J.J COLLEGE OF ARTS AND SCIENCE (Autonomous)

(Re-Accredited by NAAC with 'A' Grade in Third Cycle)

Sivapuram, Pudukkottai – 622 422

DEPARTMENT OF COMPUTER APPLICATIONS

B.C.A. Programme

(Course Structure under **CBCS** for the candidates admitted from the academic year **2019 – 2020)**

Sem	Part	Course Code	Course Title	Hrs / Week	Credit	Exam Hrs	Marks		Total Marks
							Int	Ext	
I	I	U1R1TL1	Language	6	3	3	25	75	100
	II	U1R1EL1	Language	6	3	3	25	75	100
	III	U1R1CACC1	Programming in C	8	7	3	25	75	100
		UIR1CACC2P	Programming in C – Practical	3	2	3	40	60	100
		U1R1MCAC1	Algebra and Calculus	7	4	3	25	75	100
TOTAL				**30**	**19**	**-**	**-**	**-**	**500**
II	I	U2R1TL2	Language	5	3	3	25	75	100
	II	U2R1EL2	Language	5	3	3	25	75	100
	III	U2R1CACC3	Object Oriented Programming Language using C++ and Java	6	6	3	25	75	100
		U2R1CACC4P	OOP using C++ and Java – Practical	3	2	3	40	60	100
		U2R1MORAC2	Operations Research	5	4	3	25	75	100
		U2R1MNMAC3	Numerical Methods and statistics	4	4	3	25	75	100
	IV	U2R1ES	Environmental Studies	2	2	3	25	75	100
TOTAL				**30**	**24**	**-**	**-**	**-**	**700**
III	I	U3R1TL3	Language	6	3	3	25	75	100
	II	U3R1REL3	Language	6	3	3	25	75	100
	III	U3R1CACC5	Data Base Management System	7	6	3	25	75	100
		U3R1CACC6P	Relational Data Base Management System –Practical	3	2	3	40	60	100
		U3R1CAAC4	Organizational Behaviour	6	4	3	25	75	100
	IV	U3R1VE	Value Education	2	2	3	25	75	100
TOTAL				**30**	**20**	**-**	**-**	**-**	**600**

Sem	Part	Course Code	Course Title	Hrs / Week	Credit	Exam Hrs	Marks		Total Marks
							Int	Ext	
IV	I	U4R1TL4	Language	5	3	3	25	75	100
	II	U4R1EL4	Language	5	3	3	25	75	100
	III	U4R1CACC7	Python Programming	6	6	3	25	75	100
		U4R1CACC8P	Python Programming-Practical	3	2	3	40	60	100
		U4R1CAAC5P	Accounting Packages – Practical	3	2	3	40	60	100
		U4R1CAAC6	Financial and Management Accounting	5	4	3	25	75	100
		U4R1CASBE1	To be Selected from the List	3	2	3	25	75	100
TOTAL				**30**	**22**	**-**	**-**	**-**	**700**
V	III	U5R1CACC9	Operating System	7	7	3	25	75	100
		U5R1CACC10	Programming in ASP.NET	8	7	3	25	75	100
		U5R1CACC11P	Programming in ASP.NET-Practical	3	2	3	40	60	100
		U5R1CAMBE1	To be Selected from the List	6	5	3	25	75	100
		U5R1CASBE2	To be Selected from the List	4	2	3	25	75	100
		U5R1CAIDC1	To be Selected from Other Dept.	2	2	3	25	75	100
TOTAL				**30**	**25**	**-**	**-**	**-**	**600**
VI	III	U6R1CACC12	Software Engineering	6	6	3	25	75	100
		U6R1CACC13	Programming in PHP	6	6	3	25	75	100
		U6R1CACC14P	Programming in PHP- Practical	3	2	3	40	60	100
		U6R1CAMBE2	To be Selected from the List	5	5	3	25	75	100
		U6R1CAMBE3	To be Selected from the List	5	5	3	25	75	100
		U6R1CASBE3	To be Selected from the List	2	2	3	25	75	100
		U6R1CAIDC2	To be Selected from Other Dept.	2	2	3	25	75	100
	IV	U6R1GS	Gender Studies	1	1	3	25	75	100
	V		Extension Activities	-	1	-	-	-	-
TOTAL				**30**	**30**	-	-	-	**800**
GRAND TOTAL					**140**				**3900**

PROGRAMME SPECIFIC OBJECTIVES:

- To make the learners have a blend of both theoretical and practical based knowledge
- To understand the importance data structures and its associated algorithms in the development of computer programs
- To gain knowledge in various Programming and scripting languages
- To make the students acquire logical, technical thinking coupled with practical exposure
- To incorporate the latest development in the field of technology
- To make the graduates skill oriented and Job ready

PROGRAMME SPECIFIC OUTCOMES:

- Attainment of fundamental knowledge of the applications of Computers
- Understanding the concept of logical thinking and programming the real world problems
- Gather the sufficient information by Internet surfing
- Ability to analyze, identify, formulate and develop computer applications using modern computing tools and techniques
- Ability to create and innovate
- Would have the acquired the knowledge and skill to get rewarding careers
- Able to work as I.T Professionals exhibiting social Responsiveness and ethical behaviour

U1R1CACC1: PROGRAMMING IN C

Max Marks : 25 + 75 = 100 **Hrs / Week : 08**

Credit : 7 **Total Inst. Hrs: 96**

COURSE OBJECTIVES:

1. To impart knowledge on basic building blocks of C programming language.
2. To understand the statements that controls the flow of execution.
3. To excel in the field of handling data structures offered in C.
4. To acquire knowledge on modular programming.
5. To be effective in storing data in primary and secondary storage devices.

UNIT - I: **Overview of C** **(Inst Hrs: 18)**

History - Importance - Structure of C Program - Character set – Tokens - Keywords – Identifiers - Constants and Variables – Data types **(ICT)** – Declaration Statements – Operators and Expressions.

UNIT - II: **Input Output, Branching And Looping Statements** **(Inst Hrs: 18)**

Reading and Writing a character – Formatted Input & Output operations **(Seminar)** – If, Goto and Switch Statements – While, Do…While and For Looping Statements.

UNIT - III: Arrays and Strings **(Inst Hrs: 18)**

One Dimensional Array - Declaration and Initialization – Two Dimensional Array – Multi Dimensional Array – Dynamic Arrays – Initializing String Variable – String Manipulations – String Handling Functions **(Assignment).**

UNIT - IV: User Defined Functions and Data Types **(Inst Hrs: 18)**

Function Concepts – Function Declaration, Definition and Calling (by value & by reference) - Function Returning a Value – Recursion **(ICT)** – Command Line Arguments. Declaring a Structure – Structure Variable – Accessing Structure Member – Nested Structure – Array of Structure – Union – Storage Classes.

UNIT - V: Pointers and File operations **(Inst Hrs: 20)**

Declaring and Initializing Pointer Variable – Pointer Expression – Array Of Pointers – Opening And Closing A File - I/O Operations On File **(ICT)** – Dynamic Memory Allocation Using malloc, calloc And ralloc Function.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 04)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. E. Balagurusamy, "Programming in ANSI C" Seventh Edition, TMH Publications.

Unit - I: Chapter 1, 2, 3; Unit – II: Chapter 4, 5, 6; Unit - III: Chapter 7, 8;

Unit - IV: Chapter 9, 10; Unit - V: Chapter 11, 12, 13.

REFERENCE BOOK (S):

1., Ashok N Kamthane, "Programming in C" Dorling Kindersley Publications, India 3rd Edition -2016.

ONLINE RESOURCE (S):

1. https://www.w3schools.in/c-tutorial

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be to able to,

- Gain knowledge in the structure of C language
- Write programs using C Programming language
- Have the expertise in using the various data types in C effectively
- Gain Knowledge in handling files
- Have a career in the field of information technology as developer

U1R1CACC2P: PROGRAMMING IN C PRACTICAL

Max Marks : 40 + 60 = 100 **Hrs / Week : 03**

Credit : 2 **Total Inst. Hrs: 36**

1. Write and execute a C Program to compute the circumference and area of Triangle, circle and cone.
2. Write and execute a C Program to compute the simple and compound interest.
3. Write and execute a C Program to display your personal details.
4. Write and execute a C Program to solve quadratic equation using command line argument.
5. Write and execute a C Program to display Fibonacci series using static and function.
6. Write and execute a C Program to print a number in words - Zero to 99999
7. Write and execute a C Program to find the factorial of the given number using recursion.
8. Write and execute a C Program to find the second biggest of a list without ordering.
9. Write and execute a C Program to list N elements in both the orders using quick sorting method.
10. Write and execute a C Program to Display student's information using structure.
11. Write and execute a C Program to count the number of characters, vowels, words and lines of the content of a file.
12. Write and execute a C Program to allocate memory dynamically according to the size of the given string.

U1R1MCAC1: ALGEBRA AND CALCULUS

Max Marks : 25 + 75 = 100 **Hrs / Week : 07**

Credit : 4 **Total Inst. Hrs: 84**

COURSE OBJECTIVES:

- To solve the Algebraic problems using the knowledge of equations
- To introduce the basic concept of Matrices
- To understand the basic skills of Successive differentiation
- To know the fundamental principles Differential equations
- To introduce the basic concept of Integration

UNIT-I: Theory of Equations (Inst Hrs: 16)

Introduction- In equation with rational coefficients irrational roots occur in pairs- Relations between roots and coefficients of equations- transformation of equations- To increase or decrease the roots of a given equation by a quantity- Form of the quotient and remainder when a polynomial is divided by a binomial. [Simple problems only]

UNIT-II: Matrices (Inst Hrs: 16)

Introduction to Matrices – Scalar multiplication of a matrix- Equality of matrices- Addition and Subtraction – Symmetric matrix- Multiplication- Inverse matrix – Solution of simultaneous equation – Rank of Matrix – Consistency – Characteristic equation, Eigen Values, Eigen Vectors – Cayley Hamilton's Theorem (Proof not needed) – Simple applications only.

UNIT-III: Differentiation and Successive Differentiation (Inst Hrs: 16)

Definitions – Differential Co-efficient - product rule – Quotient rule – Function of function rule – Inverse Functions – Hyperbolic functions – Successive Differentiation: n^{th} derivative – Trigonometrical Transformations –Leibnitz formula for n^{th} derivative [Formulas and simple applications only.

UNIT- IV: Differential Equations (Inst Hrs: 16)

Differential equations of first order - Second order of types $(aD^2+bD+c)\ y = f(x)$, where a, b, c are constants and f(x) is one of the following types: (i)e^{kx} (ii)Sinkx (or) Coskx, where k be a constant (iii) x^n, n being integer.

UNIT- V: Integration **(Inst Hrs: 16)**

Integration – Definite integral – Integrals of function containing linear functions of x - Integration of Rational Algebraic Functions - Rule (a), (b) and (c).

UNIT - VI: Latest Learning **(Inst Hrs: 04)**

Latest development related to the course during the semester concerned.

[For continuous Internal Assessment only]

TEXT BOOKS:

[1] 'Algebra vol. I',T.K.ManicavachagamPillai and Others, S.V. Publications 2011.

[2] 'Algebra vol. II', S. Narayanan &T.K.ManicavachagamPillai and Others, S.V. Publications 2011.

[3] 'Calculus, Vol. I' ,T.K.ManicavachagamPillai and Others, S.V. Publications 2011.

[4] 'Calculus, Vol. III', S. Narayanan &T.K.ManicavachagamPillai and Others, S.V. Publications 2011.

[5] 'Calculus, Vol. II', S. Narayanan &T.K.ManicavachagamPillai and Others, S.V. Publications 2011

Unit I: Chapter 6 (Sec 10, 11, 15, 17, 18) [1]

Unit II: Chapter 2 (Sec 1 – 8 and 10 – 16) [2]

Unit III: Chapter 2 (Sec 2.1 – 3.14) and Chapter 3 Fully [3]

Unit IV: Chapter 1 (Sec 1.1 – 1.3 formulas only), Chapter 2(Sec 1, 3 and 4) [4]

Unit V: Chapter 1 (Sec 1.1 - 7.4) [5]

REFERENCE BOOKS:

1. 'Differential Calculus'. M.L.Kanna, Jai Prakashnath& Co.,
2. 'Allied Mathematics', S.G.Venkatachalapathy, Margham Publications 2007.

