
ST. TERESA'S COLLEGE, ERNAKULAM
(AUTONOMOUS)

Affiliated to Mahatma Gandhi University, Kottayam



CURRICULUM FOR
B.VOC PROGRAMME IN SOFTWARE
DEVELOPMENT

Under Choice Based Credit & Semester System
& Outcome Based Education
(2018 Admissions)

B.VOC PROGRAMME IN SOFTWARE DEVELOPMENT

PROGRAM SPECIFIC OUTCOMES

- PSO1 :** Express Technical Knowledge , Professional Skills And Competencies in the field of Software Development and IT enabled services.
- PSO2 :** Interpret Financial, Software and Business Reports and Communicate Key findings to Stakeholders Effectively.
- PSO3 :** Appraise ethics and values in various domains such as IT governance and sustainable practices.
- PSO4 :** Solve Real Life Problems Using Mathematical, Statistical And Programming Tools.
- PSO5 :** Collaborate industry-standard project practices as a bridge to stable employment through internships.

SEMESTER 1

SEMESTER I

Course Code	Course Title	Credits	Course Type
EN1A01B18	Fine Tune Your English	4	Common Course 1
VSD1G01B18	LE FRANÇAIS ÉLÉMENTAIRE	4	General
CA1B01B18	Computer Fundamentals and Digital Principles	4	General
VSD1S01B18	Financial Accounting	4	Skill
VSD1S02B18	Problem Solving Techniques	4	Skill
CA1B02B18	Methodology of Programming and C Language	3	Skill
VSD1SP01B18	S/W Lab – I (Programming in C Language)	4	Skill (Practical)
VSD1SP02B18	S/W Lab – II (MS Office/ Photoshop)	3	Skill (Practical)

SEMESTER I
COMMON COURSE I
EN1A01B18-FINE TUNE YOUR ENGLISH

Credits : 4

Total Lecture Hours : 72

Course Outcomes:

CO1: Recognize the basics of English grammar

CO2: Choose the appropriate word classes

CO3: Identify common errors in the use of English language in various contexts

CO4: Apply the rules of grammar to comprehend, speak, and write grammatically correct English

CO5: Compose materials for business communication

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1 C	PSO2 An	PSO3 An	PSO4 A	PSO5 C
CO1 R	1	2	1	1	1
CO2Ap	1	1	1	1	1
CO3U	1	2	3	1	1
CO4Ap	2	3	2	3	1
CO5C	2	3	2	1	1

Syllabus Content

Module 1

(18 Hours)

The Sentence and its Structure

How to Write Effective Sentences – Phrases: What are They? – The Noun Clauses – The Adverb Clause – “If All the Trees Were Bread and Cheese” – The Relative Clause – How Clauses are Conjoined

Module 2

(18 Hours)

Word-Classes and Related Topics

Understanding the Verb – Understanding Auxiliary Verbs – Understanding Adverbs – Understanding Pronouns – The Reflexive Pronoun – The Articles I – The Articles II – The Adjective – Phrasal Verbs – Mind your Prepositions

Module 3

(18 Hours)

To Err is Human

Concord – Errors – Common and Uncommon

Spelling and Pronunciation

Pronunciation: Some Tips – More Tips on Pronunciation – An awesome Mess? – Spelling Part II

Module 4

(18 Hours)

Tense and Related Topics

‘Presentness’ and Present Tenses – The ‘Presentness’ of a Past Action – Futurity in English – Passivisation

Interrogatives and Negatives

Negatives – How to Frame Questions – What’s What? – The Question Tag

Module 5

(18 Hours)

Conversational English

Some time expressions – Is John There Please?

Miscellaneous and General Topics

Reading

Letter Writing

In addition there will be an essay question on a general topic.

Learning Resources

Core Text : *Fine-tune Your English* by Dr. Mathew Joseph. Orient Blackswan and Mahatma Gandhi University

SEMESTER I

GENERAL COURSE

VSD1G01B18- LE FRANÇAIS ÉLÉMENTAIRE

Credits : 4

Total Lecture Hours : 72

Course Outcomes:

CO1: Identify and use familiar everyday expressions and basic phrases.

CO2: Develop Language, vocabulary and grammar skills

CO3: Construct simple and meaningful sentences that helps to express their behaviour

CO4: Prepare conversations based on scenarios which helps while traveling

CO5: Write basic compositions in simple but complete sentences and short paragraphs about different themes.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1 C	PSO2 An	PSO3 An	PSO4 A	PSO5 C
CO1	1	1	1	1	1
CO2	3	3	2	1	1
CO3	3	3	2	1	1
CO4	3	3	2	1	1
CO5	3	2	1	1	1

Syllabus Content:

Module I (16 hours)

Bienvenue – Qui est-ce ? Les alphabets – Les sons – les accents - saluer-se présenter quelqu'un - faire connaissance avec quelqu'un –les nombres – les verbes être, s'appeler – l'article défini

Module II (14 hours)

Ça va bien ? – correspond@nce.com Les verbes aller et avoir – l'adjectif possessif au singulier – l'article indéfini – la politesse – demander des nouvelles d'une personne – chercher un(e) correspondant(e)

Module III (14 hours)

Trouvez l'objet – Portrait-robot Nommer, monter et situer des objets – exprimer la possession – indiquer les couleurs – les pronoms toniques – le pluriel des articles, des verbes, des adjectifs possessifs, la négation

Module IV (14 hours)

Shopping – Le coin des artistes Caractériser un objet – faire des achats – exprimer des goûts – l'adjectif interrogatif – les adjectifs interrogatifs – l'interrogation – comprendre un texte court

Module V (14 hours)

Appartement à louer – C'est par où ? Situer un lieu sur un plan – décrire un appartement – indiquer une direction – indiquer un moyen de transport – les prépositions – l'impératif – l'adverbe y – comprendre une annonce immobilière – présenter des informations touristiques

**SEMESTER I
GENERAL COURSE
CA1B01B18 : COMPUTER FUNDAMENTALS AND DIGITAL
PRINCIPLES**

Credits : 4

Total Lecture Hours: 72

Course Outcomes:

CO1: Differentiate the types of computers, softwares, hardwares and input or output devices

CO2: Differentiate the Operating Systems and basics of Networks and Internet.

CO3: Illustrate the conversion between various number systems and the construction of binary code.

CO4: Design simplified logical expression for digital circuits.

CO5: Construct digital circuits of medium complexity using the working of combinational and sequential circuits.

Mapping of Course Outcomes with Program Specific Outcomes

	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1An	3	1	1	2	2
CO2 An	3	1	1	2	2
CO3 A	2	1	2	2	2
CO4 C	2	1	2	2	3
CO5 C	3	1	2	2	2

Syllabus Content:

Module I:(12 Hrs)

Introduction: Functional units of a computer system, Different types of computers, Computer Software and Hardware, Types of software-System software and Application program. Characteristic of computers. Input Devices – Keyboard, Mouse, Optical input devices, Output devices – Monitors and Printers, Primary & Secondary Memory

Module II:(15 hrs)

Introduction to Operating Systems and Networking: Definition of an Operating System - Different types of PC Operating Systems. Computer Networks- categories of networks - LAN, WAN, MAN. The Internet - Working of Internet - Major Features of Internet.

Module III:(15 hrs)

Number Systems: Base or radix ,Positional number system, Popular number systems(Decimal, Binary, Octal and Hexadecimal), Conversion-From one number system to another, Concept of binary addition and subtraction, Complements in binary number systems, 1^S Complement, 2^S Complement and their applications, Signed magnitude form, BCD numbers- concept and addition, Parity.

Module IV:(15 hrs)

Boolean Algebra and Gate Networks: Logic gates- AND, OR, NOT, NAND and NOR Truth tables and graphical representation, Basic laws of Boolean Algebra, Simplification of Expressions, De Morgans theorems, Dual expressions, Canonical expressions, Min terms and Max terms, SOP and POS expressions, Simplification of expression using K-MAP (up to 4 variables), Representation of simplified expressions using NAND/NOR Gates, Dont care conditions, XOR and its applications, parity generator and checker.

Module V:(15 hrs)

Sequential and Combinational Logic. Flip flops- Latch, Clocked, RS, JK, T, D and Master slave , Adders-Half adder, Full adder(need and circuit diagram), Encoders, Decodes, Multiplexers and De-multiplexers (working of each with diagram), Analog to digital and digital to analog converters (Diagram and working principle), : Concept of Registers, Shift Registers, Counters.

Books of study:

1. Peter Nortons- Introduction to Computers, Sixth Edition, Published by Tata McGraw Hill

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2. P K Sinha & Priti Sinha - Computer Fundamentals, Fourth Edition, BPB Publications.
 3. M Morris Mano-Digital Logic and Computer design, Fourth Edition, Prentice Hall.

References:

1. Thomas C Bartee- Digital computer Fundamentals, Sixth Edition, TATA McGraw Hill Edition

SEMESTER I

SKILL COURSE

VSD1S01B18 – FINANCIAL ACCOUNTING

Credits : 4

Total Lecture Hours : 4 Hours per week

Course Outcomes:

CO1: Identify the fundamentals concepts of accounting and double entry books of accounts.

CO2: Prepare the journal accounts by applying the rules of accounting

CO3: Prepare ledger accounts and cash book by applying the principles of accounting.

CO4: Articulate the theoretical concepts of double entry system and prepare the trial balance.

CO5-: Equip with the knowledge of accounting process and preparation of final accounts of sole trader

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 U	1	1	1	1	1
CO2 A	1	3	1	1	1
CO3 A	2	3	1	1	1
CO4 A	2	3	1	1	1
CO5 A	2	3	1	1	1

Syllabus Content:

Module-1 (20 hours)

Accounting meaning Objects- Concepts and Conventions-Double Entry Books of Accounts Book keeping and Accounting Accountancy The language of the Business World Principles of double entry Advantages of double entry.

Module-2 (10 hours)

Journal- Rules of debit and credit - Kinds of Accounts Journalising .

Module-3 (20 hours)

Ledger Sub divisions of ledger Account Form of an Account Posting of Journal Balancing of Accounts-Cash book (simple, triple column)-Petty Cash book.

Module-4 (10 hours)

Trail Balance Meaning Objects-Summary of Accounting Entries.

Module-5 (12 hours)

Final Accounts-Trading and Profit and Loss Account Balance Sheet (without adjustments)

SEMESTER I

SKILL COURSE

VSD1S02B18 : PROBLEM SOLVING TECHNIQUES

Credits : 4

Total Lecture Hours : 72

Course Outcomes:

CO1: Design solutions with algorithm to solve real life problem scenarios in professional development.

CO2: Illustrate solutions for factoring problems using algorithmic technique.

CO3: Experiment the usage of array and sorting concept in sequential and linear problem solving

in computer and business logics.

CO4: Develop the logical ability to solve merging, sorting and searching problems with algorithms applied in commercial and numerical applications.

