	SEMESTER - VI
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Total Credits: 3
Hours Per Week: 5

OBJECTIVES :

1. To inculcate the concepts of Mobile Computing Architecture
2. To understand the concepts of various Mobile Computing Technologies

CONTENTS

UNIT - I

INTRODUCTION - Mobility of Bits and Bytes - Wireless-the beginning - Mobile computing - Dialog control - Networks - Middle ware and gateways - Application and Services - Developing Mobile computing applications - Security in Mobile computing - Standards - Why is it necessary? - Standard bodies - Players in the wireless space.

MOBILE COMPUTING ARCHITECTURE - History of computers - History of internet -Internet-the Ubiquitous Network - Architecture for mobile computing - Three-Tier architecture - Design considerations for mobile computing - Mobile computing through Internet - Making Existing applications Mobile-enabled.

UNIT - II

MOBILE COMPUTING THROUGH TELEPHONY - Evolution of telephony - Multiple access procedures - Mobile computing through telephone - Developing an IVR application - Voice XML - Telephony applications programming interface(TAPI) EMERGING TECHNOLOGIES - Introduction - Bluetooth - Radio Frequency Identification (RFID) - Wireless Broadband (WiMAX) - Mobile IP - Internet Protocol Version 6 (IPv6) - Java card.

UNIT - III

GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM) - GSM Architecture - GSM Entities - Call routing in GSM - PLMN Interfaces - GSM Address and Identifiers - Network aspects in GSM - GSM frequency allocation - Authentications and Security.

SHORT MESSAGE SERVICES (SMS) - Mobile computing over SMS - Short Message Services (SMS) - Value added services through SMS - Accessing SMS bearer.

UNIT - IV

GENERAL PACKET RADIO SERVICE (GPRS) - 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. WIRELESS APPLICATION PROTOCOL (WAP) - WAP - MMS - GPRS applications.

UNIT - V

CDMA and 3G - Spread Spectrum technology - Is-95 - CDMA Vs GSM - Wireless data - 3rd Generation networks - Applications on 3G. WIRELESS LAN - Advantages - IEEE 802.11 Standards - Wireless LAN architecture - Mobility in Wireless LAN - Deploying Wireless LAN - Mobile ADHOC networks and Sensor networks - Wireless LAN Security - WiFi Vs 3G.

TEXT BOOK :

1. *Ashoke K Talukder, Roopa R Yavagal*. Fourth Reprint 2007. **MOBILE COMPUTING**, Tata McGraw Hill

15UCT6EB	ELECTIVE- II: COMPUTER INSTALLATION AND SERVICING	SEMESTER - VI
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Total Credits: 3
Hours Per Week: 5

OBJECTIVE :

1. The concepts of Computer Installation and Servicing

CONTENTS

UNIT - I

PC SYSTEM Personal Computer System - Functional Blocks - System Unit - Display Unit - Keyboard. INSIDE PC Motherboard - BIOS - CMOS-RAM - Motherboard types - Processors - Chipsets - USB. ON-BOARD MEMORY PC's Memory Organization - Memory packaging - I/O Ports - USB Port.

UNIT - II

Floppy Disk Drive and Controller - Hard Disk Drive and Controller, MMX - Multimedia Extensions.

UNIT - III

Input Devices - Monitors and Display Adapters.

UNIT - IV

Output Devices DOT Matrix Printer - Printer Controller - Laser Printer - Inkjet Printer. Computer Installation Power supply - PC Installation.

UNIT - V

Trouble shooting and servicing POST, Trouble shooting the mother board - Trouble shooting the Keyboard - Trouble shooting the disk devices - Trouble shooting the printer. Maintenance Diagnostic Software's - Data Security. Computers and Communication Networking - Modem - Internet.

TEXT BOOK :

1. *D.Balasubramaniam.2005.Second Edition."* **COMPUTER INSTALLATION AND SERVICING"**, Tata McGraw-Hill.

16UCT6EC/ 15UCT63B	ELECTIVE - III : DATA MINING	SEMESTER - VI
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Total Credits: 3
Hours Per Week: 5

OBJECTIVE :

1. To understand the concepts of various algorithms and applications of data mining

CONTENTS

UNIT - I

Basic Data Mining Tasks - Data Mining Versus Knowledge Discovery in Data Bases - Data Mining Issues - Data Mining Matrices - Social Implications of Data Mining - Data Mining from Data Base Perspective.

UNIT - II

Data Mining Techniques - a Statistical Perspective on data mining - Similarity Measures - Decision Trees - Neural Networks - Genetic Algorithms.