COURSE OUTCOMES:

The Learners would have the ability to

- Access students in making the transition from the arithmetic to the symbolic form
- obtain the knowledge of Characteristic equation, Eigen Values and Eigen Vectors
- Obtain expressions for higher order derivatives of a function using the rules of differentiation
- Compute the expression for the differential equations of first order
- Interpret the indefinite integral as a definite integral with variable limits

U2R1CACC3: OBJECT ORIENTED PROGRAMMING LANGUAGE USING C++ AND JAVA

Max Marks : 25 + 75 = 100 **Hrs / Week : 06**

Credit : 6 **Total Inst. Hrs: 72**

COURSE OBJECTIVES:

1. To understand the overview of C++ and Java.
2. To Gain Knowledge about Control Structure, Looping and Classes.
3. To Get Knowledge about Interfaces and Packages.
4. To Understand the Concept of Multithreading and Exceptions.
5. To Understand the Concept of Applet Programming.

UNIT- I: Object Oriented Programming concepts (Inst Hrs: 12)

Basic Concepts of Object Oriented Programming – A simple C++ program – More C++ statements – Structure of C++ program - Operators in C++ - Scope resolution operator - Member Dereferencing Operators - Memory management operators - Manipulators Classes and Objects: Classes and Objects: Declaring Objects – Specifying a class – Defining member functions - Making an Outside Function Inline – Nesting of Member Functions – Private Member Functions – Friend Functions **(ICT)**.

UNIT - II: Operator Overloading and Inheritance in C++ (Inst Hrs: 12)

Operator Overloading: Overloading Unary – Binary Operator – Overloading Friend Functions. Inheritance: Types of Inheritance – Single – Multiple – Multilevel - Hierarchical- Hybrid **(Seminar)** – Virtual Base Classes - Abstract Classes – Pointers – Pointers to Objects - This Pointer - Pointers to Derived Classes – Virtual Functions.

UNIT - III: Overview of Java (Inst Hrs: 12)

Introduction – Simple Java Program – Java Program Structure – Java Tokens – Java Statements – Data Types - Command Line Arguments - Symbolic Constants – Type Casting - Operators. Class, Object And Methods: Introduction – Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Method Overloading **(Assignment)** – Static Members – Nesting Of Methods

UNIT - IV: Inheritance, Interfaces and Packages (Inst Hrs: 14)

Extending a Class – Overriding Methods – Final Variables and Methods – Final Classes – Abstracts Methods and Classes – Multiple Inheritance: Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables – Packages: Putting Classes Together: Introduction – Java API Packages – Creating Packages – Accessing a Packages – Adding a Class To a Package **(ICT)**.

UNIT - V: Multithreading and Exceptions (Inst Hrs: 12)

Multithreaded Programming: Introduction – Creating Threads – Extending The Thread Classes – Life Cycle Of a Thread – Thread Exceptions – Thread Priority – Synchronization. Managing Errors and Exceptions: Introduction – Type Of Errors – Exceptions – Multiple Catch Statements – Using Finally Statement – Throwing Our Own Exceptions - Applet Programming: Applet Life Cycle - Applet Tag - Passing Parameter To Applet - Graphics Programming **(ICT)**.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 04)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. E.Balagurusamy ,"Object Oriented Programming with C++" 6th Edition, McGraw Hill Education (India) pvt Ltd - 2016

Unit-I: Chapter 1, 2, 3, 4, 5; Unit-II: Chapter 7, 8;

2. E.Balagurusamy,"Programming with Java a Primer" 5th Edition, McGraw Hill Education (India) pvt Ltd - 2015

Unit-III: Chapter 3, 4, 5, 8; Unit-IV: Chapter 10, 11; Unit-V: Chapter 12, 13, 14, 15.

REFERENCE BOOK (S):

1. Herbert Schild, "C++ complete Reference" Tata McGraw Hill Publications. , Second Edition-2015.

2. Dr. C. Muthu,"Programming with Java " Thomsan course technology publications-2011.

ONLINE RESOURCE (S):

1. https://www.javatpoint.com
2. https://www.learnjavaonline.org

COURSE OUTCOMES:

After the Successful Completion of the Course the students shall be able to,

- Learn the Overview of C++ and Java
- Gain the Knowledge about inheritances in C++ Classes
- Obtain the Knowledge about Interfaces and Packages
- Gain the Concept of Multithreading and Exceptions
- Acquire the Concept and use of Applet Programming

U2R1CACC4P: OOP USING C++ AND JAVA PRACTICAL

Max Marks : 40 + 60 = 100 **Hrs / Week : 03**

Credit : 2 **Total Inst. Hrs: 36**

1. Write a C++ Program to find the Area of Circle, Triangle and Rectangle.

2. Write a C++ Program to find the Biggest of 3 Numbers.

3. Write a C++ Program to sort the given numbers using Arrays.

4. Write a C++Program to perform basic Arithmetic Operations.

5. Write a C++ Program Using Class Concept.

6. Write a Java Program to Find the Area of Rectangle Using Constructor.

7. Write a Simple Java Program using Inheritance Concept.

8. Write a Java Program using Interface and Packages Concept.

9. Write a Simple Java Program using Command Line Arguments.

10. Write an Applet Program to draw various shapes using Graphics Class.

11. Write an Applet Program to Change the Background Color Using Buttons.

12. Write a Java Program to create Simple Thread.

13. Write a Java Program to generate any Three Predefined Exceptions.

U2R1MORAC2: OPERATIONS RESEARCH

Max Marks : 25 + 75 = 100 **Hrs / Week : 05**

Credit : 4 **Total Inst. Hrs: 60**

COURSE OBJECTIVES:

- To understand Operation Research, Linear programming formation and role of Computer in OR
- To improve the skills of solving very common problems which we come across in various fields like transportation
- To introduce concepts of Assignment Problems
- To develop Sequencing Problems in industries with machines
- To introduce Network and to find critical path

Unit I: Introduction to OR **[14 Hours]**

Introduction - basics of OR - OR & decision making - Role of computers in OR - Linear programming formulations & graphical solution of two variables - canonical & standard forms of LPP - Introduction - concepts of slack & surplus variables - simplex method for $\leq$ constraints.

Unit II: Transportation Problem **[10 Hours]**

Introduction - Transportation algorithm - concepts of feasibility basicness, methods used to find the solution to a TP - Unbalanced transportation problem.

Unit III: Assignment Problem **[12 Hours]**

Introduction - - assignment algorithm - General model of the assignment problem - unbalanced assignment problem - solution to the assignment problem – maximization – Travelling Salesman.

Unit IV: Sequencing Problems **[12 Hours]**

Problems of sequencing - Processing of n jobs through two machines - processing of n jobs through 3 machines.

Unit V: Networks **[10 Hours]**

Introduction to Network - Fulkerson's rule - measures of activity - CPM - Finding the critical path - calculating TF, FF, IF, PERT computation.

Unit –VI: **[02 Hours]**

Latest development related to the course during the semester concerned.

[For continuous Internal Assessment only]

TEXT BOOK (S):

[1] "**Problems in Operations Research",** Manmohan & P. .K Gupta, Sultan Chand Publishers, New Delhi, 1999.

Unit I: Chapter 1 - 4

Unit II: Chapter 15

Unit III: Chapter 16 – Pg. No. 399 – 432.

Unit IV: Chapter 17

Unit V: Chapter 27

REFERENCE BOOKS:

[1] Prem Kumar Gupta and D.S. Hira, "An **Introduction of Operations Research**", S.Chand and co., Ltd. New Delhi, 1995.

[2] Humdy A. Taha, "**Operations Research** " (7^{th}Edn.), Mcmillan Publishing Company, New Delhi, 1982.

COURSE OUTCOMES:

The Learners would have the ability to,

- Identify and develop OR models from the verbal description of the real system
- Develop the solving technique and analyse the concepts of feasibility
- Solve specialized linear programming problems like the transportation and assignment problems
- Identity the resources required for a project and generate a plan and work schedule
- Develop computational skill and logical thinking in formulating industry oriented problems as a mathematical problem and finding solutions to these problems

U2R1MNMAC3: NUMERICAL METHODS AND STATISTICS

Max Marks : 25 + 75 = 100 **Hrs / Week : 04**

Credit : 4 **Total Inst. Hrs: 48**

COURSE OBJECTIVES:

- To understand the concept of transcendental and polynomial equations
- To Know how to use numerical methods to solve Simultaneous Linear Equations
- To understand how to find Numerical interpolation with equal and unequal intervals
- To know the techniques of Numerical Differentiation and Numerical Integration
- To understand Mean, Median, Mode, Standard Deviation, Correlation and Regression

Unit I: Solution of Algebraic and Transcendental Equation: [16 Hours]

Bisection Method, Method of False Position, Iteration Method, Newton Raphson Method - Problems only.

Unit II: Solution of Simultaneous Linear Equations: [15 Hours]

Gauss Elimination Method, Gauss Jacobi Method, Gauss Jordan Method, Gauss Seidel Method- (no proof needed).

Unit III: Numerical Interpolation: [17 Hours]

Lagrange's Interpolation Formula – Divided differences – Newton's Formula - Newton's Forward and Backward Interpolation Formulae(Problems only).

Unit IV: Numerical Differentiation and Integration [16 Hours]

Newton's Forward and Backward Differentiation Formula – Trapezoidal, Simpson's1/3rd and 3/8th Rule.

Unit V: Statistics: [16 Hours]

Mean, Median, Mode, Standard Deviation, Correlation and Regression – Simple Numerical Problems Only.

Unit –VI: [02 Hours]

Latest development related to the course during the semester concerned.

[For continuous Internal Assessment only]

TEXT BOOKS:

[1] "**Introductory methods of numerical analysis**". S.S. Sastry, Prentical Hall India, 1994.

[2] "**Statistical methods",** S.P.Gupta ,S.Chand & Company, New Delhi.

[3] "**Numerical Methods**", N. Subramaniam, Scm Publishers, Erode.

Unit I: Chapter II sec 2.1to 2.5 [1]

Unit II: Chapter I, Sec 1.2 fully [3]

Unit III: Chapter II sec2 {Page No. 87 – 92, 99 - 110 and 128 – 145} [3]

Unit IV: Chapter V 5.2, 5.4.1, 5.4.2, 5.4.3[1]

Unit V: Chapter II, Sec 2.5, 2.6, 2.7 [2]

REFERENCE BOOKS:

1. P.Kandasamy "Numerical Methods" S.Chand& Co., New Delhi, .1998

2.R.S.N. Pillai and Bagavathi S, "**Statistics**" Chand & Co Ltd., New Delhi, 1999.

COURSE OUTCOMES:

The Learners would have the ability to,

- Acquire the knowledge of transcendental and polynomial equations
- Choose the suitable computational method among existing methods
- Understand the nature and operations of Numerical analysis with theories & concepts
- Know about numerical methods to solve Numerical differentiation and Integration
- Compute Correlation coefficients and Regression Analysis

U3R1CACC5: DATABASE MANAGEMENT SYSTEM

Max Marks : 25 + 75 = 100 **Hrs / Week : 07**

Credit : 6 **Total Inst. Hrs: 84**

COURSE OBJECTIVES:

1. To have the knowledge about Database, Storage and Query processing techniques.
2. To have knowledge about relational model and normalization techniques.
3. To use the various SQL commands.
4. To represent a Database System using E-R diagrams.
5. To write and execute a PL/SQL block.

UNIT - I: Introduction to Database Management system (Inst Hrs: 16)

DBMS Definition - Database System Applications - Purpose Of Database Systems - View Of Data - Data Abstraction - Instances And Schemas - Data Models - Database Languages - Data Manipulation Language – Data - Definition Language **(ICT)** – Data Storage And Querying - Storage Manager - The Query Processor - Transaction Management - Database Architecture - Database Users And Administrators.

UNIT - II: Relational Model (Inst Hrs: 16)

Structure of Relational Databases – Basic Structure – Database Schema – Keys – Query Languages **(Seminar)** – Fundamental Relational Algebra Operations – Relational Database Design – Atomic Domain and First Normal Form – Decomposition Using Functional Dependencies – Keys and Functional Dependencies – Boyce-Codd Normal Form – Third Normal Form.

UNIT - III: Structured Query Language (Inst Hrs: 16)

Data Definition – Basic Domain Types – Basic Schema Definition In SQL – Basic Structure Of SQL Queries – Set Operations – Aggregate Functions **(Assignment)** – Null Values – Nested Sub queries – Complex Queries – Views – Modification Of The Database – Joined Relations.

UNIT - IV: Database Design and the Entity–Relationship Model (Inst Hrs: 16)

The Entity–Relationship Model – Constraints – Mapping Cardinalities – E–R–Diagrams – Weak Entity Sets **(ICT)** – Extended E-R Features – Specialization – Generalization – Attribute Inheritance.