CO5: Create Algorithmic model for a Case Study or Real Project to solve a problem in business and society

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 C	2	2	1	2	2
CO2 C	3	2	1	2	2
CO3 A	2	2	1	3	2
CO4 C	3	2	1	2	2
CO5 C	2	2	2	2	3

Syllabus Content:

Module I: PROGRAMMING TECHNIQUES (12 hours)

Steps Involved in Computer Programming – Problem Definition – Outlining The Solution – Flow Chart – Developing Algorithms – Efficiency of Algorithms - Analysis of Algorithms, Translators, Compiler and Interpreter.

Module II: FUNDAMENTAL ALGORITHMS (12 hours)

Exchanging the Values – Counting – Summation of Set of Number – Factorial Computation – Sine Computation – Fibonacci sequence – Reversing the Digits of an Integer – Base Conversion.

Module III: FACTORING METHODS (12 hours)

Finding the Square Root of a Number – Smallest Divisor of an Integer – GCD of Two Integers – Generating Prime Numbers – Computing the Prime Factors of an Integer – Raising a Number to a Large Power.

Module IV: ARRAY TECHNIQUES (12 hours)

Array Order Reversal – Array Counting or Histogram – Finding the Maximum Number in a Set – Removal of Duplicates from an Ordered Array – Partitioning an Array – Finding the kth Smallest Element

Module V: MERGING, SORTING AND SEARCHING (12 hours)

Two Way Merge - Sorting by Selection, Exchange, Insertion, and Partitioning - Binary Search Hash Searching

BOOK OF STUDY

1. Dromey R G, “How to Solve it by Computer”, Prentice Hall of India, 1997

REFERENCES

2. Michael Schneider, Steven W. Weingart, David M. Perlman, “An Introduction to Programming and Problem Solving with Pascal”, Wiley Eastern Limited, New Delhi, 1982.
 3. Harold Abelson and Gerald Sussman with Julie Sussman, “Structur Harold Abelson and Gerald Sussman with Julie Sussman, “Structure and Interpretation of Computer Programs”, MIT Press, 1985.
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SEMESTER I

SKILL COURSE

**CA1B02B18 : METHODOLOGY OF PROGRAMMING AND C
LANGUAGE**

Credits : 3

Total Lecture Hours : 72

Course Outcomes:

CO1: Develop an algorithm/flowchart to find its solution by analysing a computational problem.

CO2: Develop legible* C programs with branching and looping statements, which uses

Arithmetic, Logical, Relational or Bitwise operators.

CO3: Develop legible C programs with arrays, structure or union for storing the data to be Processed.

CO4: Construct memory efficient C programs by the application of pointers for array processing

and parameter passing and files for input and output storage.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 C	3	1	2	3	3
CO2 C	2	1	2	2	2
CO3 C	2	1	2	2	2
CO4 A	2	1	2	1	2

Syllabus Content:

Module I (12 hrs)

Introduction to programming, Classification of computer languages, Language translators (Assembler, Compiler, Interpreter), Linker, Characteristics of a good programming language, Factors for selecting a language, Subprogram, Purpose of program planning, Algorithm, Flowchart, Pseudocode, Control structures (sequence, selection, Iteration), Testing and debugging.

Module II (15 hrs)

C Character Set, Delimiters, Types of Tokens, C Keywords, Identifiers, Constants, Variables, Rules for defining variables, Data types, C data types, Declaring and initialization of variables, Type modifiers, Type conversion, Operators and Expressions- Properties of operators, Priority of operators, Comma and conditional operator, Arithmetic operators, Relational operators, Assignment operators and expressions, Logical Operators, Bitwise operators.

Module III (15 hrs)

Input and Output in C – Formatted functions, unformatted functions, commonly used library functions, Decision Statements If, if-else, nested if-else, if-else-if ladder, break, continue, goto, switch, nested switch, switch case and nested if. Loop control-for loops, nested for loops, while loops, do while loop.

Module IV (15 hrs)

Array, initialization, array terminology, characteristics of an array, one dimensional array and operations, two dimensional arrays and operations. Strings and standard functions, Pointers, Features of Pointer, Pointer and address, Pointer declaration, void wild constant pointers, Arithmetic operations with pointers, pointer and arrays, pointers and two dimensional arrays.

Module V (15 hrs)

Basics of a function, function definition, return statement, Types of functions, call by value and reference. Recursion -Types of recursion, Rules for recursive function, direct and indirect recursion, recursion vs iterations, Advantages and disadvantages of recursion. Storage class, Structure and union, Features of structures, Declaration and initialization of structures, array of structures, Pointer to structure, structure and functions, typedef, bitfields , enumerated data types, Union, Dynamic memory allocation, memory models, memory allocation functions.

Book Of Study:

1. Ashok Kamthane - Programming in C, Third Edition, Pearson Education
2. P K Sinha & Priti Sinha - Computer Fundamentals , Fourth Edition, BPB Publications.

Reference Text

1. E. Balaguruswamy -Programming in ANSI C ,Seventh Edition , McGraw Hill Education

SEMESTER I

SKILL PRACTICAL

VSD1SP01B18 : S/W LAB – I (PROGRAMMING IN C LANGUAGE)

Credits : 2

Total Lecture Hours : 72

Course Outcomes:

CO1 : Develop an algorithm/flowchart to find its solution by analysing a computational problem.

CO2 : Develop legible* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.

CO3 : Develop legible C programs with arrays, structure or union for storing the data to be Processed.

CO4 : Construct memory efficient C programs by the application of pointers for array processing and parameter passing and files for input and output storage.

***Legible :** Legibility of a program means the following,

1. Logic of the program should be clear and understandable.
2. Programming standards for indentation and formatting should be followed.
3. Naming conventions should be followed, while naming variables and program.
4. Concise comments should be provided wherever necessary.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 C	3	1	2	3	3
CO2 C	2	1	2	2	2
CO3 C	2	1	2	2	2
CO4 A	2	1	2	1	2

Syllabus Content:

1. Programs to familiarize printf() and scanf() functions.
2. Programs Based on Decision statements, break, goto, continue, switch and Loop controls statements.
3. Programs Based on One dimensional and two dimensional arrays.
4. Programs on Strings and string handling functions.
5. Programs based on Pointers, operations on pointers, Arrays & Pointers,
6. Programs based on functions, Call by value, Call by reference, Recursion,
7. Programs based on structure and union, array of structures, Pointer to structure, structure and functions
8. Simple programs using pointers and malloc().

SEMESTER I

SKILL PRACTICAL

VSD1SP02B18 – S/W Lab – II (MS Office/ Photoshop)

Credits : 3

Total Lecture Hours : 54

CO 1 : Create professional documents and spreadsheets using MS office tools for business and/or industry report generation

CO 2 : Develop Presentation skills using application software tools.

CO 3 : Appraise the knowledge of art and design components using Photoshop software.

CO 4 : Create proficiency in developing multimedia presentations using various features and techniques using software tools.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 C	2	3	2	2	2
CO2 A	3	2	1	2	2
CO3 A	2	2	1	1	2
CO4 C	2	2	2	1	3

Syllabus Content:

Module–I: (9 hours)

Word Basics, Work with Text, Format Documents, Work with Text Objects, Work with References, Work with Illustrations, Specialized Documents, Collaborate with Others, Web Pages.

Excel Basics, Work with Cells and Worksheets Calculate Your Data, Format your Workbook, Add

Charts and Graphics, Collaborate with Others, Analyze your Data, Work with Macros and the Web.

Module–II: (9 hours)

PowerPoint Basics, Create Presentations, Insert and Modify Text, Work with Graphics and Media,

Final Preparations, Deliver a Presentation.

INTRODUCTION TO ADOBE PHOTOSHOP CS4

About Photoshop - Navigating Photoshop - Menus and panels- Opening new files - Opening existing files-Exploring the Toolbox- The New CS4 Applications Bar & the Options Bar-Exploring Panels & Menus- Creating & Viewing a New Document- Customizing the Interface- Setting Preferences - Zooming & Panning an Image -Working with Multiple Images, Rulers, Guides & Grids -Undoing Steps with History -Adjusting Color with the New Adjustments Panel -The New Masks Panel & Vibrance Color Correction Command.

RESIZING & CROPPING IMAGES : Understanding Pixels & Resolution-The Image Size Command-Interpolation Options-Resizing for Print & Web-Cropping & Straightening an Image-Adjusting Canvas Size & Canvas Rotation.

Module–III: (9 hours)

WORKING WITH BASIC SELECTIONS

Selecting with the Elliptical Marquee Tool-Using the Magic Wand & Free Transform Tool-Selecting with the Regular & Polygonal Lasso Tools-Combining Selections-Using the Magnetic Lasso Tool Using the Quick Selection Tool & Refine Edge-Modifying Selections.

GETTING STARTED WITH LAYERS

Understanding the Background Layer- Creating, Selecting, Linking & Deleting Layers- Locking & Merging Layers- Copying Layers, Using Perspective & Layer Styles- Filling & Grouping Layers Introduction to Blending Modes- Blending Modes, Opacity & Fill- Creating & Modifying Text.

PAINTING IN PHOTOSHOP

Using the Brush Tool- Working with Colors & Swatches- Creating & Using Gradients- Creating & Working with Brushes- Using the Pencil & Eraser Tools-Painting with Selections.

PHOTO RETOUCHING

The Red Eye Tool-The Clone Stamp Tool-The Patch Tool & the Healing -brush Tool-The Spot Healing Brush Tool- The Color Replacement Tool-The Toning & Focus Tools-Painting with History.

Module-IV: (9 hours)

INTRODUCTION TO COLOR CORRECTION

Color Spaces & Color Modes-The Variations Command-The Auto Commands- Adjusting Levels Adjust Curves, Non-Destructively, with Adjustment Layers.

USING QUICK MASK MODE

Quick Mask Options - Painting a Selection- Saving & Removing a Selection from the Background

WORKING WITH THE PEN TOOL

Understanding Paths & the Pen Tool-Creating Straight & Curved Paths- Creating Combo Paths Creating a Clipping Path

CREATING SPECIAL EFFECTS

Getting Started with Photoshop Filters- Smart Filters- Creating Text Effects- Applying Gradients to Text.