UNIT - III

Classification: Introduction - Statistical - Based Algorithms - Distance Based Algorithms - Decision Tree - Based Algorithms - Neural Network Based Algorithms - Rule Based Algorithms - Combining Techniques.

UNIT - IV

Clustering: Introduction - Similarity and Distance Measures - Outliers - Hierarchical Algorithms . Partitional Algorithms.

UNIT - V

Association Rules: Introduction - Large Item Sets - Basic Algorithms - Parallel & Distributed Algorithms - Comparing Approaches - Incremental Rules - Advanced Association Rules Techniques - Measuring the Quality of Rules.

TEXT BOOK :

1. *Margaret H.Dunbam.* 2003. DATA MINING INTRODUCTORY AND ADVANCED TOPICS, Pearson Education.

REFERENCE BOOKS:

1. *Jiawei Han, Micheline Kamber.* 2001. DATA MINING CONCEPTS & TECHNIQUES, Academic Press. 1. 7, 8 and 11).

15UCT6ED	ELECTIVE - III: GRAPHICS AND MULTIMEDIA	SEMESTER - VI
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Total Credits: 3
Hours Per Week: 5

OBJECTIVES :

1. To inculcate knowledge on Graphics.
2. To understand the Multimedia concepts.

CONTENTS

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.

UNIT - III

Text: Types of Text - Unicode Standard - Font - Insertion of Text -Text compression - File formats. Image: Image Types - Seeing Color - Color Models - Basic Steps for Image Processing -Scanner - Digital Camera - Interface Standards - Specification of Digital Images - CMS - Device Independent Color Models - Image Processing software - File Formats - Image Output on Monitor and Printer.

UNIT - IV

Audio: Introduction - Acoustics - Nature of Sound Waves - Fundamental Characteristics of Sound - Microphone - Amplifier - Loudspeaker - Audio Mixer - Digital Audio - Synthesizers - MIDI - Basics of Staff Notation - Sound Card - Audio Transmission - Audio File formats and CODECs - Audio Recording Systems - Audio and Multimedia - Voice Recognition and Response - Audio Processing Software.

UNIT - V

Video: Analog Video Camera - Transmission of Video Signals - Video Signal Formats - Television Broadcasting Standards - PC Video - Video File Formats and CODECs - Video Editing - Video Editing Software.

Animation: Types of Animation - Computer Assisted Animation - Creating Movement - Principles of Animation - Some Techniques of Animation - Animation on the Web - Special Effects - Rendering Algorithms.

Compression: MPEG-1 Audio - MPEG-1 Video - MPEG-2 Audio - MPEG-2 Video.

TEXTBOOKS:

1. *Donald Hearn, M.Pauline Baker.* 2001. 2nd edition. "**COMPUTER GRAPHICS**", PHI. (UNIT-I: 3.1-3.6,4.1-4.5 & UNIT-II: 5.1-5.4,6.1-6.5)
2. *Ranjan Parekh.*2007."**PRINCIPLES OF MULTIMEDIA**", TMH. (UNIT III: 4.1-4.7,5.1-5.16 UNIT-IV: 7.1-7.3,7.8-7.14,7.18-7.20,7.22,7.24,7.26-28 UNIT-V: 9.5-9.10,9.13,9.16,10.10-10.13)

REFERENCE BOOKS :

1. *Amarendra N Sinha, Arun D Udai.* 2008."**COMPUTER GRAPHICS**", TMH.
2. *Tay Vaughan.*Seventh Edition. 2006."**MULTIMEDIA: Making it Work**", TMH.

15UED34K	NON MAJOR ELECTIVE - I: MULTIMEDIA	SEMESTER - III
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Total Credits: 2
Hours Per Week: 2

OBJECTIVE :

1. To understand the basics concepts of multimedia

CONTENTS

UNIT - I

Text: Types of Text - Unicode Standard - Font - Insertion of Text - Text compression - File formats

UNIT - II

Image: Image Types - Seeing Color - Color Models - Basic Steps for Image Processing - Scanner - Digital Camera

UNIT - III

Audio: Introduction - Acoustics - Nature of Sound Waves - Fundamental Characteristics of Sound - Microphone - Amplifier - Loudspeaker - Audio Mixer - Digital Audio - Sound Card - Audio Transmission - Audio File formats

UNIT - IV

Video: Analog Video Camera - Transmission of Video Signals - Video Signal Formats - Television Broadcasting Standards - PC Video - Video File Formats and CODECs - Video Editing - Video Editing Software.