UNIT - V: Introduction to PL/SQL (Inst Hrs: 16)

Introduction to PL/SQL: Advantages of PL\SQL – The Generic PL/SQL Block – PL/SQL Data types – Variables – Constants – Control Structure – PL/SQL Transactions: Cursor – PL/SQL Database Objects: Procedures Versus Functions - Packages – Database Triggers **(ICT)**.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 04)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Abraham Silberschatz, Henry F. Korth, S. Sudharsan, "Database System Concepts" Tata McGraw Hill ,5th Edition.

   Unit-I : Chapter 1.1, 1.2, 1.3, 1.4, 1.8, 1.9, 1.11, 1.12;

   Unit-II: Chapter 2.1, 2.2, 7.2, 7.3 - 7.3.1, 7.3.2, 7.3.4;

   Unit-III: Chapter 3.2, 3.3, 3.4, 3.5, 3.7, 3.8, 3.9, 3.10, 3.11;

   Unit-IV: Chapter 6.2, 6.3-6.3.1, 6.4, 6.6, 6.7- 6.7.1, 6.7.2, 6.7.3;
2. Ivan Bayross,"SQL, PL/SQL The Programming Language of ORACLE" 3rd Revised Edition.

   Unit-V: Chapter 15, 16,18.

REFERENCE BOOK (S)

1. G.K.Gupta,"Database Management Systems" Tata McGraw Hill-2011.
2. Raghu Ramakrishnan, "Database Management Systems", McGraw-Hill College Publications, 4th edition-2015.

ONLINE RESOURCE (S):

1. https://www.studytonight.com/dbms

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Gain the knowledge on Database System and its purpose
- Understand the need for Normalization
- Write Queries using various SQL commands
- Map E-R model to Relational Model to Perform Database Design Effectively
- Code the PL\SQL Block

U3R1CACC6P: RELATIONAL DATABASE MANAGEMENT SYSTEM PRACTICAL

Max Marks : 40 + 60 = 100 **Hrs / Week : 03**

Credit : 2 **Total Inst. Hrs: 36**

1. Write a SQL query for creating Table, and SQL queries for inserting, deleting, updating the records in Table.
2. Write SQL Queries for AND/OR/NOT operation, Union- Intersection and Minus.
3. Write SQL queries for various Join Operations.
4. Write SQL query for Sorting and Grouping the records.
5. Write Nested queries, Sub queries using SQL.
6. Write a SQL program using Built-in functions.
7. Using index, create a view and access the view using query.
8. Write a PL/SQL block for using explicit cursors and implicit cursors.
9. Write a PL/SQL block using Triggers.
10. Write a PL/SQL block using Procedure and Function.
11. Write a PL/SQL block for calculating the salary of an employee.
12. Write a PL/SQL block for Inventory Maintenance.

U3R1CAAC4: ORGANISATIONAL BEHAVIOUR

Max Marks : 25 + 75 = 100 **Hrs / Week : 06**

Credit : 4 **Total Inst. Hrs: 72**

COURSE OBJECTIVES:

1. To introduce the concept of Individual and Organizational Behaviour.
2. To acquaint the knowledge of Personality theories and factors influencing perception.
3. To study the attitudes of Individual and Impact of Learning on Employee behavior.
4. To understand the group nature and their Dynamics.
5. To assess the stress and various strategies followed to remove the stress.

UNIT-I INTRODUCTION AND INDIVIDUAL BEHAVIOUR (Hours:10)

Organizational behavior – Definition and meaning – nature – importance- role of organizational behavior – nature of human behavior – organizational system and resources – personal factors – psychological factors – environmental factors – models of individual behavior.

UNIT-II PERSONALITY AND PERCEPTION (Hours:15)

Personality – nature – theories of personality – stages – determinants – perception – meaning and definition – factors influencing perceptions – perceptual process.

UNIT-III ATTITUDES AND VALUES AND LEARNING (Hours:15)

Attitudes – nature – components – formation – functions – changing attitude - ways of changing – measurements – work related attitudes - values – importance – differ from attitudes – learning – definition – theories of learning – learning impact on an employee behavior.

UNIT-IV GROUP DYNAMICS (Hours:16)

Group – nature of group – advantages and disadvantages – types – why do people join group – group development – benefits – pitfalls of group – determinates of group behavior – group size- group name – group tasks – group cohesiveness – causes and consequences – group consequences – group decision making –approaches – problems – consideration in group decision making.

UNIT-V WORK STRESS AND JOB SATISFACTION (Hours:16)

Work stress – meaning – what is not stress ?- sources of stress – individual level stressors – group level stressors – organizational stressors – extra - organizational stressors –

outcomes –stress management – individual strategies – organizational strategies – job satisfaction – causes and consequences – measuring job satisfaction.

Unit VI Latest Learning (for Continuous Internal Assessment only):

Latest Developments Related to the course during the semester concerned.

(Theory 75 Marks)

TEXT BOOKS:

1. Organizational behavior – p. subbarao – Himalaya publishing house, Mumbai.
2. Organizational behavior – L.M.Prasad – sultan chand publication, New Delhi.
3. Organizational behavior – Stephen P.Robbins – Prentice Hall International.

COURSE OUTCOME:

1. Equipped the students with the basic idea and introduction on Organizational Behaviour as a concept.
2. Gives a light on the concept and difference of personality and perception.
3. Gain the knowledge on Attitude, value and learning.
4. Understand the concept of group dynamics.
5. Impacted Knowledge with work stress and job satisfaction.

U4R1CACC7: PYTHON PROGRAMMING

Max Marks : 25 + 75 = 100 **Hrs / Week : 06**

Credit : 06 **Total Inst. Hrs: 72**

COURSE OBJECTIVES:

1. To Understand the Overview of python.
2. To Gain the Knowledge about Functions, conditional and Recursion
3. To Get the Knowledge about List.
4. To Understand the Concept of Dictionaries and Tuples.
5. To Understand the Concept of Files.

UNIT - I: Way Of The Program (Inst Hrs: 14)

Define Program – Running Python – The First Program – Arithmetic Operators - Values And Types - Formal And Natural Language – Debugging Variables, Expression And Statements: Assignment Statements - Variables Names – Expression And Statements – Script Mode - Order Of Operations – String Operations **(ICT)** – Comments.

UNIT - II: Functions (Inst Hrs: 14)

Function call – Math Functions – Composition - Adding new Function – Definition and Uses – Flow of Execution – Parameters and Arguments – Variables and Parameters are Local – Fruitful Functions and Void Functions **(Seminar)** – Define Functions - Conditionals and Recursion: Floor Division and Modulus – Boolean Expressions – Logical Operators - Conditional Execution – Alternative Execution – Chained Conditionals – Nested Conditionals - Recursion, Fruitful Functions: Return values – Incremental Development – Composition - Boolean Functions.

UNIT - III: Iterations (Inst Hrs: 14)

Reassignment – Updating Variables - The While Statement – Break – Algorithms, Strings: A String is a Sequence – Len – String Slices – String are Immutable –Searching – String Methods – In Operator – String Comparison, Lists: A List is a Sequence – List are Mutable – Traversing a List – List Operations – List Slices – List Methods – Map, Filter, Reduce – Deleting Elements **(Assignment)** – List and Strings – Objects and Values – Aliasing.

UNIT - IV: Dictionaries (Inst Hrs: 14)

A Dictionary Is A Mapping - Dictionary As A Collection Of Counters – Looping And Dictionaries – Reverse Lookup – Dictionaries And Lists - Memos – Global Variables Tuples: Tuples Are Immutable – Tuple Assignment – Tuple As Return Values – Variable-Length

Argument Tuples – List And Tuples – Dictionaries And Tuples **(ICT)** – Sequences Of Sequences.

UNIT - V: Files **(Inst Hrs: 12)**

Persistence – Reading and Writing – Format Operator – Filenames and Paths – Databases - Pickling – Pipes Classes and Objects: Programmer Defined Types - Attributes – Rectangles – Instance and Return Values – Objects Are Mutable Copying Classes and Functions: Time – Pure Functions **(ICT)** – Modifiers Classes and Methods: Printing Objects – The init Method – The str Method.

UNIT -VI: Latest Learning (For CIA only): **(Inst Hrs: 04)**

Latest development related to the Course during the Semester Concerned

TEXTBOOK (S):

1. Allen B. Downey, "Think Python: How to Think Like a Scientist" Updated for Python 3 O'Reilly Media, 2nd Edition -2015.

Unit – I: Chapter 1, 2; Unit – II: Chapter 3, 5, 6; Unit – III: Chapter 7, 8, 10;
Unit – IV: Chapter 11, 12; Unit – V: Chapter 14, 15, 16, 17.

REFERENCE BOOK (S):

1. Ajay ohri, "Python for R Users: A Data Science Approach" Wiley Publications-2018

2. K.Nageswararao , "Problem Solving and Python Programming" Scientific Publisher - 2018.

ONLINE RESOURCE (S):

1. https://www.codecademy.com/learn/learn-python
2. https://www.learnpython.org

COURSE OUTCOMES:

After the Successful Completion of the Course the students shall be able to,

- Apply a solution clearly and accurately in a program using Python
- Apply the best features of mathematics, engineering and natural sciences to program real life problems
- Design the real life situational problems and think creatively about solutions to them
- Gain the knowledge about Dictionaries and Tuples
- Understand the concept of Files

U4R1CACC8P: PYTHON PROGRAMMING PRACTICAL

Max Marks : 40 + 60 = 100 **Hrs / Week : 03**

Credit : 2 **Total Inst. Hrs: 36**

1. Create a Python program to convert Kilometers into Miles.

2. Create a Python program to print all prime numbers in a given interval.

3. Create a Python program to display the given multiplication Table.

4. Create a Python program for exploring the string functions in Python.

5. Compose a simple calculator by using functions in Python.

6. Establish the use of Lists in Python.

7. Create a Python program to demonstrate the operations of Dictionaries.

8. Create a Python program to expose the benefit of Tuples.

9. Create a Python Program to perform Read, Write operations on a file.

10. Using Python and MYSQL, Manipulate the given Students Records.

U4R1CAAC5P: ACCOUNTING PACKAGES PRACTICAL

Max Marks : 40 + 60 = 100 **Hrs / Week : 03**

Credit : 02 **Total Inst. Hrs: 36**

COURSE OBJECTIVES:

1. To enable the students to know the accounting software programme.
2. To maintain the business secrets in system with effective.
3. It gives the nature of accounting standard.
4. It Promote the students' knowledge about the accounting in needed places.
5. It Maintain the business movement with continuously.

PRACTICAL LIST:

1. Creation of company in your own name with address, E-mail id. Maintain with inventory and Accounts only.
2. Create the accounting groups.
3. Editing and deleting of groups
4. Voucher creation (Contra, payment, Receipt, Journal, Sales and Purchase).
5. Vouchers from the Transactions.
6. Ledger preparation.
7. Display and Alteration of ledger.
8. Preparation of trading and profit and loss account.
9. Preparation of final accounts.
10. Creation of inventory report (Stock Group, Category, Items and Units of Measures)

U4R1CAAC6: FINANCIAL AND MANAGEMENT ACCOUNTING

Max Marks : 25 + 75 = 100 **Hrs / Week : 05**

Credit : 04 **Total Inst. Hrs: 60**

COURSE OBJECTIVES:

1. To familiarize the student with basic knowledge of accountancy and accounts related management.

2. To make appropriate knowledge about the management of business with effective.

3. Utilization of accounting records in future purpose.

4. It fulfills the need for the specialized syllabus for degree level students.

5. It gives opportunities for the students simplified the accounting nature.

Unit-I: Introduction of Accounting (Hours:10)

Meaning, Definition – Branches- Merits and Demerits- Accounting Concept-Convention-Kinds of Accounts, Rules of Double entry-Journal-Ledger-Trial balance.

Unit-II: Final Accounts (Hours:12)

Subsidiary book- Purchase, Sales, Cash book-simple, Double and Petty cash book.Trading account – Profit and Loss Account-Balance sheet with simple adjustments.

Unit-III: Depreciation Accounting (Hours:12)

Depreciation Accounts - Straight line method, Written down value method and Annuity method.

Unit-IV: Management Accounting (Hours:12)

Definition of management accounting –nature-scope-objectives-merits-limitations-difference between management accounting and financial accounting-financial statement analysis-comparative income statement –common size income statement-trend analysis.

Unit-V: Budget analysis (Hours:14)

Budget and budgetary control-production-production cost, sales, cash, flexible budget.

Unit VI: Latest Learning (for Continuous Internal Assessment only):

Latest Developments Related to the course during the semester concerned.