SEMESTER II

SEMESTER II

Course Code	Course Title	Credits	Course Type
EN2A03B18	ISSUES THAT MATTER	4	Common
CA2B03B18	DATABASE MANAGEMENT SYSTEM	4	Skill
CA2B04B18	OBJECT ORIENTED PROGRAMMING USING C++	3	Skill
VSD2SP03B18	S/W LAB III (OBJECT ORIENTED PROGRAMMING USING C++)	2	SKILL PRACTICAL
VSD2G03B18	COMPANY LAW	4	General
MT2C03B18	BASIC MATHEMATICS	4	General
VSD2G02B18	LE FRANÇAIS INTERMEDIAIRE	4	General

SEMESTER II
COMMON COURSE I
EN2A03B18– ISSUES THAT MATTER

Credits : 4

Total Lecture Hours : 90

Course Outcomes:

CO1. Identify the major issues of contemporary significance

CO2. Discuss the consequences of war and refugee crisis with respect to the psychological dimension

CO3. Employ theoretical learning in classrooms to current developments in the world

CO4. Critique the diverse experiences both historical and contemporary to create a more informed vision of the future

CO5. Develop oneself as a conscious, concerned, conscientious human being

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1 R	1	2	2	1	2
CO2 U	1	1	1	1	2
CO3 A	1	1	1	3	2
CO4 E	1	1	1	3	2
CO5 C	2	1	1	2	3

Syllabus Content:

Module 1 (18 hours)

“The Unsundered People” – Kenzaburo Oe

“The Old Prison” – Judith Wright

“War” – Luigi Pirandello

Module 2 (18 hours)

Persuasions on the Power of the Word:

“On Censorship” – Salman Rushdie

“Peril” – Toni Morrison

“The Burning of the Books” – Bertolt Brecht

“The Censors” – Luisa Valenzuela

Module 3 (18 hours)

“The Poisoned Bread” – Bandhu Madhav

“A Trip Westward” – Zitkala-Sa

“The Pot Maker” – Temsula Ao

Module 4 (18 hours)

“Does it Matter?” – Richard Leakey

“On Killing a Tree” – Gieve Patel

“Hagar: A Story of a Woman and Water” (Gift in Green (chapter 2)) – Sarah Joseph

Module 5

(18 hours)

“Understanding Refugeeism: An Introduction to Tibetan Refugees in India” – Mallica Mishra

“Refugee Blues” – W.H Auden

“The Child Goes to the Camp” (from Palestine’s Children) – Ghassan Kanafani

SEMESTER II

SKILL COURSE

CA2B03B18: DATABASE MANAGEMENT SYSTEMS

Credits : 4

Total Lecture Hours : 4 Hours per week

Course Outcomes:

CO1: Describe the fundamental concepts of databases.

CO2: Construct an Entity-Relationship (ER) model and transform to relational schema.

CO3 : Develop queries for relational databases in the context of practical applications.

CO4 : Model and design(Construct) relational databases following the design principles.

CO5: Summarize control and recovery techniques in transaction processing.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1 C	PSO2A n	PSO3A n	PSO4 A	PSO5 C
CO1 U	1	2	2	1	1
CO2 C	2	1	1	2	3
CO3 A	2	2	2	3	2
CO4 A	2	1	1	3	2
CO5 U	2	1	1	2	3

Syllabus Content:

Module 1 (12 hours) Introduction : Characteristics of the Database Approach – Database users -DBA , Database Designers ,End users – Advantages of using the DBMS Approach – Data models, Schemas, and Instances – Three Schema Architecture and Data Independence. DBMS Languages: DDL, DML – The Database System Environment: DBMS Component Modules.

Module II (12 hours) Relational Model: Entity Relationship Modeling: Introduction –Entity Types, Entity Sets, Attributes and Keys – Relationship Types ,Relationship Sets, Roles , and Structural Constraints – Weak Entity Types – Notation for ER diagrams – Sample ER diagrams. Relational Model concepts: Domains ,Attributes, Tuples, and Relations – Characteristics of Relations – Relational Model Constraints and Relational Database Schemas : Domain Constraints, Key Constraints , Relational Database Schemas , Entity Integrity , Referential Integrity, and Foreign Key.

Module III (12 hours) SQL : Data Types – Data Definition commands : CREATE , ALTER ,DROP - Adding constraints in SQL – Basic SQL Queries : INSERT ,SELECT ,DELETE ,UPDATE - Substring comparison using LIKE operator ,BETWEEN operator – Ordering of rows – SQL set operations UNION , EXCEPT , INTERSECT – Complex Queries : Comparison involving NULL and Three-valued logic, Nested queries , EXISTS and UNIQUE functions, Renaming of attributes and Joining of tables, Aggregate functions ,Grouping – Managing Views.

Module IV (12 hours) Normalization and Indexing Structures for Files : Normalization: Informal Design Guidelines for Relational Schemas –Functional Dependencies – Normal forms : First Normal Form , Second Normal Form , Third Normal Form – General Definitions of Second and Third Normal Forms –BCNF. Indexing Structures for files: -Types of Single-Level Ordered Indexes: Primary Indexes, Clustering Indexes, and Secondary Indexes.

Module V (12 hours) Transaction Processing and Database Security: Transaction Processing: Introduction to Transaction Processing - Transaction and System Concepts – Desirable properties of Transactions. Database Security and Authorization: Types of Security – Control measures – Database Security and DBA – Access Control , User Accounts, and Database Audits –Access Control based on Granting and Revoking Privileges

SEMESTER II

SKILL COURSE

CA2B04B18 - OBJECT ORIENTED PROGRAMMING USING C++

Credits : 3

Total Lecture Hours : 45

Course Outcomes:

CO1: Write programs using C++ and learn its execution environment

CO2: Apply programs to implement various computational tasks which requires loops and conditional statements

CO3: Apply programs to implement the concept of Object Oriented Programming

CO4: Design object oriented programs to implement daily life problems and their solutions

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 A	2	1	1	3	2
CO2 A	2	1	1	3	2
CO3 A	2	1	1	3	2
CO4 C	3	1	2	2	3

Syllabus Content:

Module I: Principles of Object Oriented Programming, Beginning with C++ (12 hrs)

Procedure Oriented Programming-Object Oriented Programming-Basic concepts of object-oriented programming- Benefits of OOP- Applications of OOP-A simple C++program-Structure of C++ program- C++ data types- Symbolic constants- Reference by variables-Operators in C++- Operator precedence- Control structures- Function in C++ - The main function, Function prototyping- Call by reference- Return by reference- Inline function- Default arguments- Function overloading.

Module II: Classes and Objects (15 hrs)

Specifying a class- Defining member functions- Nesting of member functions -Private member functions - Arrays within a class - Memory allocation for objects-Static data members -Static member functions - Arrays of objects - objects as function arguments -Friendly functions- Returning Objects.

Module III: Constructors and Destructors, Overloading (15 hrs)

Constructors- Default constructor-Parameterized constructor-Copy constructor- Multiple constructors- Constructors with default arguments- Dynamic constructor-Destructors- Operator overloading- Unary and Binary operator overloading- Overloading using friends- Rules for overloading- Type conversion.

Module IV: Inheritance (15 hrs)

Inheritance- Defining derived classes-Visibility modes-Single, Multilevel, Multiple, Hierarchical And Hybrid inheritance- Virtual base classes- Abstract classes- Constructors in derived classes- Nesting of classes.

Module V: Pointers, Virtual Functions and Polymorphism, Working with Files (15 hrs)

Pointers- Pointers to objects- this pointer-Pointers to derived classes- Virtual functions- Pure virtual functions- File Stream classes, Opening and closing a file- File opening modes- File pointers and their manipulations- Sequential input and output operations.

SEMESTER II
SKILL COURSE

**VSD2SP03B18 : Software Lab III (OBJECT ORIENTED PROGRAMMING
USING C++)**

Credits : 4

Total Lecture Hours : 60 Hours

Course Outcomes:

CO1: Test the basic concept of database system and applications

CO2: Solve database problems using SQL

CO3: Apply programs to implement the concepts of Object Oriented Programming

CO4: Develop object oriented programs to implement daily life problems and their solutions

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 A	2	1	1	3	2
CO2 A	2	1	1	3	2
CO3 A	2	1	1	3	2
CO4 C	3	1	1	2	3

I. SQL Commands (2 hrs. per week)

1. Data definition commands - CREATE, ALTER, DROP, Adding Constraints Primary key, foreign key, unique key, check, not null. 2. Basic SQL queries INSERT, SELECT, DELETE, UPDATE, Using multiple tables, ordering of rows using ORDER BY option, Set operations using UNION, EXCEPT, INTERSECT, Substring Comparison using LIKE operator, BETWEEN operator. 3. Complex Queries Nested Queries, EXISTS and UNIQUE/DISTINCT functions, NULL values, Renaming of attributes and Joining of tables, Aggregate functions and grouping. 4. Managing views, Simple stored procedures. 5. Data Control commands - Access Control and Privilege commands.

II. Object Oriented Programming using C++ (3 hrs. per week)

1. Programs based on default arguments, function overloading. 2. Programs based on array of objects, friend functions, passing objects as arguments to function. 3. Programs based on operator overloading (binary, unary) using member functions and friend functions. 4. Programs based on constructors, different types of constructors. 5. Programs based on inheritance, different types of inheritance.

SEMESTER II
GENERAL COURSE
COMPANY LAW- VSD2G04TB

Credits : 4

CO1: Describe the framework of Companies Act 2013 and the procedure in the promotion and formation of the company

CO2: Describe the types, related concepts and procedure of issue of share capital

CO3: Explain the proceedings of company meetings.

CO4: Explain the various grounds and procedures for winding up of companies.

CO5: Discuss the concepts of Corporate Accountability and the requirement of keeping various books of accounts.

Mapping of Course Outcomes with Program Specific Outcome

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 U	2	2	3	3	3
CO2 U	3	2	3	2	2
CO3 U	3	3	2	2	2
CO4 U	3	3	3	2	2
CO5 U	2	3	3	2	2

Syllabus Content

Module I (12 Hours)

Legal structures of business, Forms of business association contrasted, Meaning and types of companies, Formation and incorporation of a company, ; advantages and disadvantages of incorporation; corporate personality.

Module II (12 Hours)

Promoters of company, Duties and Liabilities of Promoter, Memorandum and Articles of Association, Prospectus and Issue of Shares, Share Capital and Shareholders, Lifting the corporate veil", Doctrine of indoor management.

Module III (12 Hours)

Company Management, officers and organs of the company; Company Meetings and Proceedings; legal rules governing the enforceability of transactions with companies.

Module IV (12 Hours)

Directors. Appointment and tenure; Powers and Liabilities of Directors, executive and non-executive directors; Managerial Remuneration and Winding up of Company.

Module V (12 Hours)

Corporate accountability- requirement of keeping book of accounts, statutory books and statistical books, Annual accounts, Auditors- appointment, qualification, remuneration, removal of auditors.

SEMESTER II
SKILL COURSE
MT2C03B18 –BASIC MATHEMATICS

CREDITS : 4

TOTAL LECTURE HOURS : 60 hours

Course Outcomes :

CO1: Apply the fundamental concepts of Mathematical logic in real life situations

CO2: Solve systems of linear equations using matrices.

CO3: Analyze different set operations using set theory.