UNIT - V

Animation: Types of Animation - Computer Assisted Animation - Creating Movement - Principles of Animation - Some Techniques of Animation - Animation on the Web

TEXT BOOK :

1. *Ranjan Parekh*. 2007. **PRINCIPLES OF MULTIMEDIA**, TMH.

15UED44K	NON MAJOR ELECTIVE -II: ORACLE	SEMESTER - IV
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Total Credits: 2
Hours Per Week: 2

OBJECTIVE :

1. To understand the concepts of Relational Database
2. To inculcate the knowledge on Oracle

CONTENTS

UNIT - I

Database Concepts: A Relational approach: Database - Relationships - DBMS - Relational Data Model - Integrity Rules - Theoretical Relational Languages.

UNIT - II

Oracle Tables: DDL: Naming Rules and conventions - Data Types - Constraints - Creating Oracle Table - Displaying Table Information - Altering an Existing Table - Dropping, Renaming, Truncating Table - Table Types - Spooling - Error codes.

UNIT - III

Working with Table: Data Management and Retrieval: DML Commands adding a new Row/Record - Customized Prompts - Updating and Deleting an Existing Rows/Records - retrieving Data from Table

UNIT - IV

Arithmetic Operations - restricting Data with WHERE clause - Sorting

UNIT - V

DEFINE command - Multiple Tables: Joins and Set operations: Join - Set operations.

TEXT BOOK:

1. *Nilesh Shah*.2005. 2nd edition. **DATABASE SYSTEMS USING ORACLE**, PHI.

16UCTSS1	SELF STUDY PAPER - I PERSONALITY DEVELOPMENT	SEMESTER - I To V
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Total Credits: 1
Hours Per Week: -

CONTENTS

UNIT - I

Communication - Types of communication - Elements of communication - Ways to improve communication - Effective Communication - Public Speaking.

UNIT - II

Attitude - Motivation - Self-confidence - Strategies for developing confidence - Personality Dimensions - Positive Thinking - Body language - Active Listening.

UNIT - III

Life Skills - Targeting life skills (TLS) model - Stress Relaxation Techniques - Critical Thinking - Decision making - Problem Solving.

UNIT - IV

Character Building - Aims of education and value education - Emotional Intelligence - Social intelligence - Assertiveness - Developing Assertiveness.

UNIT - V

Group Discussion - Structured Group Discussion - Unstructured Group Discussion - Resume Preparation - Focus areas of personal interview - Do's and Don'ts in interview.

REFERENCE WEBSITES :

1. http://en.wikipedia.org/wiki/Personality_Development.
2. www.indiabix.com/group-discussion/topics.

16UCTSS2	SELF STUDY PAPER - II SOCIAL NETWORKING	SEMESTER - I To V
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Total Credits: 1
Hours Per Week: -

CONTENTS

UNIT - I

Social Networking: Introduction - History - Features-Types -Impact on Social Networks among people-Advantages of Social Networking-Issues.

UNIT - II

Facebook: Evolution of Facebook- Design-Facebook IPO- Five hidden dangers of Facebook-Security tips for users and Application Developers-Facebook Security Settings.

UNIT - III

Google Applications: History of Google apps-Gmail-Calendar-Drive-Docs-Sheets-Slides-Hangouts-Advantages of Google Applications.

UNIT - IV

Mobile Applications: Introduction -Definition-Overview-Messenger-Truecaller-Share it -Xender-Adobe reader-INDpay-EPFO.

UNIT - V

Search Engines:Google-Yahoo-Bing-Qwant.P2P Search Engines-Meta Search Engines.

REFERENCE WEBSITES :

1. https://en.wikipedia.org/wiki/Social_Networks
2. http://www.google.com/Google_Applications

QUESTION PAPER PATTERN

DURATION : 3 HOURS

MAX.MARKS: 75

SECTION - A (10 X 1 = 10 MARKS)
10 MULTIPLE CHOICE QUESTIONS

SECTION - B (5 X 5 = 25 MARKS)
5 EITHER OR TYPE QUESTIONS

SECTION - C (5 X 8 = 40 MARKS)
5 EITHER OR TYPE QUESTIONS

QUESTION PAPER PATTERN

DURATION : 3 HOURS

MAX.MARKS: 55

SECTION - A (10 X 1 = 10 MARKS)
10 MULTIPLE CHOICE QUESTIONS

SECTION - B (5 X 3 = 15 MARKS)
5 EITHER OR CHOICE QUESTIONS

SECTION - C (5 X 6 = 30 MARKS)
5 EITHER OR CHOICE QUESTIONS


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