(Theory 25 Marks; Problem 50 Marks)

TEXT BOOKS:

1. Financial Accounting- Dr. Radha, Prasanna Publication.
2. Management Accounting – Murthy and S. Gurusamy. Vijay Nicole Imprints Pvt.Ltd.

REFERENCE BOOKS:

1. Management Accounting – R.S.N.Pillai and Bhagavathy, Sultan Chand Publication.
2. Financial Accounting- T.S.ReddyandMurthy, Margham Publication.

COURSE OUTCOMES:

1. Understand about the concept of management accounting, and different methods of analysis of financial statements.
2. Elicit knowledge on various types of ratio analysis techniques and analyzing the cost volume and break even analysis in Marginal costing.
3. Proficiency in preparation of different types of budgets like sales budget, Cash budget and flexible budget etc.

U5R1CACC9: OPERATING SYSTEM

Max Marks : 25 + 75 = 100 **Hrs / Week : 07**

Credit : 7 **Total Inst. Hrs: 84**

COURSE OBJECTIVES:

1. To understand the importance of operating system.
2. To get the knowledge about memory management.
3. To get the knowledge processor management.
4. To get the knowledge about device management.
5. To gain the knowledge about information management.

UNIT - I: Overview **(Inst Hrs: 16)**

Importance Of Operating Systems - Basic Concepts And Terminology – An Operating System Resource Manager – An Operating System Process Viewpoint – Other Views Of An Operating System – I/O Programming **(ICT) -** Interrupt Structure And Processing.

UNIT - II: Memory Management **(Inst Hrs: 16)**

Single Contiguous Allocation **(ICT)** – Introduction To Multiprogramming – Partitioned Allocation – Re-Locatable Partitioned Memory Management – Paged Memory Management – Demand-Paged Memory Management – Segmented Memory Management – Segmented And Demand-Paged Memory Management **(Seminar)**.

UNIT - III: Processor Management **(Inst Hrs: 16)**

State Model – Job Scheduling – Functions – Policies – Job Scheduling In Non Multi Programmed Environment - Process Scheduling – Functions – Policies – Process State Diagrams For Scheduling – Evaluation Of Round-Robin Multiprogramming – Performance - Multiprocessor Systems – Process Synchronization **(Assignment)**.

UNIT - IV: Device Management **(Inst Hrs: 16)**

Techniques for Device Management – Device Characteristics **(ICT)** – Hardware Considerations – Channels and Control Units – Device Allocation Considerations – I/O Traffic Controller , I/O Scheduler , I/O Device Handlers – Virtual Devices – Design of SPOOLing System .

UNIT - V: Information Management **(Inst Hrs: 16)**

Introduction – A Simple File System – General Model Of A File System – Symbolic File System – Basic File System – Access Control Verification - Logical File System – Physical File System **(ICT)** – Allocation Strategy Module – Device Strategy Module , I/O Initiator , Device Handler.

UNIT - VI: Latest learning (For CIA Only): (Inst Hrs: 04)

Latest development related to the Course during the Semester Concerned

TEXTBOOK (S):

1. Stuart E. Madnick John J. Donovan, "OPERATING SYSTEM" McGraw-Hill, Inc., 2007.

Unit–I: Chapters 1, 2; Unit–II: Chapter 3; Unit–III: Chapter 4;
Unit-IV: Chapter 5; Unit-V: Chapter 6.

REFERENCE BOOK (S):

1. Abraham Silberschatz Peter Baer Galvin Greg Gagne "Operating System Principles" Wiley Publications, Seventh Edition- 2006.

2. William Stallings, "Operating Systems" Dorling Kindersley (India) Private Limited, Seventh Edition -2014.

ONLINE RESOURCE (S):

1. https://www.geeksforgeeks.org/operating-systems

COURSE OUTCOMES:

After the Successful Completion of the Course the students shall be able to,

- Describe the importance of computer system resources and the role of OS
- Understand the process management policies and scheduling process by CPU
- Evaluate the requirement for process synchronization and coordination by OS
- Analyze the memory management concepts and its allocation policies
- Identify and evaluate the different storage management policies

U5R1CACC10: PROGRAMMING IN ASP .NET

Max Marks : 25 + 75 = 100 **Hrs / Week : 08**

Credit : 7 **Total Inst. Hrs: 96**

COURSE OBJECTIVES:

1. To understand the role of ASP .NET in the .net frame work.
2. To gain the knowledge about the C#.
3. To learn the creation of Web Application using ASP .NET &C#.
4. To learn the various controls in ASP.NET.
5. To understand the concept of data access.

UNIT – I: Introducing .Net (Inst Hrs: 20)

The Evolution of Web Development - Server Side Programming, Client Side Programming – The.Net Framework. **The C# Language:** C# Language: C# Language Basics –Variables And Data Types – Arrays – Enumerations **(ICT)** – Variable Operations – Type Conversions - Object Base Manipulation – The String Type – Date Time And Time Span Types - Conditional Logic – Loops – Methods – Parameters – Delegates.

UNIT – II: Types, Objects and Namespaces (Inst Hrs: 18)

Types, Objects and Namespaces: The Basic About Classes Static Members – Building A Basic Class – Understanding Namespace And Assemblies **(Seminar)** – Using Namespaces, Importing Namespaces, Assemblies – Advanced Class Programming – Partial Class, Generics. Developing ASP .NET Applications: Promises Of Visual Studio – Creating Websites – Designing A Web Page – The Anatomy Of A Web Form – The Webform Markup, The Page Directive – The Doctype – Writing Code.

UNIT – III: Web Form Fundamentals (Inst Hrs: 18)

The Anatomy of ASP .NET Application – Introducing Server Controls – HTML Server Controls, Converting an HTML page to an ASP .NET Page, The HTML Control Classes, Event Handling, Error Handling - The Page Class – Application Events **(Assignment)** – ASP .NET Configuration – The Web. Config File. Web controls: Stepping up to Web Controls – Web Control Classes – List Controls – Web Control Events and Auto Post Back.

UNIT – IV: State Management (Inst Hrs: 18)

View State – The View State – The State Collection, A View State Example – The Query String – Cookies – Session State – Application State. Validation: Understanding Validation – The Validation Controls. Rich Controls: The Calendar **(ICT)** – The Ad Rotator – Pages With Multiple Views. User Controls And Graphics: Dynamic Graphics.

UNIT - V: Master Pages **(Inst Hrs: 18)**

Master Page Basics. ADO .NET Fundamentals: ADO .NET Basics – Direct Data Access – Disconnected Data Access. Data Binding: Introducing Data Binding - Single Value Data Binding – Repeated Value Binding. The Data Controls: The Grid View – Formatting The Grid View – Editing With Grid View – Sorting and Paging Grid View – The Detail View and Form View **(ICT)**.

TEXT BOOK (S):

1. Matthew MacDonald, "Beginning A

SP .NET 3.5 in C# 2008", A press- 2012.

Unit - I: Chapter 1, 2; Unit - II: Chapter 3, 4; Unit - III: Chapter 5, 6

Unit - IV: Chapter 7, 10, 11, 12; Unit-V: Chapter 13, 15, 17.

REFERENCE BOOK (S):

1. Cristian Darile,Wyatt Barnett and Tim Posey,"Build your own ASP.NET 4 website using C# and VB, 4th Edition- 2015
2. Matthew MacDonald, "The complete Reference- ASP.NET", A press- 2013

ONLINE RESOURCE (S):

1. https://www.tutorialspoint.com/asp.net

COURSE OUTCOMES:

After the Successful Completion of the Course the students shall be able to,

- Get a clear picture about the .NET Framework
- Gain the insight of the Assemblies, Namespaces and Web Application
- Accumulate the knowledge about Web Controls
- Get a fair idea about the statement and Rich, validation controls
- Know the establishment of ADO .NET

U5R1CACC11P: PROGRAMMING IN ASP.NET – PRACTICAL

Max Marks : 40 + 60 = 100 **Hrs / Week : 03**

Credit : 2 **Total Inst. Hrs: 36**

1. Create an ASP.NET web site for job portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the SqlServer database (Connected data access)
2. Create an ASP.NET web site for job portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the MS Access database (Connected data access)
3. Create an ASP.NET web site for job portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the SqlServer database (Disconnected Data Access)
4. Create an ASP.NET web site for college portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the SqlServer database (Connected data access)
5. Create an ASP.NET web site for college portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the MS Access database (Connected data access)
6. Create an ASP.NET web site for college portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the MS Access database (Disconnected Data Access)
7. Create an ASP.NET web site for company portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the SqlServer database (Connected data access)
8. Create an ASP.NET web site for company portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the MS Access database (Connected data access)
9. Create an ASP.NET web site for company portal with web form controls, validation controls, rich controls and ADO.NET and data controls to store and retrieve data from the MS Access database (Disconnected Data Access)

U6R1CACC12: SOFTWARE ENGINEERING

Max Marks : 25 + 75 = 100 **Hrs / Week : 06**

Credit : 6 **Total Inst. Hrs: 72**

COURSE OBJECTIVES:

1. To provide an insight about software Engineering.
2. To estimate the cost and requirements for developing software projects.
3. To know the various design concepts and notations for modeling the software.
4. To implement the coding techniques, strategies to evaluate the software.
5. To construct software with high quality and reliability.

UNIT- I: Introduction To Software Engineering (Inst Hrs: 14)

Introduction - Some Definitions - Some Size Factors- Quality And Productivity Factors - Managerial Issues - Planning A Software Projects: Introduction - Defining A Problems - Developing A Solution Strategy - Planning A Development Process **(ICT)** - Planning An Organizational Structure.

UNIT - II: Software Cost Estimation (Inst Hrs: 14)

Introduction - Software Cost Factors - Software Cost Estimation Techniques **(seminar)** - Software Requirements Definition: Introduction - Software Requirements Specification - Formal Specification Techniques - Relational Notations - State Oriented Notations - Languages And Processors For Requirements - SADT- SSA.

UNIT- III: Software Design (Inst Hrs: 14)

Introduction - Fundamental Design Concepts - Modules and Modularization Criteria - Design Notations - Design Techniques - Detailed Design Considerations - Real-Time and Distributed System Design **(Assignment)** -Test Plans - Milestones, Walkthroughs And Inspections-Design Guidelines.

UNIT- IV: Implementation Issues (Inst Hrs: 14)

Introduction - Structured Coding Techniques - Coding Style - Standards and Guidelines - Modern Programming Language: Introduction - Type Checking - Separate Compilation - User Defined Data Types - Data Abstraction **(ICT)** - Scoping Rules - Exception Handling - Concurrency Mechanisms.

UNIT- V: Verification and Validation (Inst Hrs: 12)

Introduction - Quality Assurance - Static Analysis - Symbolic Execution - Unit Testing and Debugging - System Testing **(ICT)** - Formal Verification - Software Maintenance: Introduction - Enhancing Maintainability During Development - Managerial Aspects Of Software Maintenance.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 04)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Richard Fairley, "Software Engineering Concepts" McGraw Hill Education (India) Private Limited– 2016

   Unit - I: Chapter 1, 2; Unit - II: Chapter 3, 4; Unit - III: Chapter 5;

   Unit - IV: Chapter 6, 7; Unit - V: Chapter 8, 9

REFERENCE BOOK (S):

1. Roger S. Pressman,"Software Engineering: A Practitioner Approach", Seventh Edition, Tata McGraw-Hill International Edition-2009.
2. Ian Sommerville, "Software Engineering" Pearson Pvt. Ltd, 10th edition- 2017.

ONLINE RESOURCE (S):

1. https://www.guru99.com/software-engineering

COURSE OUTCOMES:

After the Successful Completion of the Course the students shall be able to,

- Understand about Software Engineering
- Estimate the cost using various techniques
- Model the software projects using design notations
- Implement the coding with various techniques and strategies
- Analyze, design, verify, validate, implement and maintain software systems

U6R1CACC13: PROGRAMMING IN PHP

Max Marks : 25 + 75 = 100 **Hrs / Week : 06**

Credit : 6 **Total Inst. Hrs: 72**

COURSE OBJECTIVES:

1. To understand the basics of PHP.
2. To get the knowledge about control statements.
3. To get the knowledge about functions.
4. To get the knowledge about object oriented programming.
5. To gain the knowledge about working with databases.

UNIT - I: Introduction to PHP (Inst Hrs: 13)

Introduction – Creating First PHP page - Running first PHP page – Mixing HTML and PHP – Command line – Working with Variables – Storing data in variable – Interpolating strings **(ICT)** – Creating variables – Creating Constant – Understanding PHP internal Data types. OPERATOR: PHP's Math operators – Assignment operators – Increment and Decrement operators – String Operators – Bit–wise Operators – Execution Operators - Comparison Operator – Ternary Operator and Logical Operators.