CO4: Apply the concepts of connectivity of graphs in real life problems and find solutions.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	2	1	1	3	1
CO2	2	1	1	3	1
CO3	1	1	3	2	1
CO4	2	2	1	3	1

MODULE I (Mathematical Logic (20hrs)

Logical statement or proposition, Types of propositions, The Propositional Calculus, The negation of proposition, Disjunction, Conjunction, Tautologies & Contradictions, Logical Equivalence, The Algebra of propositions, Conditional propositions, Converse, Inverse & Contrapositive propositions, The negation of a Conditional propositions, Biconditional propositions, Arguments

MODULE II (18 hours) - MATRIX

Elementary transformation – echelon form – rank using elementary transformation by reducing in to echelon form – solution of linear homogeneous and non – homogeneous equations using elementary transformation

MODULE III (14hrs) - SETS

Sets, Union, Intersection, Complementation, Symmetric Difference, Power set, Cartesian Products, Generalized set theory, Relation, equivalence relations

MODULE IV - GraphTheory (20hrs)

An introduction to graph. Definition of a Graph, More definitions, Vertex Degrees, Sub graphs, Paths and cycles The matrix representation of graphs (definition & example only) Trees and connectivity. Definitions and Simple properties, Bridges, Spanning trees, Cut vertices and connectivity (definition & example only)

SEMESTER II

GENERAL COURSE

VSD2G02B18 : LE FRANÇAIS INTERMEDIAIRE (INTERMEDIATE FRENCH)

Credits : 4

Total Lecture Hours : 60 Hour

Course Outcome

CO1 : Identify familiar everyday expressions.

CO2 : Develop vocabulary and grammar skills.

CO3 : Explain one's immediate environment.

CO4 : Write a postcard in a particular scenario.

CO5 : Explain one's day to day activity.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1 U	2	2	2	3	3
CO2 U	1	3	1	3	3
CO3 U	3	2	2	3	2
CO4 A	3	2	2	2	3
CO5 U	3	2	3	3	2

Syllabus Content:

Module I (12 hours)

Bon Voyage – Marseille Donner un conseil – décrire un lieu – C'est + lieu – les prépositions de lieu – on – les moyens de transport – localisation – comprendre et présenter des informations touristiques

Module II (12 hours)

Un aller simple – À Londres Demander et donner l'heure – indiquer une date – demander poliment – situer dans le temps – les verbes partir, faire au présent – les professions – réserver un billet de train – s'informer sur les activités des autres

Module III (10 hours)

Le dimanche matin – Un journée avec Laure Manaudou S'informer sur une activité en cours, habituelle – dire quel sport on fait – parler des activités quotidiennes les verbes lire et écrire au présent – le genre des noms - les verbes pronominaux – faire de, jouer à + sport – comprendre un article de journal simple.

Module IV (13hours)

On fait des crêpes ? – Il est comment ? Demander et exprimer des besoins – s'informer sur des habitudes – indiquer des quantités – les articles partitifs – rapporter des événements passés – exprimer une opinion – le passé composé avec avoir – la formation du participe passé – parler des ses habitudes alimentaires – parler de sa journée

Module V (13 hours) Chère Léa... - Les fêtes Interroger sur le moment et la durée – comprendre des souvenirs – le passé composé avec être – pour et dans + durée future – écrire une carte postale – évoquer des fêtes traditionnelles .

SEMESTER III

SEMESTER III

Course Code	Course Title	Credits	Course Type
VSD3G04B18	PRINCIPLES AND PRACTICES OF MANAGEMENT	4	General
VSD3G05B18	HUMAN RIGHTS	4	General
ST3C04B18	BASIC STATISTICS AND SPSS	4	General
CA3B07B18	SYSTEM ANALYSIS AND SOFTWARE ENGINEERING	5	Skill
CA3B05B18	DATA STRUCTURES USING C++	4	Skill
VSD3SP05B18	SOFTWARE LAB V (DATA STRUCTURES USING C++ LAB)	5	Skill Practical
VSD3SP06B18	SOFTWARE LAB VI (HTML & CSS)	4	Skill Practical

SEMESTER III

GENERAL COURSE

VSD3G04B18: PRINCIPLES AND PRACTICES OF MANAGEMENT

Credits : 5

Total Lecture Hours : 75

Course Outcomes:

CO1: Describe the evolution of management.

CO2: Identify the functions and principles of management.

CO3: Discuss the planning and the process of effective controlling in the organization.

CO4: Explain the management functions in the special areas of staffing and motivation.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	2	1	2
CO2	1	2	3	2	2
CO3	2	3	2	2	3
CO4	2	3	3	1	3

Syllabus Content:

Module I : Management (12 hours)

Definition, nature, importance, evolution of management thought, Contribution made by Taylor, Fayol, Hawthorne experiments. Maslow; Is managing a science or art? Functions of manager, ethics in managing and social responsibility of managers.

Module II : Planning & Control (12 hours)

Why Management process starts with planning, steps in planning, types of planning, barriers to effective planning, operational plan, strategic planning, Mckinsey's 7's Approach, SWOT analysis, Controlling- concept, Planning- control relationship, process of control, human response to control, dimensions of control, MBO.

Module III : Decision Making & Organizing (12 hours)

Nature, process of decision making, decision making under Certainty and Uncertainty, decision tree, group-aided decision, brain-storming. Organizing – concept, nature and process of organizing, authority and responsibility, delegation and empowerment, centralization and decentralization, concept of departmentation.

Module IV : Staffing & Motivation (12 hours)

Concept, Manpower planning, Job design, recruitment & selection, training and development, performance appraisal, motivation, motivators and satisfaction, motivating towards organizing objectives, morale building.

Module V : Leadership & Communication (12 hours)

Defining leadership and its role, should managers lead, leadership style, leadership development, Leadership behavior.

Communication- Process, Bridging gap-using tools of communication, electronic media in Communication.

SEMESTER III

GENERAL COURSE

VSD3G05B18 : HUMAN RIGHTS

Credits : 4

Total Lecture Hours : 60

Course Outcomes:

CO1: Develop the students to observe the nature and need for human rights to take positive actions in support of human rights.

CO2: Describe systems prevailing under the Indian Constitution for the protection of human rights.

CO3: Explain the implementation and development stages of Human rights in India.

CO4: Identify the role of Human rights for the protection and upliftment of weaker sections of the society.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	3	2	2
CO2	1	2	2	2	1
CO3	2	3	2	2	2
CO4	2	2	3	2	2

Syllabus Content:

Module I THE CONCEPT OF HUMAN RIGHTS Introduction Nature and Meaning of Human Rights Origin of Human Rights Movement UN Charter and its Agencies International Movements for the Protection of Human Rights

Module II PROTECTION OF HUMAN RIGHTS UNDER THE INDIAN CONSTITUTION
Introduction Indian Constitution vis-à-vis International Human Rights Human Rights, Politics and Indian Judiciary Public Interest Litigation

Module III IMPLEMENTATION OF HUMAN RIGHTS IN INDIA Introduction Position of Judiciary Under Indian Constitution The Concept of „Judicial Review“ and Human Rights Development of Human rights Through different Tools and Technique

Module IV HUMAN RIGHTS AND WEAKER SECTIONS Introduction Women and International Human Rights Women and Human Rights in India National Legislations Children and Human Rights in India

Module V HUMAN RIGHTS OF ARRESTED PERSONS, UNDER TRIALS AND PRISONERS Rights of Arrested Persons Power of and Procedure for Arrest Rights of under trial Prisoners Rights of Prisoners

SEMESTER III
GENERAL COURSE
ST3C04B18 : BASIC STATISTICS AND SPSS

Credits : 4

Total Lecture Hours : 60

Course Outcomes:

CO1: Illustrate the concept of measures of central tendency and measures of dispersion in an organized data

CO2: Interpret the facts of data using Testing of hypothesis

CO3: Articulate Descriptive statistics and Inferential statistics using M.S Excel

CO4: Illustrate various statistical tools using SPSS

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	1	2	1
CO2	1	2	1	2	1
CO3	3	2	1	3	2
CO4	3	2	1	3	2

Syllabus Content:

Module I (10 Hours) Data and its organization: Data - Sources of data - Types of data - Collection of data Tabulation–frequency distribution - graphic representation- Histogram, frequency polygon, frequency curve, ogives Analysis of Data: Measures of Central Tendency - Mean, Median and Mode. Requisites for an ideal measure of central tendency. Measures of Variation - Range, Quartile deviation, Mean deviation, Standard deviation & Coefficient of variation, Characteristics of an ideal measure of dispersion. Concepts of correlation and

regression. Scatter diagram, Correlation table, correlation coefficient, regression coefficient, linear regression and prediction(Theory only)

Module II (20 Hours) Interpretation of Data: Normal distribution - Importance and properties of Normal distribution. Theory of attributes - introduction, independence of attributes, criterion of independence, association of attributes, Yule's coefficient of association, coefficient of colligation. Tests of significance- Null Hypothesis, level of significance, confidence interval, large sample tests for single proportion, single mean and difference of means, difference of standard deviations. Small sample tests-t test and F test-t test of significance for single mean, paired t - test for related samples, difference in means and observed correlation coefficients, F test of significance for equality of population variances. - Chi square - test of goodness of fit, independence of attributes. B.Voc Programme in Software Development St.Teresa's College (Autonomous), Ernakulam Curriculum and Syllabus (2018 Admission onwards) Page 39

Module III (14 Hours) Data Handling using Excel: Getting started with Using functions - Statistical Functions – Frequency, Average, Median, Mode, Quartile, Standard Excel - Work Book and Work Sheet – Moving around in a work sheet - Building a work sheet working with more than one cell at a time - Formula and rules for using formula - Functions - Deviation, Variance, Correlation, Chi test - Printing Data and Results. Charts: Column- Pie- XY (Scatter) - Frequency Polygon, Frequency curve - Ogives- Formatting Charts - Printing Charts. Data Analysis Using Excel: Frequency Distribution – Histogram - Descriptive Statistics Correlation - Regression. Inferential Statistics: Statistical Tests: Testing a mean, t-test for a mean, two sample Z test for Means- Two sample t-test for means, Paired t- test, Chi-square test for Variance, Goodness of fit, Independence of Attributes.

Module IV (16 Hours) Introduction to SPSS and its Applications: Defining variables - Numeric and String Variables – Assigning Names and Labels to variables and values - Entering Data - Summary Statistics – Frequencies - Descriptive Statistics Means - Crosstab - Graphs - Histograms and Bar charts Scatter diagram, Pie Diagram - Bivariate Correlation - Linear regression - Test of mean - One Sample t-test, Independent sample t-test- Paired samples t-test – Chi-square test

SEMESTER III

SKILL COURSE

CA3B07B18 : SYSTEM ANALYSIS AND SOFTWARE ENGINEERING

Credits : 5

Total Lecture Hours : 75

Course Outcomes:

CO1: Adapt the basic software engineering methods and practices in their appropriate applications.

CO2: Distinguish the various software process models such as waterfall model, evolutionary models, etc.

CO3: Compose the requirements document by understanding the software requirements and identify the software architectural styles to the suitable applications.

CO4: Devise, design and maintain software.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	1	1	2
CO2	3	1	1	1	3
CO3	3	1	1	2	2
CO4	3	1	1	2	3

Syllabus Content:

Module I (15 hours)

Information systems concepts, Business information systems; Describing the business organization –organization chart , organization function list ; information system levels -

operational, lower, middle, top management; the system development life cycle concepts; hardware and software end products. Life cycle activities- life cycle flow chart, task, management review, baseline specifications, role of system analyst.

Module II (15 hours)

Introduction to Software Engineering - Definition, Program Vs Software, and Software process, Software Characteristics, Brief introduction about product and process, Software process and product matrices. Software life cycle models - Definition, Waterfall model, Increment process models, Evolutionary process models, Selection of a life cycle model.

Module III (15 hours)

Software Requirement Analysis and Specification Requirements Engineering type of requirements, Feasibility Studies, Requirement Elicitation, Various steps for requirement analysis, Requirement documentation, Requirement validation, an example to illustrate the various stages in Requirement analysis. Project planning-Size estimation, cost estimation, the constructive cost model (COCOMO).

Module IV (15 hours)

Software Design - Definition, Various types, Objectives and importance of Design phase, Modularity, Strategy of design, Function oriented design, IEEE recommended practice for software design descriptions. Steps to Analyze and Design Objected Oriented System. Software Reliability Definition, McCall software quality model, Capability Maturity Model.

Module V (15 hours)

Software Testing What is testing?, Test, Test case and Test Suit, Verification and Validation, Alpha, beta and acceptance testing, functional testing, techniques to design test cases, boundary value analysis, Equivalence class testing, decision table based testing, cause effect graphing technique, Structural testing path testing, Graph matrices, Data flow testing; Levels of testing Unit testing, integration testing, system testing, validation testing, a brief introduction about debugging and various testing tools.

SEMESTER III

SKILL COURSE

CA3B05B18 : DATA STRUCTURES USING C++

Credits : 4

Total Lecture Hours: 60

Course Outcomes:

CO1: Choose appropriate data structures to represent data items in real world problems.

CO2: Analyze the time and space complexities of algorithms.

CO3: Design programs using a variety of data structures such as stacks, queues, binary trees, search trees, heaps, graphs, and B-trees.

CO4: Analyze and implement various kinds of searching and sorting techniques.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	3	1	3
CO2	2	2	3	1	2
CO3	2	2	2	1	3
CO4	2	2	2	1	3

Syllabus Content:

Module I (12 hours)

Concept of Structured data - Data structure definition, Different types and classification of data structures, Arrays – Memory allocation and implementation of arrays in memory, array operations, Applications - sparse matrix representation and operations, polynomials representation and addition, Concept of search and sort – linear search, binary search, selection sort, insertion sort, quick sort.

Module II (12 hours)

Stacks – Concepts, organization and operations on stacks using arrays (static), examples, Applications - Conversion of infix to postfix and infix to prefix, postfix evaluation, subprogram calls and execution, Multiple stacks representation. Queues - Concepts, organization and operations on queues, examples. Circular queue – limitations of linear queue, organization and operations on circular queue. Double ended queue, Priority queue.

Module III (12 hours)

Linked list: Concept of dynamic data structures, linked list, types of linked list, linked list using pointers, insertion and deletion examples, circular linked list, doubly linked lists, Applications-linked stacks and queues, memory management basic concepts, garbage collection.

Module IV (12 hours)

Trees - Concept of recursion, trees, tree terminology, binary trees, representation of binary trees, strictly binary trees, complete binary tree, extended binary trees, creation and operations on binary tree, binary search trees, Creation of binary search tree, tree traversing methods – examples, binary tree representation of expressions.

Module V (12 hours)

File - Definition, Operations on file (sequential), File organizations - sequential, Indexed sequential, random files, linked organization, inverted files, cellular partitioning, hashing – hash tables, hashing functions, collisions, collision resolving methods

SEMESTER III

SKILL PRACTICAL COURSE

VSD3SP05B18 : Software Lab V (DATA STRUCTURES USING C++)

Credits : 5

Total Lecture Hours : 75

Course Outcomes:

CO1: Identify the appropriate data structures and algorithms for solving real world problems.

CO2: Illustrate various kinds of searching and sorting techniques.

CO3: Compare data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	1	2
CO2	2	2	3	1	2
CO3	2	2	2	1	2

Syllabus Content:

Module I (20 Hours)

Array – Insertion , Deletion, Polynomial addition using arrays Sort – Selection, Insertion, Quick Search – Linear search, Binary search Sparse matrix – Sparse form representation, transpose and addition using the sparse form.

Module II (20 Hours)

Stack - Implementation using arrays (linear stack), Infix to postfix conversion, Postfix evaluation

Queue – Implementation using arrays (linear queue), Implementation of circular queue

Module III (20 Hours)

Singly linked list – Implementation using dynamic memory allocation techniques, arrange the list based on the ascending or descending order of the information field, concatenate two linked lists, interchange any two nodes in a list, Implementation of circular list, Implementation of linked stacks and queues.

Doubly linked list – Implementation of doubly linked list, Implementation of circular doubly linked list.

Module IV (15 Hours)

Creation of binary search trees, Insertion and deletion of nodes, Tree traversals.

SEMESTER III

SKILL PRACTICAL COURSE

VSD3SP06B18 : HTML5 AND CSS3 (PRACTICAL ONLY)CREDITS

Credits : 5

Total Lecture Hours : 75

Course Outcomes:

CO1: Simple and impressive design techniques of HTML and CSS, from basics till advanced to focus on goal oriented and user centric designs

CO2:Plan and optimize a website

CO3: Create a layout for web pages and your entire site and to add elements to your web pages, including colors, text, images, and more using html and CSS

CO4: Add advanced features to your website including special effects and widgets using html and CSS

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	2	1	1
CO2	2	3	1	1	2
CO3	2	1	1	1	1
CO4	1	1	2	2	2

Syllabus Content:

Module I (15 HOURS)

Overview of HTML5 Defining HTML5 - HTML5 markup - Key HTML5 elements - Web forms - New HTML5 elements - HTML5 APIs and supporting technologies - Geolocation in action - Web workers - Web storage - CSS animations - CSS transitions - CSS 2D and 3D transformations - CSS3 backgrounds, borders, RGBa colors, gradients, drop shadows, and

rounded corners - @font-face web fonts.

Fundamentals of HTML, XHTML, and CSS Web languages - Details of XHTML syntax - W3C and page validation - HTML structure - Placing images in HTML - Role of CSS - Styling a heading - Class styles and the element - Three ways to use styles - Internal vs. external style sheet

Module II (15 HOURS)

Formatting Text with CSS Importance of typography on the web - Challenges of fonts on the web - Setting a font-family - Sizing text with CSS - Pixels and points are not the best choices - Using a combination of percent and the em measurement - Using margins to modify space between your text - Setting paragraph line-height - Transforming text with CSS - Working with HTML lists - Styling HTML lists Basic (X)HTML Formatting (15 HOURS)

Making Text Bold or Italic - Changing the Size of Text and Using a Monospaced Font - Using Preformatted Text - Quoting, Superscripts, and Subscripts - Marking Changed Text .

Module III

Introduction to CSS Layout Working with the CSS reset file - Brief history of layout techniques on the Web - Page layout options - <div> element: creating a two-column fixed-width CSS layout - CSS float property - Creating columns with the float property - Working with the clear property - Creating a list-based navigation using floats - Adding text styles - Effect of margins and padding on your fix-width layout - Using margins and padding for layout - Styling your footer with a background image.

Module IV(15 HOURS)

Advanced CSS Layout Building your page layout - Removing the background color - Working with CSS background images - Using hacks to solve layout problems - Enhancing your CSS navigation bar - Moving internal styles to the external style sheet - Creating a style for the active page - Adding images to sidebar - Working with absolute positioning

Module V(15 HOURS)

Creating HTML5 Forms

Need for updated forms – Forms - Components of a form - Adding new HTML5 input types and attributes - Creating an order form with new HTML5 input type and attributes - HTML5 form features under development.

SEMESTER IV

SEMESTER IV

Course Code	Course Title	Credits	Course Type
CA4B09B18	WEB PROGRAMMING USING PHP	4	General
VSD4G06B18	ADVANCED SQL WITH ORACLE	4	General
VSD4G07B18	INDIAN CONSTITUTION	4	General
VSD4S04B18	OPERATING SYSTEMS	4	Skill
VSD4S05B18	PROGRAMMING IN JAVA	4	Skill
VSD4SP07B18	S/W LAB VII (PROGRAMMING IN JAVA)	4	Skill Practical
VSD4SP08B18	S/W LAB VIII (PHP & SQL)	2	Skill Practical
VSD4SI02B18	INTERNSHIP	4	Practical

SEMESTER IV

GENERAL COURSE

CA4B09B18: WEB PROGRAMMING USING PHP

Credits : 4

Total Lecture Hours : 60 Hours

Course Outcomes:

CO1: Establish the installation of PHP and develop simple PHP programs.

CO2: Analyze the construction of a web page and relate how PHP and HTML combine to produce the web page.

CO3: Connect HTML forms to PHP scripts

CO4: Create Dynamic website using server side PHP Programming and Database connectivity.

CO5: Design a responsive web site.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	2	1	1	3	2
CO2	1	3	3	2	1
CO3	2	3	3	2	2
CO4	2	1	1	3	2
CO5	3	2	2	2	3

Syllabus contents:

Module I (12 hours) Introduction to PHP: Installation of PHP and MySQL. PHP configuration in IIS & Apache Web Server and features of PHP. Writing PHP-How PHP code is parsed, Embedding PHP and HTML, Executing PHP and viewing in Browser, Data types, Operators, PHP variables: static and global variables, Comments in PHP

Module II (12 hours) Control Structures Condition statements-If...Else, Switch, Operator, Loops-While, Break Statement, Continue Do...While, For, For each, Exit, Die, Return, Arrays in PHP. Working With Data- FORM element, INPUT elements, Validating the user input, Passing variables between pages, Passing variables through GET, Passing variables through POST, Passing variables through REQUEST.