UNIT - II: Control Statement (Inst Hrs: 13)

IF Statement – The Else Statement – The Elseif Statement - Switch Statement – For Loop – While Loop - Do… While Loop – For Each Loop **(Seminar)**. String And Arrays: The String Functions – Converting To and From String – Formatting Text String – Arrays – Modifying Data In Arrays – Deleting Array Elements – Handling Arrays With Loop – PHP Array Functions.

UNIT - III: Functions (Inst Hrs: 14)

Creating Functions In PHP – Passing Functions Some Data – Passing Arrays To Functions – Using Default Arguments – Working With Static Variables **(Assignment)** – PHP Conditional Function – PHP Variable Function – Nesting Function. Reading Data In Web Pages: Handling Text Field, Text Area, Checkboxes, Radio Button, List Box, Password Control, Hidden Control, Image Map , File Upload, Button.

UNIT - IV: Object Oriented Programming (Inst Hrs: 14)

Creating Class – Object – Creating Object – Setting Access to Properties And Methods – Constructor And Destructor – Inheritance – Over Loading – Overriding **(ICT)**.

Advanced Oop: Creating Static Method – Static Members and Inheritance – Creating Abstract Classes – Creating Interfaces. File Handling – File Open, Close, Read, Write, Copy, Delete, Append, Checking a File, Getting File Size.

UNIT -V: Working With Databases **(Inst Hrs: 14)**

Database Introduction – Creating a MYSQL Database – Creating a New Table – Putting Data Into The New Database – Accessing , Updating , Inserting And Deleting a New Data Into The Database **(ICT).** Session and Cookies: Setting A Cookie – Reading A Cookie – Setting Cookie Expiration – Deleting A Cookie – Storing Data In Session – Writing a Hit Counter Using Session.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 04)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Steven Holzner, "THE COMPLETE REFERENCE PHP" McGraw Hill Education (India) Private Limited – 2014.
   Unit - I: Chapter 1, 2; Unit - II: Chapter 2, 3; Unit - III: Chapter 4, 5;
   Unit - IV: Chapter 7, 8, 9; Unit - V: Chapter 10, 11.

REFERENCE BOOK (S):

1.Vikram Vaswani, "PHP – A Beginner's Guide" Tata McGraw Hill Publications - 2018.

2. Lynn Beighlay & Michael Morrison, "Head First PHP & MySQL" O' Reilly Publications-2014.

ONLINE RESOURCE (S):

1. https://www.phptpoint.com/php-tutorial

COURSE OUTCOMES:

After the Successful Completion of the Course the students shall be able to,

- Know about the working of WAMP and to publish their website
- Apply the Object-oriented design principles in PHP
- Connect to database to fetch, store and update persistent information
- Store business logic in the database using stored procedures
- Test and debug Object-oriented PHP scripts

U6R1CACC14P: PROGRAMMING IN PHP PRACTICAL

Max Marks : 40 + 60 = 100 **Hrs / Week : 03**

Credit : 2 **Total Inst. Hrs: 36**

1. Write a PHP program to create Student Mark Statement.
2. Write a PHP Program to create Employee pay roll preparation.
3. Write a PHP program to use three buttons and change the Background color.
4. Write a PHP program to format the given text.
    - Bold
    - Italic
    - Underline
    - Increase the font size
    - Change the font color.
5. Write a PHP program using list box and create Multiplication table from 1 to 20.
6. Simple program to handle string, dates and time functions
7. Display student Resume using Cookies.
8. Creating a simple login form using sessions
9. Create a student database and manipulate the records in PHP
10. Creating a shopping cart mechanism
11. Create a course registration form with name, address and list of available course. Reply with the corresponding course fees on selection of a single course or a collection of courses.

LIST OF ELECTIVE COURSES – B.C.A.

(To be followed from the Academic Year 2019 - 2020)

✓ **M**ajor **B**ased **E**lective - **Any 03 (01 in Semester - V and 02 in Semester - VI)**

M.B.E – 1: Data Communication Networks

M.B.E – 2: Fundamentals of Data Structures

M.B.E – 3: Computer Architecture and Organization

M.B.E – 4: E-Commerce

M.B.E – 5: Internet of Things

M.B.E – 6: Software Applications Practical

✓ **S**kill **B**ased **E**lective – **Any 03 (01 Each in Semester - IV, V and VI)**

S.B.E – 1: Internet and WWW

S.B.E – 2: Web designing using HTML

S.B.E – 3: Multimedia and its Applications

S.B.E – 4: Web Services

S.B.E – 5: Computer Graphics

S.B.E – 6: Computer Networks

✓ **I**nter **D**isciplinary **C**ourse – **Offered by the Department**

I.D.C – 1: Computer Skill Development Course

I.D.C – 2: Internet Skill Development Course

I.D.C – 3: Fundamentals of Photoshop

I.D.C – 4: Computer Applications in Chemistry

M.B.E - 1: DATA COMMUNICATION NETWORKS

Max Marks : 25 + 75 = 100 **Hrs / Week : 06**

Credit : 5 **Total Inst. Hrs: 72**

COURSE OBJECTIVES:

1. To understand the basics of computer network.
2. To understand the concept of physical layer and media.
3. To understand the concept of data link layer.
4. To get the knowledge about network layer.
5. To understand the concepts of transport layer and application layer.

UNIT - I: Introduction to Computer Networks (Inst Hrs: 15)

Data communication – components – Data Representation – Network – Network Models – The Internet - Protocols and Standards – Layered Tasks - The OSI Model - Layers In The OSI Model : Physical Layer , Data link Layer , Network Layer , Transport Layer , Presentation Layer , Session Layer , Application Layer **(ICT)** - TCP/IP Protocol Suite - Addressing.

UNIT - II: Physical Layer and Media (Inst Hrs: 18)

Data And Signals - Analog And Digital – Periodic Analog Signals - Bandwidth – Digital Signals – Transmission Impairment **(Seminar)** - Data Rate Limits –Performance – Digital Transmission –Digital To Digital Conversion: Signal Element Versus Data Element, Data Rate Versus Signal Rate – Analog to Digital Conversion – Transmission modes.

UNIT - III: Data Link Layer (Inst Hrs: 15)

Error Detection and Error Correction – Detection versus Correction – Forward Error Correction versus Retransmission – Blocks Coding – Linear Block Codes – Cyclic Codes – Advantage of Cyclic Codes – Checksum **(Assignment)** - Data Link Control – Framing – Flow And Error Control – Protocols – Noiseless Channels - Go-Back-N Automatic Repeat Request – Piggybacking – Point–To–Point protocol.

UNIT - IV: Network Layer (Inst Hrs: 12)

Network Layer : Logical Addressing – Ipv4 Addresses – Address Spacel - Classful-Addressing – Classless Addressing – Network Addresses – Network Address Translation – Ipv6 Addresses – Internetworking **(ICT)** – Internet As Datagram Network – Internet As connectionless Network – Fragmentation – Fields Related To Fragmentation – Fragmentation Offset –Ipv6-Advantages.

UNIT - V: Transport Layer and Application Layer (Inst Hrs: 11)

Process To Process Delivery - User Datagram Protocol(UDP) – Transmission Control Protocol(TCP) – Stream Control Transmission Protocol(SCTP) – Congestion Control And Quality Of Service –Domain Name System – Remote Logging – Electronic Mail – File Transfer – WWW And HTTP **(ICT)**– Security In The Internet And Firewalls.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 04)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Behrouz Forouzan, **"Data Communication and Networking",** McGraw Hill Publications, 4th Edition.

UNIT – I: Chapter 1, 2; UNIT - II - Chapter 3, 4; UNIT – III: Chapter 10, 11;

UNIT – IV: Chapter 19, 20; UNIT – V: Chapter 23, 24, 25, 26, 27, 31.

REFERENCE BOOK(S):

1. Andrew.S. Tenenbaum "Computer Networks", Prentice-Hall of India Pvt.Ltd., 4thEdition.

ONLINE RESOURCE (S):

1. https://www.tutorialspoint.com/data_communication_computer_network

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Describe the components of data communication system
- Describe the type of signals and features in physical layers and media
- Describe the various error detection and correction schemes in Data link layer
- Explain the role of networks in network layer
- Describe the security and standards of protocol suite

M.B.E - 2: FUNDAMENTALS OF DATA STRUCTURES

Max Marks : 25 + 75 = 100 **Hrs / Week : 05**

Credit : 05 **Total Inst. Hrs: 60**

COURSE OBJECTIVES:

1. To understand the basics of data structures.
2. To understand the concepts of stack and queue.
3. To gain the knowledge about tree and tree traversal.
4. To understand the concept of graphs.
5. To design and implement various data structures and algorithms.

UNIT - I: **Arrays, Stacks and Queues** **(Inst Hrs: 15)**

Introduction- Overview – SPARKS - Create Programs - Analyze programs - Arrays: Axiomatization - Ordered Lists-Representation of Arrays. Stacks and Queues: Fundamentals-Circular Queues - Evaluation of Expressions **(ICT)** - Multiple Stacks and Queues

UNIT - II: **Linked List** **(Inst Hrs: 10)**

Singly Linked List- Linked Stacks and Queues- Storage Pool- Polynomial Addition-Doubly Linked List and Dynamic Storage Management- Garbage Collection**(Seminar).**

UNIT - III: Trees **(Inst Hrs: 12)**

Basic Terminology – Binary Trees-Binary Tree representation- Binary Tree Traversal - Threaded Binary Trees – Binary Tree Representation of Trees- Applications of Trees- Set Representation – Decision Trees- Game Trees **(Assignment)**.

UNIT - IV: Graphs **(Inst Hrs: 10)**

Graph Terminology - Graph Representation - Graph Traversals - BFS and DFS - Connected Components and Spanning Tree - Kruskal's Minimum cost Spanning Tree Algorithm **(ICT)**.

UNIT - V: Shortest path and Sorting **(Inst Hrs: 10)**

Shortest path and Transitive Closure- Activity Networks- Topological Sort- Sorting**:** Insertion sort- Quick Sort **(ICT)** - Merge Sort - Heap Sort.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 04)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Ellis Horowitz, Sartaj Sahni ”Fundamentals of Data Structures” Galgotia Publishers.

UNIT – I: Chapter 1, 2, 3; UNIT – II: Chapter 4; UNIT – III: Chapter 5;

UNIT – IV: Chapter 6; UNIT – V: Chapter 6, 7.

REFERENCE BOOK (S):

1. Debasis Samanta “Classic Data Structures” PHI Learning Private Limited 2012.

ONLINE RESOURCE (S):

1. https://www.programiz.com/dsa

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Choose appropriate data structure for specific problem
- Handle storage management
- Learn the various domains like DBMS, Compiler
- Use linear and non-linear data structures legibly
- Have knowledge of network and topological sorting

M.B.E - 3: COMPUTER ARCHITECURE AND ORGANIZATION

Max Marks : 25 + 75 = 100 **Hrs / Week : 05**

Credit : 5 **Total Inst. Hrs: 60**

COURSE OBJECTIVES:

1. To understand the basics of computer architecture and organization.
2. To get the knowledge about the functions of Central Processing Unit.
3. To gain the knowledge about computer arithmetic.
4. To understand the concept of input-output organization.
5. To get the knowledge about memory management.

UNIT - I: Basic Computer and Design (Inst Hrs: 15)

Instructions Codes – Stored Program Organization – Indirect Address – Computer Register – Common Bus System – Computer Instructions **(ICT)**– Timing and Control – Instruction Cycle – Memory Reference Instructions – Input Output and Interrupt

UNIT - II: Central Processing Unit (Inst Hrs: 12)

Introduction – General Register Organization – Control Word – Stack Organization – Instruction Formats – Addressing Modes**(Seminar)** – Data Transfer And Manipulation – Program Control – Reduced Instruction Set Computer (RISC).

UNIT - III: Computer Arithmetic Operations (Inst Hrs: 10)

Introduction – Addition and Subtraction – Add and Sub With Signed Magnitude – Hardware Implementation, Algorithm, With Signed-2's- Multiplication Algorithm – Division Algorithm **(Assignment)** – Floating Point Arithmetic Operation – Decimal Arithmetic Unit – Decimal Arithmetic Operation.

UNIT - IV: Input – Output Organization (Inst Hrs: 10)

Peripheral Devices **(ICT)** – Ascii Character – Input – Output Interface – Asynchronous Data Transfer – Modes Of Transfer – Priority Interrupt – Direct Memory Access (DMA) – Input Output Processors (IOP) – Serial Communication.