Module III (12 hours) Working With Functions-Built-in functions, String Functions: chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim, substr, strcmp,strcasecmp, strpos, strrpos, strstr, stristr, str_replace, strrev, echo, print, Math Functions: abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand Array Functions: count, list, in_array, current, next, previous, end, each, sort, rsort, assort, array_merge, array_reverse, User Defined Functions

Module IV (12 hours) Sessions and cookies- Concept of Session, starting session, modifying session variables, Un registering and deleting session variable, Concept of Cookies

Module V (12 hours) Introduction of MySQL- Types of tables in MySQL, Query in MySQL: Select, Insert, Update, Delete, Truncate, Alias, Order By, Database connectivity of PHP with MySQL

SEMESTER IV

GENERAL COURSE

VSD4G06B18: ADVANCED SQL WITH ORACLE

Credits : 4

Total Lecture Hours : 60 Hours

Course Outcomes:

CO1: Apply relational database theory to construct relational algebra expression, tuple and domain relational expression for SQL queries

CO2: Construct advanced SQL queries on data

CO3: Analyze PL/SQL structures like functions, procedures, cursors and triggers for database applications.

CO4: Write programs using control structures, conditional and looping statements

CO5: Construct advanced SQL queries on data and apply Procedural abilities through PL/SQL.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	1	1	1	3	2
CO2	2	1	1	3	2
CO3	1	3	3	1	1
CO4	2	1	1	3	2
CO5	3	1	1	2	3

Syllabus Content

Module - I Structured Query Language : (12 hours) · Writing Basic SQL Select Statements, Restricting and Sorting Data, Creating and managing tables, including constraints, creating views, creating other database objects(Sequences, Indexes and Synonyms) .

Module - II Advanced SQL (12 hours) · using SET operators, single row functions, Joins (Displaying data from multiple tables), aggregating data using group functions, grouping data from tables in sql- GROUPBY clause, having clause, subqueries.

Module - III PL/SQL (12 hours) · Introduction, Overview and benefits of PL/SQL, Subprograms, types of PL/SQL blocks, Simple · Anonymous Block, Identifiers, types of identifiers, Declarative Section, variables, Scalar Data Types, The % Type attribute, bind variables in PL/SQL expressions, Executable statements, PL/SQL block syntax, comment the code, deployment of SQL functions in PL/SQL, Convert Data Types. Invoke SELECT Statements in PL/SQL.

Module – IV Control Structures : (12 hours) Conditional processing using IF statements and CASE statements, Loop Statement, while loop statement, for loop statement, the continue statement composite data types : PL/SQL records, The % ROWTYPE attribute, insert and update with PL/SQL records.

Module - V (12 hours) · SQL cursor concept, -implicit and explicit cursors, declare cursor, Fetch data from the Cursor, Close the Cursor, Cursor FOR loop.

SEMESTER IV

GENERAL COURSE

VSD4G07B18 : INDIAN CONSTITUTION

Credits : 4

Total Lecture Hours : 60 Hours

Course Outcomes:

CO1: Describe the basic principles of the Indian Constitution.

CO2: Examine the concept of federalism and the description of fundamental rights in the Indian Constitution.

CO3: Explanation of the constitutional organs such as Legislature Executive and Judiciary.

CO4: Describe the emergency provisions and the amendment procedure of the Indian Constitution.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	1	2	2	2	3
CO2	1	2	2	2	3
CO3	1	3	3	3	3
CO4	1	3	2	3	3

Syllabus Content

Module I (15 Hours) Constitution Definition and Classification - Sources of Constitution - Constitutional Conventions - Salient features and provisions of Indian Constitution - Rule of Law - Separation of powers.

Module II (15 Hours) Distributive of Powers between Center and States Legislative Powers - Administrative Powers - Financial Power Doctrine of Territorial Nexus–Doctrine of Harmonious Construction-Doctrine of Pith and Substance-Doctrine of Repugnancy .

Module III (15 Hours) Constitutional Organs (a) Parliament (b) Parliamentary Sovereignty (iii) Parliamentary Privileges (iv) Anti Defection Law (v) Executive Power (vi) Collective Responsibility of Cabinet (vii) JudiciaryJurisdiction of Supreme Court and High Courts (viii) Independence of Judiciary (ix) Public Interest Litigation (x) Power of Judicial Review .

Module IV (15 Hours) Emergency Provisions, Amendment of Constitution, Doctrine of Basic Structure, Contractual and Tortious Liability of State, Right to Property and Freedom of Trade & Commerce.

SEMESTER IV

SKILL COURSE

VSD4S04B18: OPERATING SYSTEMS

Credits : 4

Total Lecture Hours : 60 Hours

Course Outcomes:

CO1: Describe the evolution, types, importance, structure and functions of Operating Systems in computing devices

CO2: Illustrate the concepts of process management and process scheduling mechanisms in Operating Systems.

CO3: Explain Inter process synchronization and determine the methods for detection, prevention, avoidance and recovery for managing deadlocks in Operating Systems

CO4: Apply knowledge to describe different approaches to memory management

CO5: Apply secondary storage management and disk scheduling Techniques

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	2	1	1	3	2
CO2	2	1	1	2	3
CO3	2	1	1	2	2
CO4	2	2	2	3	2
CO5	2	1	1	2	3

Syllabus Content:

Module I: (12 hrs.) Introduction: OS Definition, Functions, Evolution of OS, OS Structure
Operating System Operations, Operating System Services, User Operating System Interface,
System Calls, Types of System Calls.

Module II:(12 hrs) Process: Basic Concepts, Process Scheduling, Operations on Processes, Inter
process communication, Process Scheduling - Scheduling Criteria, Scheduling Algorithms,
Multiple Processor Scheduling.

Module III:(12 hrs) Process Coordination: Synchronization - The Critical Section problem,
Semaphores, Classic Problems of Synchronization, Monitors. Deadlocks: System Model,
Deadlock Characterization, Methods of handling Deadlocks, Deadlock Prevention, Deadlock
Avoidance, Deadlock Detection, Recovery from Deadlock

Module IV: (12 hrs) Memory Management: Memory Management Strategies - Swapping,
Contiguous memory allocation,Paging, Segmentation. Virtual Memory Management- Demand
paging, Page Replacement.

Module V: (12 hrs) Storage Management: File System: - File Concept, Access Methods,
Directory structure. Implementing File Systems: -File System Structure, Allocation Methods,
Free Space Management, Disk Scheduling.

SEMESTER IV

SKILL COURSE

VSD4S05B18 : PROGRAMMING IN JAVA

Credits : 4

Total Lecture Hours : 60

Course Outcomes:

CO1: List and use Object Oriented Programming concepts for problem solving.

CO2: Write Java programs to implement error handling techniques using exception handling and developing programs using class and inputs from keyboard and multithreading.

CO3: Illustrate the interdisciplinary applications using the concept of inheritance.

CO4: Develop graphical User Interface using AWT and programs using java collection API as well as java standard class library

CO5: Write programs using JDBC to provide a program level interface for communicating with database using java programming.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	1	3	3	1	1
CO2	3	1	1	2	3
CO3	1	2	2	3	1
CO4	2	1	1	3	2
CO5	1	3	3	1	1

Syllabus Content:

Module I (12 hours)

Object oriented programming-Encapsulation-Inheritance-Polymorphism-Genesis of Java-characteristics of java- program structure-identifiers-operators-variables-literals-data types-Arrays. Control Statements selection statements-iterative statements-jump statements - Loops- while loop-do while loop- for loop.

Module II (12 hours)

Classes-declaration –object references-instantiation- method declaration-method calling – this operatorconstructor- method overloading-constructor overloading-method overriding-inheritance-super classdynamic method dispatch-final-static-abstract classes – String Handling.

Module III (12 hours)

Packages - creating packages-using packages-Interfaces-Exception Handling Techniques-try-catch-throwthrows-finally -Multithreading- creation of multithreaded program-Thread class-Runnable interface- thread priorities.

Module IV (12 hours)

The Applet class - Event Handling - Working with windows, Graphics and Text using AWT Classes- AWT Controls - Layout Managers and menus - Images. Java I/O Programming

Module V (12 hours)

JDBC: JDBC Architecture - Installing the ODBC Driver - Connecting to a Database – Structure Query language. JDBC programming concept: Database URL - Executing the action commands – Introducing Swing: swing components and containers - the swing packages - Painting in a Swing - Exploring Swing: JLabeland ImageIcon - JTextField - The Swing Buttons - Jtabbed Pane - Jscroll Pane - Jlist - JComboBox -Trees- Jtable.

SEMESTER IV

SKILL PRACTICAL

VSD4SP07B18 : SOFTWARE LAB VII (PROGRAMMING IN JAVA)

Credits : 4

Total Lecture Hours : 60 HOURS

Course Outcomes:

CO1: Illustrate java application programs using OOP principles and proper program structure.

CO2: Develop Java programs using packages, inheritance and interface.

CO3: Create Multithreaded programs.

CO4: Practice Java programs to implement error handling techniques using exception handling and developing programs using class and inputs from keyboard.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	1	3	3	2	1
CO2	3	1	1	3	3
CO3	3	1	1	1	3
CO4	2	1	1	3	2
CO5	3	1	1	3	3

Syllabus Contents:

Part I. Applet, JDBC connection and swing-based Programs

Part II (using class and read inputs from keyboard) Java Programs: Method Overloading-Method Overriding-inheritance-abstract class interfacespackages-Exception Handling-Multithreading.

SEMESTER IV

SKILL PRACTICAL

VSD4SP08B18 : SOFTWARE LAB VIII (PHP & SQL)

Credits : 2

Total Lecture Hours : 30 hours

Course Outcomes

CO1: Discover PHP as a server side programming Language.

CO2: Construct Programs based on PHP.

CO3: Connect HTML forms to PHP scripts.

CO4: Generalize the principles behind using MySQL as a backend DBMS with PHP.

CO5: Construct a responsive web page with proper validation .

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1C	PSO2An	PSO3An	PSO4A	PSO5C
CO1	1	2	2	3	1
CO2	3	2	2	3	3
CO3	2	3	3	2	2
CO4	3	1	1	2	3
CO5	3	2	2	3	3

Syllabus Contents:

- 1) Creating simple programs based on PHP
- 2) Programs using PHP functions
- 3) Programs based on MYSQL

B. Voc Programme in Software Development
St. Teresa's College (Autonomous), Ernakulam

SEMESTER V

SEMESTER V

Course Code	Course Title	Credits	Course Type
VSD5G08B18	ENVIRONMENT STUDIES	4	General
VSD5G09B18	ENTREPRENEURSHIP	4	General
VSD5G10B18	LINUX OPERATING SYSTEMS	4	General
VSD5S06B18	COMPUTER NETWORKS	3	Skill
VSD5S07B18	PYTHON PROGRAMMING	4	Skill
VSD5S08B18	JAVA SCRIPT AND JQUERY	3	Skill
VSD5SP09B1 8	S/W LAB IX (JAVA SCRIPT)	4	Skill Practical
VSD5SP10B1 8	S/W LAB X (PYTHON LAB)	4	Practical

SEMESTER V

SKILL COURSE

VSD5G08B18 : ENVIRONMENT STUDIES

Credits : 4

Total Lecture Hours : 60

Course Outcomes

CO1: Understand the multidisciplinary nature, important theories and concepts of environmental science, ecosystems, natural resources and conservation.