UNIT - V: Memory Unit (Inst Hrs: 10)

Memory Hierarchy – Main Memory – RAM And ROM - Memory Address Map, Auxiliary Memory – Cache Memory – Virtual Memory **(ICT)**– Memory Management Hardware.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 04)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. "Computer System Architecture" – by M.Moris Mano, Pearson Education, 3rd Edition, 2009.

UNIT - I: Chapter 5; UNIT – II: Chapter 8; UNIT – III: Chapter 10;

UNIT – IV: Chapter 11; UNIT – V: Chapter 12.

REFERENCE BOOK(S):

1. N. Malarvizhi, "Computer Architecture and Organization", Eswar Press 2007.

2. Ian McLoughlin "Computer Architecture",Tata McGraw-Hill 2012.

ONLINE RESOURCE (S):

1. https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Use various metrics to calculate the performance of a computer system
- Identify the addressing mode of instructions
- Determine which hardware blocks and control lines are used for specific instructions
- Demonstrate how to add and multiply integers and floating point numbers
- Map a virtual address into a physical address

M.B.E - 4: E-COMMERCE

Max Marks : 25 + 75 = 100 **Hrs / Week : 05**

Credit : 5 **Total Inst. Hrs: 60**

COURSE OBJECTIVES:

1. To understand the basics of Electronic Business and marketing.
2. To get the knowledge about various transmission modes.
3. To gain the knowledge about different networks.
4. To understand the concept of Electronic Data Interchange.
5. To get the knowledge about security based protocols.

UNIT -- I: Welcome to E-Commerce (Inst Hrs: 15)

Electronic Commerce - Types of Electronic Commerce Solutions - Major Projects In Electronic Communication - Application Of Electronic Commerce **(ICT)** -Direct Marketing and Selling – Examples Of Today's E-Commerce-Transaction Processing Systems-Value Added Networks - Information Services - Educational and Medical.

UNIT -- II: Essential Tools for E-Commerce (Inst Hrs: 12)

Data Communication – Forms Of Data Transmission – Data Transmission Techniques - Communication Channel Bandwidths – Types of Communication Channels **(Seminar)** – Methods Of Data Transmission – Transmission Modes – Multiplexing – Integrated Services Digital Network (ISDN) – Asynchronous Transfer Mode (ATM).

UNIT -- III: Internet, Intranet and Extranet (Inst Hrs: 10)

The Internet – Information Superhighway – Internet and E-commerce – Linking to the Internet – Internet Address – Internet Tool **(Assignment)** – Domain Name System(DNS) - Intranet – Communication Systems – Software used in Electronic Mail – Electronic Meeting Systems – Extranets – X.400 Message Handling System – X.500 Directory Service.

UNIT -- IV: Technologies in E-Commerce Systems (Inst Hrs: 10)

Introduction – Electronic Data Interchange(EDI) – Use Of EDI – The Evolution Of EDI – Benefits Of EDI Process – How EDI Works – EDI Standards – Cost Benefit Analysis Of EDI - EDI Components – File Types – EDI Services **(ICT)** – Choosing EDI Value Added Network(VAN) – Business Approach to EDI- EDIFACT – Structure Of EDIFACT – EDI Security and Legal Aspects.

UNIT -- V: Security Issues (Inst Hrs: 10)

Introduction To Security – Authentication : Passwords – Viruses – Firewalls – Types Of Firewalls –Encryption - Pretty Good Privacy(PGP) – Secured Hypertext Transfer

Protocol(SHTTP) – Secured Socket Layer(SSL) – RSA – Electronic Payment Systems **(ICT)** – Digital cash – Cyber cash – Smart Card.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 04)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. S.Jaiswal "Doing Business Through Internet" GalaGotia Publication 2010.

UNIT – I: Chapter 1, 2; UNIT – II: Chapter 3; UNIT – III: Chapter 9;

UNIT - IV- Chapter 10, 11; UNIT – V: Chapter 13.

REFERENCE BOOK (S):

1. Ravi Kalakota, Andrew "Frontiers of Electronic Commerce" Pearson Education 2011.

ONLINE RESOURCE (S):

1. https://www.tutorialspoint.com/e_commerce

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Demonstrate an understanding the foundation and importance of E-Commerce
- Describe the tools for E-Commerce
- Describe the key features of Intranet, Extranet and Internet
- Elucidate the impact of Electronic Data Interchange in E-Commerce
- Assess Electronic Payment System and its security features

M.B.E. - 5: INTERNET OF THINGS

Max Marks : 25 + 75 = 100 **Hrs / Week : 05**

Credit : 05 **Total Inst. Hrs: 60**

COURSE OBJECTIVES:

1. To understand the concept of IoT and its technologies.
2. To provide an exposure on Domain specific IoTs.
3. To acquire knowledge on IoT Design methodology.
4. To Excel in IoT logical design using Python.
5. To understand the IoT Physical Servers and cloud offerings.

UNIT - I: Introduction to Internet of Things (Inst Hrs: 15)

Introduction - Physical Design of IoT - Logical Design of IoT - IoT Enabling Technologies **(ICT)** - IoT Levels & Deployment Templates.

UNIT - II: Domain Specific IoT's (Inst Hrs: 10)

Introduction – Home Automation – Cities – Environment – Energy – Retail – Logistics - Agriculture - Industry – Health & Lifestyle **(Seminar)**. IoT and M2M: Introduction - M2M - Difference Between IoT and M2M - SDN and NFV for IoT.

UNIT - III: IoT System Management with NETCONF-YANG (Inst Hrs: 12)

Need for IoT Systems Management - Simple Network Management - Protocol [SNMP] - Network Operator Requirements - NETCONF-YANG - IoT Systems Management with NETCONF-YANG. IoT Platforms Design Methodology: Introduction - IoT Design Methodology - Case Study on IoT System for Weather Monitoring **(Assignment)**.

UNIT - IV: IoT System-Logical Design using Python (Inst Hrs: 10)

Introduction - Installing Python - Python Data Structures - Control Flow-Functions - Modules - Packages - File Handling - Data/Time Operations **(ICT)** - Classes - Python Packages of Interest for IoT.

UNIT - V: IoT Physical Devices & Endpoints (Inst Hrs: 10)

Define IoT Device-Exemplary Device: Raspberry Pi-About the Board -Linux on Raspberry Pi-Raspberry Pi Interfaces-Programming Raspberry Pi with Python -Other IoT Devices. IoT Physical Servers & Cloud offerings: Introduction to Cloud Storage Models & Communication APIs – WAMP **(ICT)**- Auto Bahn for IoT - Xively Cloud for IoT – Python Web Application Framework - Django - Design a RESTful Web API-Amazon Web services for IoT- SkyNet IoT Messaging Platform.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 03)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Arshdeep Bahga, Vijay Madisetti "Internet of Things – A hands on approach", Universities Press 2015.

UNIT – 1: Chapter 1; UNIT – 2: Chapter 2, 3; UNIT – 3: Chapter 4, 5;
UNIT – 4: Chapter 6; UNIT – 5: Chapter 7, 8.

REFERENCE BOOK(S):

1. Andrew Minteer "Analytics for the Internet of Things (IoT)" Packet Publishing Limited 2017.

ONLINE RESOURCE (S):

1. https://www.edureka.co/blog/iot-tutorial

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Apply the concepts of IoT
- Use domain specific IoT
- Design and Develop the IoT system management with NETCONF-YANG
- Apply several logical designs of IoT using Python
- Design and implement successful recommendation engines for enterprises

M.B.E - 6: SOFTWARE APPLICATIONS PRACTICAL

Max Marks : N.A + 100 = 100 **Hrs / Week : 05**

Credit : 05 **Total Inst. Hrs: 60**

COURSE OBJECTIVES:

1. To learn about application of programming languages.
2. To understand the requirements of the client's software project.
3. To know about the working platform and domain.
4. To obtain the knowledge in Front end and Back end tools.
5. To prepare the documentation for Software Projects.

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Acquire a job in IT or ITES
- Interact with the clients
- Obtain knowledge about development of windows and web based applications
- Learn how to apply the programming logic and techniques
- Gain an overall knowledge in the process of software development

S.B.E - 1: INTERNET AND WORLD WIDE WEB

Max Marks : 25 + 75 = 100 **Hrs / Week : 03**

Credit : 2 **Total Inst. Hrs: 36**

COURSE OBJECTIVES:

1. To understand the basics of Internet.
2. To understand the concept of XHTML.
3. To handle the script and script functions.
4. To understand the basics of World Wide Web.
5. To understand the concept of web services.

UNIT - I: Basics of Internet (Inst Hrs: 08)

Introduction to Internet: History of the Internet – History of the WWW - Explorer 6 - Web Browser - Internet Explorer 6 – Features – Searching the Internet **(ICT)** – File Transfer Protocol - Electronic Mail- Instant messaging – Other Web Browsers.

UNIT -- II: Introduction to XHTML (Inst Hrs: 08)

Introduction – Editing XHTML – Headers – Linking - Special Character and more line breaks - Unordered List - Nested and Ordered List – Basic XHTML Tables – Intermediate XHTML Tables and Formatting – Basic XHTML Forms – Internal Linking – Meta Element – Frame Set Element – Nested Frame Sets **(Seminar)**.

UNIT - III: Introduction to Java Script (Inst Hrs: 08)

Introduction to Scripting – Obtaining User Input with Prompt Dialog – Memory Concept – Arithmetic – Decision Making Equality and Relational Operators – Control Statement – Control Structures – If Selection statement – IF Else Selection Statement – While Repetition Statement – For Repetition Statement – Switch Multiple Selection Statement – Do While Repetition Statement – Break and Continuous Statement – Definition – User Programmer Defined Functions – Global Functions – Recursion – Declaring Allocation Array – Multi Dimensional Array – Examples **(Assignment)**.

UNIT - IV: Introduction to VB Script and XML (Inst Hrs: 06)

Introduction – Operators – Data Type – Control Structures – VB Script Functions – Arrays – String Manipulation – Classes and Objects – XML Introduction – Structuring Data – XML Namespaces – Document Type Definition **(ICT)** – Schemas – Document Object Model(DOM) – DOM Methods – Web Service – XSL – SAX – SOAP – Web Service.

UNIT – V: Introduction to Web Services (IIS and Apache) (Inst Hrs: 04)

Introduction – HTTP Request Type – System Architecture – Client Side Scripting Vs Server Side Scripting – Accessing Web servers – Microsoft Internet Information Services (IIS) – Microsoft Internet Information Service 5.0 – IIS 6.0 – Apache Web Server**(ICT)**.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 02)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. H.M. Deital, P.J.Deital, A.B.Goldberg "Internet and World Wide Web" 3rd edition Pearson Perentice Hall 2007.

UNIT – I: Chapter 1, 2; UNIT – II: Chapter 4, 5; UNIT-III: Chapter 7, 8, 9, 10, 11; UNIT – IV: Chapter 32, 20; UNIT – V: Chapter 21.

REFERENCE BOOK (S):

1. Robert W.Sebesta "Programming the World Wide Web" 3rd edition Pearson Publishing 2007.

2. Horold "XML Bible", 3rd edition Wiley Publishing Inc 2005.

ONLINE RESOURCE (S):

1. https://www.edu.gctglobal.org/en/internetbasics

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Access the internet easily
- Learn how to handle the tags
- Develop a web page with scripts and functions
- Work on 2-tier or 3-tier architecture platform
- Gain knowledge in web services

S.B.E - 2: WEB DESIGNING USING HTML

Max Marks : 25 + 75 = 100 **Hrs / Week : 04**

Credit : 2 **Total Inst. Hrs: 48**

COURSE OBJECTIVES:

1. To understand the basics of the scripting language HTML.
2. To understand the concepts of HTML like list and graphics.
3. To acquire knowledge about tables, links and frames.
4. To know about Java script and its usage.
5. To incorporate the concept of forms into the website.

UNIT - I: Introduction to HTML (Inst Hrs: 09)

Introduction to HTML – Information files creation – Web server, Web Client/Browser – HTML Tags – Paired Tags – Singular Tags – Common Html Commands – Document Head – Document Body – Titles and Footers – Text Formatting – Emphasizing Material in a WEB PAGE **(ICT)** – Text Styles – Other Text Effects.

UNIT - II: HTML List & Graphics (Inst Hrs: 09)

Types of List : Unordered List(Bullets), Ordered List(Numbering), Definition List – Adding Graphics to HTML Documents: Image Alignments – Using the Border attribute, Using the Width Attribute – Using the Height Attribute - Using the Align Attribute - Using the Alt Attribute **(Seminar).**

UNIT - III: Tables, Linking & Frames (Inst Hrs: 09)

Introduction – Using the Width & Border attribute - Using the Cell padding attribute – Using the Cell spacing attribute – Using the Bgcolor attribute – Using the Col span and Row span attribute **(Assignment)** – Links: External Document References – Internal Document References – Hyper linking to HTML File – Linking to a particular Location in a separate document – Images as Hyperlinks. Frames: Introduction to Frames.

UNIT - IV: Java Script (Inst Hrs: 09)

Java script in web pages – Java script : The Advantage of java script – Writing java script into HTML – Basic programming techniques – Operators and Expressions in java script – java script programming constructs : Conditional checking – Super Controlled – Endless Loops – Function in java script – User defined functions **(ICT)** – Placing text in a Browser – Dialog Boxes.

UNIT - V: Forms used in a Website **(Inst Hrs: 09)**

The form objects: The form object's methods – The text element – The password element – Button – Submit element – Reset element – The Checkbox element – The radio element – The Text area element – The Select and Option elements **(ICT)** – Other Built in objects in Java Script – The String object – The Math object – The date object – User defined objects: Creating user defined objects – Instances – Objects Within objects.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 03)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Ivan Bayross "Web enabled Applications Development using HTML, DHTML, JAVASCRIPT, PERL, CGI"BPB 2000.

UNIT – I: Chapter 2; UNIT – II: Chapter 3, 4; UNIT – III: Chapter 5, 6, 7;

UNIT – IV: Chapter 8; UNIT - V Chapter 10.

REFERENCE BOOK (S):

1. C Xavier "World Wide Web with HTML" Mc Graw Hill Education 2015.

2. N P Gopolan, J.Akilandeswar "Web Technology a Developer's Perspective 2nd edition PHI Learning Private Limited 2016.

ONLINE RESOURCE (S):

1. https://www.w3schools.com/

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Handle Script and Functions
- Develop a web page with scripts
- Modify the existing web content
- Apply the skill in real world to acquire a job
- Understand about the form elements in HTML

S.B.E - 3: MULTIMEDIA AND ITS APPLICATIONS

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To understand the basics of multimedia.
2. To understand the multimedia software and hardware.
3. To understand the audio and video file format.
4. To understand the multimedia and internet.
5. To get the knowledge about delivering a multimedia project.

UNIT - I: Introduction to Multimedia (Inst Hrs: 05)

Introduction to Multimedia – CD ROM and the Multimedia Highway – Uses of Multimedia – Multimedia in Business – Multimedia in School – Multimedia at Home – Multimedia in Public Places – Multimedia Skill and Training **(ICT)** – The Team – Project Manager – Multimedia Designer – Interface Designer – Writer – Video Specialist – Audio Specialist – Multimedia Programmer.

UNIT - II: Multimedia Software and Hardware (Inst Hrs: 05)

Multimedia Hardware and Software – Machine Tools and Windows Protection Platform – Connections – Memory and Storage Device **(Seminar)** – Input Device – Output Device – Communication Device – Basic Software Tool – Text Editing and Word Processing Tools – Painting and Drawing Tools – 3D Modeling and Animation Tool – Image Editing Tool – Sound Editing Tool – Animation, Video and Digital Movie Tool – Making Instant Multimedia – Multimedia Authoring Tool.

UNIT - III: Audio and Video File Format (Inst Hrs: 05)

Multimedia Building Blocks – Text – Font and Faces – Using Text in Multimedia – Computers and Text – Font Editing and Design Tool – Hyper Media and Hyper text – Sound Multimedia system Sound – MIDI (Musical Instrument Digital Interface) VS Digital Audio – Making MIDI audio – Audio File Format – Images – Making Still image – Coral – Image File Format – Animation – Principle of Animation – Making Animation that Work **(Assignment)** – Video – How Video works – Integrating Video Tips – Recording Format – Digital Video.

UNIT - IV: Multimedia and Internet **(Inst Hrs: 04)**

Multimedia and Internet – The Internet and How it Works – Internetworking – Connections - Internet Services – World Wide Web and HTML – Multimedia on the Web – Tool for the World Wide Web **(ICT)** – Working on the Web – Text for the Web – Image for the Web – Sound for the Web – Animation for the Web.

UNIT - V: Delivering a Multimedia Project **(Inst Hrs: 03)**

Assembling and Delivering a Project – Planning and Costing – Project Planning – Estimating – Designing and Producing – Content and Talent – Using Content created by the Others – Using Content Created for A project – Delivering – Testing **(ICT)** – Preparing for Delivering – Delivering on CD ROM – Delivering on WWW

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 02)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Multimedia making it work – Fourth Edition – Tay Vaughan – Tata Mcgraw Hill Edition 2001

UNIT - I: Chapter 1, 2, 3; UNIT - II: Chapter 4, 5, 6, 8; UNIT - III: Chapter 9, 10, 11; UNIT - IV: Chapter 14, 15, 18; UNIT - V: Chapter 19, 20.

REFERENCE BOOK(S):

1. Prabhat K. Andleigh, Kiran Thakar "Multimedia System Design" PHI Learning Private Limited 2009.

ONLINE RESOURCE (S):

1. https://www.tutorialspoint.com/list tutorials/multimedia/

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Understand the basics of Multimedia
- Acquire the knowledge about multimedia software and hardware
- Learn about Audio and Video File Format
- Develop the skills in multimedia and internet
- Gain the knowledge about delivering a multimedia project

S.B.E - 4: WEB SERVICES

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To understand the basics of the scripting language XML.
2. To understand the concept of XML technology family.
3. To gain the knowledge about SOAP.
4. To get the knowledge about web services.
5. To understand the concept of XML security.

UNIT - I: XML: Extending the Enterprise (Inst Hrs: 05)

Role - Just Tags – Advantages - Design by omission- XML and The Web - SOAP - Web Services -.Net and J2EE **(ICT)** - Revolutions of XML –The Data Revolution - The Architectural Revolution - The Software Revolution.

UNIT - II: XML Technology Family (Inst Hrs: 05)

Name Spaces **(Seminar)** - Structuring with Schemas - DTD –XML Schema - XML Processing – DOM – SAX - Presentation Techniques: CSS – XSL -XFORMS - XHTML - Voice XML - Transformation: XSLT - XLINK - XPATH – X-Query - XML Infrastructure - RDF.

UNIT - III: SOAP (Inst Hrs: 05)

Overview Of SOAP - HTTP – XML - RPC: Data Typing – Zwift Books – Response - SOAP: Protocol – Overview-Message Structure – Example – Paths - Intermediaries - Actors - Design Patterns - Faults - SOAP With Attachments **(Assignment)**.

UNIT - IV: Web Services (Inst Hrs: 04)

Web Services :Overview – Opportunity and Risk – Technologies - Architecture - Key Technologies – UDDI – WSDL **(ICT)** – XML and its Technologies - SOAP , Web Services and E-Commerce - Enterprise's Web Services: .NET - J2EE – IBM - ORACLE.

UNIT - V: XML Security **(Inst Hrs: 03)**

Security Overview: Single key and Public key cryptography-Digital Signature-Managing certificates and Private key - Canonicalization - XML Security Framework - XML Encryption - XML Digital Signature **(ICT)** - XKMS Structure - Guidelines for Signing XML Documents.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 02)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Frank. P. Coyle, "XML, Web Services and The Data Revolution", Pearson Education, 2002

UNIT – I: Chapter 1; UNIT – II: Chapter 2; UNIT – III: Chapter 4;

UNIT – IV: Chapter 5; UNIT – V: Chapter 7.

REFERENCE BOOK (S):

1. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2013.

ONLINE RESOURCE (S):

1. https://www.javapoint.com/web services_tutorial/

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Understand the basics in XML
- Develop the concept of XML technology family
- Gain the knowledge about SOAP
- Get knowledge about web services
- Obtain the concept of XML Security

S.B.E – 5: COMPUTER GRAPHICS

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To understand the basics of computer graphics.
2. To understand the graphics primitives.
3. To understand the concept of two dimensional transformation.
4. To understand the three dimensional transformation.
5. To understand the computer animation.

UNIT - I: Overview of Interactive Computer Graphics (Inst Hrs: 05)

Positioning of points - Database Structure for Graphics Modeling - Graphics Standards - Applications of Interactive Computer Graphics - Graphics Hardware – Introduction - Basic Computer Architecture **(ICT)** – Microcomputer – Workstation – Memory Storage Devices - Input Devices - Graphics Displays - Graphics Monitors - Hardcopy Output Devices - Graphics Systems.

UNIT - II: Computer Graphics Primitives (Inst Hrs: 04)

Introduction - Raster Scan Graphics - Line Drawing Algorithms – Mid - point Circle Algorithm - Mid-point Ellipse Algorithm - Scan Conversion – Anti-aliasing **(Seminar)** - Drawing Text -Properties of Graphics Primitives.

UNIT - III: Two-dimensional Geometric transformations (Inst Hrs: 05)

Introduction – Translation – Scaling – Rotation – Reflection – Shearing - Homogeneous Coordinates - Composite Transformations **(Assignment)** - Rotation about an Arbitrary Point - Transformation between Coordinate Systems.

UNIT - IV: Three-Dimensional Transformations (Inst Hrs: 05)

Introduction - Translation - Scaling - Rotation - Rotation of a 3D Object about an Arbitrary Axis – Reflection – Shearing **(ICT)** - Composite Transformations.

UNIT - V: Computer Animations (Inst Hrs: 03)

Introduction - Design of Animation Sequences - Primary Computer Animation Functions - Computer Animation Languages - Types of Raster Animations – Key - frame Systems - Key - Frame Algorithms **(ICT)** - Motion Specifications - Human Walking Model.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 02)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. Chennakesava R.Alavala "Computer Graphics" PHI Learning Private Limited 2009.

UNIT – I: Chapter 1, 2; UNIT – II: Chapter 3; UNIT – III: Chapter 5;

UNIT – IV: Chapter 10; UNIT – V: Chapter 14.

REFERENCE BOOK (S):

1. N.Krishnamoorthy "Introduction to Computer Graphics" Tata Mc Graw Hill Publishing Company Limited 2006.

2. Donald D. Hearn, M. Pouline Baher "Computer Graphics C Version "2nd edition Pearson Education 2014.

ONLINE RESOURCE (S):

1. https://www.wisdom jobs.com/e-university/computer-graphics-tutorial/

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- The basic understanding of the core concepts of computer graphics
- Get knowledge about the geometric transformation on graphics
- Gain the knowledge in the problem solving aspects of the field
- Extract scene with different clipping methods and its transformation to graphics display device
- Obtain the skills required to develop animations

S.B.E – 6: COMPUTER NETWORKS

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To provide an introduction to the computer networks and protocol standards.
2. To Concern about the exchange of data between two directly connected devices.
3. To examine the internal mechanisms and user-network interfaces.
4. To know about a range of applications that operates over the Internet.
5. To gain the knowledge about congestion control.

UNIT – I: Overview (Inst Hrs: 05)

Data communications and networking for today's enterprise – A Communication model – Data Communications – Networks – The internet - The need for Protocol Architecture – TCP/IP protocol architecture **(ICT)** – OSI Model

UNIT – II: Data Communications (Inst Hrs: 05)

Data Transmissions: Concepts and Terminology – Analog and Digital Data Transmissions **(Seminar)** – Channel Capacity – Transmission Media: Guided Transmission media – Wireless Transmission – Wireless Propagation – Line-of-Sight Transmission

UNIT – III: Communication techniques and Data link protocols (Inst Hrs: 05)

Digital Data Communication Techniques: Asynchronous and Synchronous Transmission – Types of Errors – Error Detection – Error Correction **(Assignment)** – Line Configurations – Data link control protocols: Flow control – Error Control – HDLC

UNIT – IV: Circuit Switching and Packet Switching (Inst Hrs: 04)

Switched Communication networks – Circuit Switching Networks **(ICT)** – Concepts - Soft switch Architecture – Packet Switching Principles – X.25 – Frame Relay - Asynchronous Transfer Mode: Protocol Architecture

UNIT – V: Routing, Congestion, and Internet Applications (Inst Hrs: 03)

Routing in Packet Switching – Congestion Control in Data Networks: Effects of Congestion – Congestion control – Traffic Management **(ICT)** – Electronic mail – DNS – IPv4 and IPv6 Security

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 02)

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

William stallings, "Data and Computer Communications", Eighth edition, Pearson Education 2006, ISBN: 0-13-243310-9

UNIT – I: Chapter 1, 2; **UNIT – II: Chapter 3, 4;** **UNIT–III: Chapter 6, 7;**

UNIT– IV: Chapter 10; **UNIT – V: Chapter 12, 13, 22.**

REFERENCE BOOK (S):

1. Behrouz A. Forozan "Data Communication and Networking" 5th edition Mc Graw Hill Education 2017.

ONLINE RESOURCE (S):

1. https://www.studytonight.com/computer -networks/

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Build their own network and maintain it without any struggle
- Understand the OSI reference model
- Learn about the various techniques and modes of transmission
- Understand the TCP/IP configuration for windows
- Understand the network security and various protocols such as FTP, HTTP and DNS

I.D.C - 1: COMPUTER SKILL DEVELOPMENT COURSE

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To understand the basics of computer.
2. To understand the concept of computer component.
3. To get the knowledge about programming languages.
4. To understand the concept of computer networks.
5. To get the knowledge about applications of computer.