CO2: Identify various types of natural resources

CO3: Describe the different components of ecosystem.

CO4: Indicate skills and commitment to act independently and collectively to sustain and enrich the environment

CO5: Review the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	3	1	1
CO2	1	1	3	1	1
CO3	1	1	3	1	1
CO4	1	1	3	1	1
CO5	1	1	3	1	1

Syllabus Content:

Module I : (12 hours)

Multidisciplinary nature of environmental studies Definition, scope and importance Need for public awareness.

Module II : (12 hours)

Natural Resources :Renewable and non-renewable resources : Natural resources and associated problems. a) Forest resources : Use and over-exploitation, deforestation, case studies.Timber extraction, mining, dams and their effects on forest and tribal people. b) Water resources : Use and over-utilization of surface and ground water,floods, drought, conflicts over water, dams-benefits and problems. c) Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies. d) Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies. f) Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification. • Role of an individual in conservation of natural resources. • Equitable use of resources for sustainable lifestyles.

Module III : (12 hours) Ecosystems • Concept of an ecosystem. IV • Structure and function of an ecosystemProducers, consumers and decomposers. • Energy flow in the ecosystem. • Ecological succession. • Food chains, food webs and ecological pyramids. • Introduction, types, characteristic features, structure and function of the following ecosystem :-a. Forest ecosystem b. Grassland ecosystem ,c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) (6 lectures)

Module IV : Biodiversity and its conservation • Introduction – Definition : genetic, species and ecosystem diversity. • Biogeographical classification of India • Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values • Biodiversity at global, National and local levels. • Inida as a mega-diversity nation V • Hot-spots of biodiversity. • Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts. • Endangered and endemic species of India • Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Module V : (12 hours) Environmental Pollution Definition • Cause, effects and control measures of ,a. Air pollution, b. Water pollution,c. Soil pollution,d. Marine pollution,e. Noise pollution,f. Thermal pollution, g. Nuclear hazards • Solid waste Management : Causes, effects and control measures of urban and industrial wastes. • Role of an individual in prevention of pollution. • Pollution case studies. • Diaster management : floods, earthquake, cyclone and landslides.

SEMESTER V

SKILL COURSE

VSD5G09B18 : ENTREPRENEURSHIP

Credits : 4

Total Lecture Hours : 60

Course Outcomes:

CO1 : Describe the basic aspects of entrepreneurship and marketing.

CO2 : Explain the role of entrepreneurs in economic development.

CO3 : Identifying the various programmes promoting entrepreneurship.

CO4 : Identifying the various projects and and developing it.

CO5 : Prepare a project report.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	1	3
CO2	3	3	2	1	3
CO3	3	3	2	2	3
CO4	3	3	2	2	3
CO5	3	3	2	2	3

Syllabus Content:

Module I (12 hours)

Entrepreneurship & Marketing Entrepreneurship – Entrepreneur, Characteristics, Entrepreneurial Decision Process, Functions, Types and Need of Entrepreneur, Intrapreneur. Marketing – Functions and problems of marketing, Marketing Segmentation & Marketing Mix

Module II (12 hours)

Role of Entrepreneur in Economic Development Entrepreneurship in Economic Development, Women Entrepreneur – Functions, Growth and Problems of Women Entrepreneurship. Developing Women Entrepreneurship and its Limitations.

Module III (12 hours)

Entrepreneurship Development Programmes EDP – Objectives, Course Contents and Curriculum of EDPs, its phases, Evaluation and Problems of Entrepreneurship Development Programmes.

Module IV (12 hours)

Project Development and Project Formulation

Module V (12 hours)

Project Planning and Project Report

SEMESTER V

SKILL COURSE

VSD5G10B18 : LINUX OPERATING SYSTEMS

Credits : 4

Total Lecture Hours : 60

Course Outcomes:

CO1: Explain concepts and components of Linux.

CO2: Interpret common Linux commands and utilities for general file system operations.

CO3: Construct shell scripts for common shell environments.

CO4: Implement system administration tasks to manage files, software, network, users, services.

CO5: Interpret Filter Commands

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	2	3	3
CO2	1	1	1	3	3
CO3	1	1	1	3	3
CO4	1	1	1	3	3
CO5	1	1	1	3	3

Syllabus Content:

Module I: (12 hours)

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell - Linux File system - Boot block, Super block, Inode table, Data blocks, Linux standard directories. Commands for files and directories – cd, ls, cp, rm, mkdir, rmdir, pwd, file, more, less, Creating and viewing files using cat, file comparisons, View files, disk related commands, checking disk free spaces.

Module II: (12 hours)

Essential Linux commands, Understanding shells, Processes in Linux, process fundamentals, connecting processes with pipes, redirecting input/output, Background processing, managing multiple processes, scheduling of processes. Batch commands, kill, ps, who, Printing commands, find, sort, touch, file, file processing commands - wc, cut, paste etc - mathematical commands - expr, factor etc. Creating and editing files with vi editor.

Module III: (12 hours)

System administration - Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disabling of user's accounts, creating and mounting file system, checking and monitoring system performance - file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel, installing and removing packages with rpm command

Module IV: (12 hours)

Shell programming - Basics of shell programming, various types of shell available in Linux, comparisons between various shells, shell programming in bash Conditional and looping statements, case statement, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automating system tasks

Module V :

Simple filter commands – pr, head, tail, cut, sort, uniq, tr - Filter using regular expression – grep, egrep, sed Understanding various Servers —DHCP, DNS, Squid, Apache, Telnet, FTP,Samba.

SEMESTER V

SKILL COURSE

VSD5S06B18 : Computer Networks

Credits : 3

Total Lecture Hours : 60

Course Outcomes

CO1: Define basic concepts of Data communication and Computer Networks.

CO2: Understand different Network Models, their functions and transmission medias.

CO3: Understand various topologies, Networking types and protocols.

CO4: Apply the encoding schemes, Error correction and detection methods, switching techniques as per given network.

CO5: Understand different Network devices, addressing schemes, security threats and crypting method

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	1	2	3	3
CO2	1	1	2	3	3
CO3	1	1	2	3	3
CO4	1	1	3	3	3
CO5	1	1	2	3	3

Syllabus Content:

Module 1 (9 hours)

Introduction to Networks, Data and signals-analog and digital, periodic analog signals, digital signals, bit rate, baud rate, bandwidth. Transmission impairments - attenuation, distortion and noise. Data communication protocols and standards, Network models - OSI model-layers and their functions. TCP/IP protocol suite.

Module II (9 hours) Bandwidth utilization Multiplexing: FDM, TDM, spread spectrum. Transmission Media- guided media and unguided media. Switching: message, Circuit and packet switched networks, datagram networks, virtual- circuit networks.

Module III (9 hours) Data link layer: Error Detection and Correction, Framing, flow and error control, Protocols - Noiseless channels (Simplest, Stop and Wait) and Noisy channels (Stop and Wait and Piggy Backing). Multiple Access Protocols. Random Access-ALOHA, CSMA. Wired LANs-IEEE standards, wireless LANs-Bluetooth, Cellular Telephony

Module IV (9 hours) Network layer and Transport layer: Repeaters, Bridges, Gateways and routers. Logical addressing – IPV4 and IPV6 addressing, Internet protocol - IPV4 and IPV6. Connectionless and Connection Oriented Services: UDP and TCP. Congestion Control, Quality of Service.

Module V (9 hours) Application layer: HTTP, FTP, SMTP, DNS. Network security: Common Threats- Firewalls (advantages and disadvantages), Cryptography.

SEMESTER V

SKILL COURSE

VSD5S07B18 : PYTHON PROGRAMMING

Credits : 4

Total Lecture Hours : 60

Course Outcomes

CO1: Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.

CO2: Explain modules and functions using Python.

CO3: Develop logic of various programming problems using numerous data types and control structures of Python.

CO4: Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.

CO5: Develop proficiency in handling Strings and File Systems.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	1	3	2
CO2	2	1	1	3	2
CO3	3	2	2	3	3
CO4	2	1	1	3	2
CO5	3	1	1	3	3

Syllabus Content:

Module I (12 hours) Introduction to python, features, downloading and installing python, running

python, python virtual machine (PVM), python implementation alternatives, Python interpreter and interactive mode; values and types: int, float, Boolean, string, and list; variables, expressions.

Module II (12 hours) DATA, EXPRESSIONS, STATEMENTS Statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments; Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.

Module III (12 hours) CONTROL FLOW, FUNCTIONS Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (ifelif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays.

Module IV (12 hours) LISTS, TUPLES, DICTIONARIES Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing – list comprehension

Module V (12 hours) FILES, MODULES, PACKAGES Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages.

SEMESTER V

SKILL COURSE (PRACTICAL)

VSD5SP10B18: S/W LAB X (PYTHON PROGRAMMING)

Credits : 4

Total Lecture Hours : 60

Course Outcomes:

CO1: Describe the structure and components of Python with simple examples.

CO2: Construct Programs with loops and conditional statements.

CO3: Design Python programs using functions.

CO4: Categorize compound data using tuples, lists, dictionaries.

CO5: Demonstrate proficiency in handling Strings and File Systems.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	1	1	3	2
CO2	3	2	2	3	3
CO3	3	1	1	2	3
CO4	2	3	3	2	2
CO5	3	1	1	3	3

Syllabus Content:

To write, test, and debug simple Python programs.

- To implement Python programs with conditionals and loops.
- Use functions for structuring Python programs.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python.

SEMESTER V

SKILL COURSE

VSD5S08B18 : JAVA SCRIPT AND JQUERY

Credits : 3

Total Lecture Hours : 60

Course Outcomes:

CO1: Understand the JavaScript language & the Document Object Model., identify expressions and operators and summarize flow control.

CO2: Evaluate objects and arrays usage, illustrate functions and methods.

CO3: Create event listeners and callbacks to respond to user-interface and network events.

CO4: Apply the jQuery AJAX interfaces and JSON to upload data to a back-end web server, and to asynchronously retrieve and display responses.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	1	1	1
CO2	1	3	3	2	1
CO3	1	1	1	1	3
CO4	1	1	1	3	1

Syllabus Content:

Module - I

The Nature of JavaScript : (9 hours) 🎬 The Evolution of Scripting Languages, JavaScript -Definition, Essential features of javascript, Lexical structure, Datatypes and values- Numbers, Strings, Functions, Objects, Boolean Values, Arrays, null, defined, date object, Variables - variable typing, variable declaration, variable scope. First javascript program.

Module – II

Script Writing Basics(9 hours)

Expressions and operators, Using Conditional Statements for Decision Making,if Statements,if-else Conditional Statements, while Conditional Statements , break andcontinue Statements, for Conditional Statements,for in conditional statement, withstatement, switch statement,Creating objects, object properties, checking property existence, deleting properties.