UNIT - I: Introduction to Computer (Inst Hrs: 05)

Generations of Computer - Types of Computers **(ICT)** - Characteristics of Computers – Purpose of Computer – Limitations of Computer - Classification of Digital Computer Systems - Functions and Components of a Computer.

UNIT - II: Computer Components (Inst Hrs: 04)

Memory Units - Main and Auxiliary Storage Devices **(Seminar)** - Input Devices - Output Devices - Classification and Characteristics of Output Devices - Introduction to Computer Software: System Software and Application Software.

UNIT - III: Programming languages (Inst Hrs: 05)

Types of Programming Languages - General Software Features and Trends - Data Processing - Introduction to Database Management Systems **(Assignment)** - Introduction to Telecommunications.

UNIT - IV: Computer Networks (Inst Hrs: 04)

Types of Networks - Network Topologies - Network Protocols - Network Architecture - Communication Systems **(ICT)** - Internet and World Wide Web: Internet Access and Basics - Internet Protocols - Internet Addressing – WWW – HTML - E-mail - Introduction to Multimedia

UNIT - V: Applications of Computers (Inst Hrs: 04)

Computers In Business and Industry- Computers in Home- Computers in Education and Training- Computers in Entertainment, Science, Medicine And Engineering **(ICT)**.

UNIT - VI: Latest Learning (For CIA only): (Inst Hrs: 02)

Latest development related to the Course during the Semester Concerned

TEXTBOOK (S):

1. Alexis Leon, Mathews Leon **"**Fundamentals of Information Technology" Vikas Publications 1999.

UNIT – I: Chapter 1, 2, 3; UNIT – II: Chapter 6, 7, 8, 9, 10;

UNIT – III: Chapter 12, 13, 14, 15, 17; UNIT – IV: Chapter18, 19, 21, 22, 24

UNIT – V: Chapter 33, 34, 35, 36.

REFERENCE BOOK (S):

1. Dennis P.Curtin, Kim Foley, Kunal Sen, Cathleen Morin "Information Technology the breaking wave" TATA-McGRAW-HILL 2007.
2. V.Rajaraman "Introduction to Information Technology" PHI Learning Private Limited 2003.

ONLINE RESOURCE (S):

1. https://www.tutorialspoint.com/data_communication_computer_network

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Understand the knowledge about computers and its types
- Attain the skills about Input, Output and Memory Units
- Acquire the competence of computers and its applications
- Gain the knowledge about various types of programming language
- Obtain the insight about role of computers in human life

I.D.C – 2: INTERNET SKILL DEVELOPMENT COURSE

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To understand the basics of Internet concepts.
2. To understand the web servers, browsers, security.
3. To get the knowledge about creating websites and markup languages.
4. To get the knowledge about searching and web casting techniques.
5. To get the knowledge about network and security programming.

UNIT - I: Introduction to Network and Internet (Inst Hrs: 05)

Basics of Networks – Topologies of Networks - Layering in Networks – Switching in the Network – Bridges, Routers and Gateways – Types of Networks **(ICT)**. Internet: Basics of Internet – Addresses and Names for the Internet, Web Objects and Sites – E Mail- WWW – FTP - Telnet.

UNIT - II: Web Servers, Browsers and Security (Inst Hrs: 05)

The Web Server – Proxy Server – The Fast Ready Connection on the Web – Web Browsers – Netscape Communication Suite – Microsoft Internet Explorer **(Seminar)** – The Virus Menace in the Internet – Firewalls – Data Security.

UNIT - III: Creating Websites and Markup Language (Inst Hrs: 04)

The Art of Creating a Web Site – Hypertext and HTML – HTML Document Features – Document Structuring Tags in HTML – Special Tags in HTML **(Assignment)** – Dynamic HTML – XML for Universal Format for the Data on the web – Microsoft Front Page

UNIT - IV: Searching and Web Casting Techniques (Inst Hrs: 04)

Introduction – Search – Subscription – Web Casting – Web Casting Channel Push Technology Mode – Search Alerts – Searching Citation –Search Engines – Search Tools **(ICT)** – Using Navigator, Using Internet Explorer, Saving Search Results – Subscribing – Channels.

UNIT - V: Network and Security Programming (Inst Hrs: 04)

Network Programming – URL Classes – Socket Classes – Programming for Security – CGI – Four Steps for CGI Script – CGI Script Language **(ICT)** – Scripting Language ' Java Script' – Dynamic Page Functionality using Servlets and JSPs – Using ASP, COMs, DCOMs.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 02)**

Latest development related to the Course during the Semester Concerned

TEXTBOOK (S):

1. Raj Kamal, "Internet and Web Technologies" Tata McGraw- Hill Publishing company limited, New Delhi

UNIT - I: Chapter 1, 2; **UNIT - II: Chapter 3;** **UNIT - III: Chapter 4;**

UNIT - IV: Chapter 5; **UNIT - V: Chapter 9, 10.**

REFERENCE BOOK (S):

1. K.L.James "The Internet A User's Guide PHI Learning Private Limited 2010.

ONLINE RESOURCE (S):

1. https://www.w3schools.com/

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Gain the knowledge about Internet and its Applications
- Acquire the skills of Servers, Browsers and Security
- Get the insight about HTML and XML
- Learn about Searching and webcasting techniques
- Gain the knowledge about network and security programming

I.D.C - 3: FUNDAMENTALS OF PHOTOSHOP

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To understand the basics of principles of Photoshop.
2. To understand the tools and tricks.
3. To get the knowledge about filters.
4. To understand the text, effects.
5. To gain the knowledge about plug-ins.

UNIT - I: Getting Started **(Inst Hrs: 05)**

The Basics - Opening and Saving – Working with Files – Saving your work – Undoing and Redoing - Selection Modes **(ICT)** – Transformations – Resizing – Rotating – Flipping – Selection Transformations - Paintbrushes and Art Tools – The Brushes Palette – Brushes - Moving Paint - Smudges – Focus Tools – The Toning Tools.

UNIT - II: More Tools and Tricks **(Inst Hrs: 05)**

Advanced Painting Techniques – Simulating Different Media - Layers –Using The Layers Palette – Working With Multiple Layers - Using Masks –Applying Masks – Using Quick Mask – Layer Masks **(Seminar)** - Paths – Creating Paths - Editing Paths – Using Paths.

UNIT - III: Fun with Filters **(Inst Hrs: 04)**

Filters That Improve Your Picture –Sharpen Filters – Blur Filters – Fading Filters - Filters To Make Your Picture Artistic – Artistic Filters – Brush Strokes – sketch Filters - Filters To Distort and Other Funky Effects – Distort Filters – Pixelate Filters – Stylize – Combining Filters **(Assignment)**.

UNIT - IV: Text, Effects **(Inst Hrs: 04)**

Adding Type to pictures – The Type Tools **(ICT)** – Setting Type – Creating Drop Shadows – Cutting and Filling Type – Adding Glows – Creating Bevel and Emboss Effects.

UNIT - V: Getting Plugged In **(Inst Hrs: 04)**

Wrapping Text – Checking your Spelling - Special Effects and Useful Tricks **(ICT)** – Compositing – Photo Repair –Black and White.

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 02)**

Latest development related to the Course during the Semester Concerned

TEXTBOOK (S):

1. Carla Rose Sams" Teach Yourself Adobe Photoshop 7 in 24 hours"–Edition 2002.

   UNIT - I: Chapter 1, 2, 3, 4, 7, 9; UNIT - II: Chapter 10, 11, 12, 13

   UNIT - III: Chapter 14, 15, 16; UNIT - IV: Chapter 17, 18

   UNIT - V: Chapter 20, 21.

REFERENCE BOOK(S):

1. Vikas Gupta "Multimedia and Web Design" Dream Tech Press 2007.

2. Shruthilal "Photoshop CS" Firewall Media 2011.

ONLINE RESOURCE (S):

1. https://www.guru99.com/photoshop-tutorials.html/

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Understand the basics of principles of Photoshop palette
- Learn the layers and masks
- Get the knowledge about filters
- Understand the text, effects, and type tools
- Obtain the knowledge about special effects

I.D.C – 4: COMPUTER APPLICATIONS IN CHEMISTRY

Max Marks : 25 + 75 = 100 **Hrs / Week : 02**

Credit : 2 **Total Inst. Hrs: 24**

COURSE OBJECTIVES:

1. To enable the students to learn the basics of computer.
2. To understand the concept of operating systems and its types.
3. To learn computer network basics.
4. To introduce the concept of C programming to the learners.
5. To enable the students to apply the concept of C Programming in applications of Chemistry.

UNIT -- I: Introduction to Computer (Inst Hrs: 05)

Characteristics Of Computers – Organization Of A Computer – Secondary Storage Devices – Computer Languages – Low Level, Assembly And High Level Languages – Software – System and Application Software – Applications Of Computer **(ICT)** – Algorithms And Flow Charts.

UNIT -- II: Operating system (Inst Hrs: 05)

MS-DOS, Simple DOS Commands – MS-Windows - Components Of Windows – Desktop, My Computer, Recycle Bin, Taskbar, My Briefcase and Network Neighborhood – Windows Accessories – Calculator, Games, Windows Media Player, Notepad and Imaging – Windows Explorer. Power Point – Creating a Presentation – Slide Preparation **(Seminar)**.

UNIT -- III: Fundamentals of Computer Networks (Inst Hrs: 04)

Importance – Mode Of Connections – Protocol – Network Topologies – Bus, Ring And Star Topologies – Network Architecture – Network Components – Hubs , Cables, Repeaters, Routers And Bridges, Internet And Its Application: Internet – Meaning – Importance –WWW **(Assignment)** – Browsing the Internet – Browsing Software – URL Addresses, Search Engines, Exploring Websites and Downloading Materials from Websites, E-Mail – Sending, Receiving and Storing Mail and Chatting.

UNIT -- IV: Fundamentals of C (Inst Hrs: 04)

Character Set – Identifiers – Keywords – Data Types – Constants – Variables – Symbolic Constants – Operators – Expressions – Evaluation Of Expressions. Input And Output Functions - getchar – putchar – scanf – printf – gets and puts Functions **(ICT)**.

UNIT – V: Applications of C - Programming: **(Inst Hrs: 04)**

- Basic Structure of C - Programming
- Conversion of temperature from Kelvin to Celsius
- Calculation of rate constant using first order rate equation
- Calculation of root mean square, average and most probable velocities of molecules
- Calculation of Bohr radius
- pH determination using Henderson equation
- Determination of vander Waals constants **(ICT)**

UNIT - VI: Latest Learning (For CIA only): **(Inst Hrs: 02)**

Latest development related to the Course during the Semester Concerned

TEXT BOOK (S):

1. E. Balagurusamy "Programming in ANSI C" 6th Ed.,Tata McGraw-Hill – New Delhi.
2. Pundir Ansu Bansal "Computers for Chemists" 9th Ed., Pragati Prakashan Publication, 2011.
3. Andrews Tenenbaum "Computer Networks" 4th Ed., Prentice-Hall of India Pvt.Ltd. New Delhi -110 001.

REFERENCE BOOK (S):

1. Kishor Arora "Computer Application in Chemistry" 1st Ed., Anmol Publications Pvt. Ltd. 2004.
2. K.V.Raman "Computer Chemistry" Tata Mc Graw Hill 2003.

ONLINE RESOURCE (S):

1. https://www.w3schools.in/c-tutorial
2. https://www.tutorialspoint.com/data_communication_computer_network

COURSE OUTCOMES:

After the successful completion of the Course the Students shall be able to,

- Obtain knowledge about computer
- Understand the need for operating system
- Understand the fundamentals of computer networks
- Understand the basics of the programming language C
- Know the applications of Programming language C in Chemistry