Module – III Adding Interactivity to a Web Page(9 hours) Arrays, reading and writing array elements, adding new elements to an array, deleting array elements, array length, iterating through arrays, array methods, ,Creating Functions in JavaScript, DeclaringFunction, Designing a Simple Function,basic event handling,mouse events,keyboard events,onload event..

Module – IV (9 hours) Introduction to jQuery

Introduction,advantages,getting jquery,adding jquery to a page, selectors in jquery,jquery filters, understanding jquery selections,adding content to a page, setting and reading tag attributes, classes, reading and removing html attributes, Events, using events the jquery way, jquery events, event object, JQuery effects- showing and hiding elements, fading elements in and out,sliding elements

Module - V (9 hours) jQuery and AJAX

Using the ajax() API, Loading data with GET & POST, Working with JSON data, Serialising your form handling with serialize() Handling a completed AJAX request.

SEMESTER V

SKILL COURSE (PRACTICAL)

VSD5SP09B18 : SOFTWARE LAB IX (JAVA SCRIPT AND JQUERY)

Credits : 4

Total Lecture Hours : 60

Course Outcomes:

CO1: Illustrate the understanding of JavaScript and JQuery scripting fundamentals.

CO2: Write and troubleshoot JavaScript statements, commands, variables, operators, conditionals, loops, arrays, and functions.

CO3: Test user events using JavaScript and jQuery, creating interactivity.

CO4: Illustrate JavaScript libraries, toolkits, plugins, and APIs to add specialized functionality to web pages.

CO5: Design effective user interfaces.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	1	1	1
CO2	1	1	3	2	1
CO3	1	3	1	1	3
CO4	1	1	1	3	1
CO5	1	1	1	1	3

Syllabus Content:

To write, test, and debug simple javascript programs using browsers.

To implement javascript programs with conditionals and loops.

Use functions for structuring javascript programs.

Semester VI

Semester VI

Course Code	Course Title	Credits	Course Type
VSD6G11B18	BUSINESS ETHICS	5	General
VSD6G12B18	SOFTWARE TESTING	5	General
VSD6G13B18	CLOUD COMPUTING	5	General
CA6B12aB18	DATA MINING	5	Skill
VSD6SPRB18	MAIN PROJECT	5	Skill Practical
VSD6S103B18	INTERNSHIP	5	Skill Practical

SEMESTER V

SKILL COURSE

VSD6G11B18 : BUSINESS ETHICS

Credits : 5

Total Lecture Hours :75

Course Outcomes:

CO1: Discuss the ethical principles and relevance in business.

CO2: Examine basic elements of an ethical organization and designing the code of ethics of an organization.

CO3: Describe sustainable development, industrial pollution and related environmental issues.

CO4: Explain the term corporate governance its importance, issues and obligations.

CO 5: Describe consumer protection and legal protection available to consumers.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	1	2
CO2	3	3	3	1	3
CO3	2	3	3	1	3
CO4	3	3	3	1	3
CO5	3	3	3	1	3

Syllabus Content

Module I (15 hours)

Introduction-Concept, relevance and importance, Ethical principles and relevance in business, Normative and Justice & Fairness .

Module II (15 hours)

Ethics and the organization Organizational ethics, basic elements of an ethical organization, designing of code of ethics of an organization, dimensions of organizational ethics, benefits of managing ethics in the organization, current ethical related issues in organizations.

Module III (15 hours)

Environmental Ethics Sustainable Development, Industrial Pollution & Environmental Issues.

Module IV (15 hours)

Corporate Governance Introduction to corporate governance, Importance, Issues and Obligations.

Module V (15 hours)

Consumer Protection Consumer & Consumer protection and Legal Protection to consumers.

References

1. Business Ethics Concepts & Cases ,Velasquez, TMH Publication.
2. Ethics & the conduct of Business, Boatright, Pearson Publication
3. Business Ethics text and Cases Viswanath Ghosh, Vikas Publication
4. Business Ethics, S.K.Chakravorty, TMH Publication.
5. Business ethics in the Indian social system-kirandeeep kaur sumedha guptha

SEMESTER VI

SKILL COURSE

VSD6G12B18 : SOFTWARE TESTING

Credits : 5

Total Lecture Hours :75

Course Outcomes:

CO1: Understand the basic application of techniques used to identify useful ideas for tests.

CO2: Illustrate a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing methods to the projects.

CO3: Analyze software testing methods and modern software testing tools for their testing projects

CO4: Create designs at various levels of testing.

CO5: Analyze software test automation problems and solutions.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	2	2	1
CO2	1	2	2	3	1
CO3	1	3	3	2	1
CO4	3	2	2	2	3
CO5	1	3	3	2	1

Syllabus Content:

Module I (15 hours)

Fundamentals Of Testing: Human and errors ,Testing and Debugging, objectives of Testing,General Principles of Testing,Role of Tester,Software Quality Assurance (SQA)

Module II (15 hours)

Testing Techniques : Structural versus functional Technique Categories,Verification versus Validation ,Static versus Dynamic Testing

Module III (15 hours)

Test Case Design : Introduction to testing design strategies – The smarter tester – Test case design strategies – Using black box approach to test case design – Equivalence class partitioning – Boundary value analysis – Other black box test design approaches –Using white box approach to test design – Test adequacy criteria – Coverage and control flow graphs – Covering code logic – Paths – Their role in white box based test design

Module IV (15 hours)

LEVELS OF TESTING : The need for Levers of Testing – Unit Test – Unit Test Planning – Designing the Unit Tests – –Running the Unit tests and Recording results – Test HarnessIntegration tests – Designing Integration Tests – Integration Test Planning –System Testing – Acceptance testing – Performance testing – Regression Testing – Ad-hoc testing – Alpha, Beta Tests

Module V (15 hours)

Test Automation : Software test Automation-Skill needed for Automation-Scope for Automation-Design and Architecture for Automation-Requirements for Test tool-Challenges in automation Test metrics and measurements.

SEMESTER VI

SKILL COURSE

VSD6G13B18 : CLOUD COMPUTING

Credits : 5

Total Lecture Hours : 75

Course Outcomes:

CO1: Understand the theoretical background for cloud computing and storage , clouds working environments.

CO2: Illustrate the methodologies and technologies for the development of applications that will be deployed and offered through cloud computing environments.

CO3: Categorize Virtualization management and virtualization technologies in cloud computing.

CO4: Implementation and management of cloud security and the various risk models in security.

CO5 : Connect Market based management and third party cloud services.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	2	1	2
CO2	3	2	2	2	3
CO3	2	3	3	2	3
CO4	2	2	2	3	2
CO5	2	3	3	2	2

Syllabus Content:

Module I (15 hours)

Introduction: Historical development, Vision of Cloud Computing, Characteristics of cloud computing as per NIST , Cloud computing reference model ,Cloud computing environments, Cloud services requirements, Cloud and dynamic infrastructure, CloudAdoption and rudiments ApplicationsSatellite Image Processing ,Social networking .

ModuleII (15 hours)

Cloud Computing Architecture: Cloud Reference Model, Types of Clouds, CloudInteroperability & Standards, Scalability and Fault Tolerance, Cloud Solutions: CloudEcosystem, Cloud Business Process Management, Cloud Service Management.

Module III (15 hours)

Cloud Management & Virtualization Technology: Virtualization: Fundamental concepts of compute, storage, networking, desktop and application virtualization. Virtualization benefits, server virtualization, Block and file level storage virtualization.

Module IV (15 hours)

Cloud Security: Security risks in cloud, security attacks in virtualization, security solutions in virtualization, securing the cloud, security boundary, CSA cloud reference model with security mechanisms, encryption, establishing identity and presence

Module V (15 hours)

Market Based Management of Clouds, Federated Clouds/Inter Cloud: Characterization & Definition, Cloud Federation Stack, and Third Party Cloud Services.

SEMESTER VI

SKILL COURSE

CA6B12aB18: DATA MINING

Credits : 4

Total Lecture Hours : 90

Course Outcomes:

CO1: Illustrate the key process of Data mining and Warehousing

CO2: Discover appropriate techniques to convert raw data into suitable format for practical data mining tasks

CO3: Analyze and compare various classification algorithms and apply in appropriate domain

CO4: Evaluate the performance of various classification methods using performance metrics

CO5 : Create tools of Data Mining and their techniques to solve the real time problems

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	3	2
CO2	3	3	2	3	1
CO3	2	3	3	3	1
CO4	3	3	3	3	1
CO5	3	3	3	3	3

Syllabus Content:

MODULE I:

Introduction Data Mining, Data Ware House, Transactional Databases, Data Mining Functionalities Characterization and Discrimination, Mining frequent patterns, Association and correlation, Classification and Prediction, Cluster Analysis, Classification of Data Mining Systems, Data Mining Task Primitive, Integration of Data Mining systems, Major issues in Data Mining, Data integration and transformation, Data reduction, Data discretization.

MODULE II

Data Warehouse and OLAP technology Data Warehouse, Multidimensional data Model, Data warehouse architecture, Data Warehouse implementation, OLAP, Data Warehouse and data mining.

MODULE III

Association Rules and Classification Concepts Efficient and Scalable Frequent item set Mining methods, Mining various kind of association rules, from association mining to Co-relation analysis, Classification and prediction, Issues, Classification by Decision tree induction, Bayesian Classification, Rule-based classification, Support Vector Machines, Learning from your neighbors, Prediction.

MODULE IV

Cluster Analysis Definition, Types of data in cluster analysis, A categorization major Clustering methods- Partitioning methods, K-means and k-medoids, from k-medoids to CLARANS, Hierarchical methods, Density based methods.

MODULE V

Mining Complex Data Spatial Data Mining, Multimedia Data Mining, Text Mining and Mining WWW

SEMESTER VI

SKILL COURSE

VSD6SPRB18 : SOFTWARE DEVELOPMENT LAB (MAIN PROJECT)

Credits : 3

Total Lecture Hours : 75

Course Outcomes:

CO1: Demonstrate a sound technical knowledge of their selected project topic.

CO2: Sketch problem identification, formulation and solution.

CO3: Apply software application packages as an engineering tool, if required

CO4: Facilitate communication tools with customers, peers, technicians and engineers

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	2
CO2	3	3	2	1	3
CO3	2	3	3	1	3
CO4	3	3	1	3	3

**SEMESTER VI
SKILL COURSE
VSD6S103B18 : INTERNSHIP**

Credits : 3

Total Lecture Hours : 75

Course Outcomes:

CO1: Integrate theory and practice.

CO2: Understand appreciate work and its function in the economy.

CO3: Develop work habits and attitudes necessary for job success.

CO4: Develop communication, interpersonal and other critical skills in the job interview process.

Mapping of Course Outcomes with Program Specific Outcomes

Mapping	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	2	1	3
CO3	2	3	3	1	3
CO4	3	3	1	3	3