Parvatibai Chowgule College of Arts and Science

(Autonomous)

DEPARTMENT OF COMPUTER SCIENCE

THREE YEAR B.Voc.(Software Development) – Course Structure

Semester-I	Lecture Credits	Tutorial/Practical Credits	Credits
General Education Component			
G1: Language Paper-I	4		4
G2: Elements of Basic Statistics	4		4
G3: Cyber Security	4		4
Skill Component			
SK1: Office Automation Tools	3	3	6
SK2: Web Designing	3	3	6
SK3: Introduction to programming	3	3	6
Semester-II	Lecture Credits	Tutorial/Practical Credits	Credits
General Education Component			
G4: Language Paper-II	4		4
G5: Mathematical Foundations in Computer Science	4		4
G6: Academic Writing	4		4
Skill Component			
SK4: Computer Organization & Operating System	3	3	6
SK5: Data Structure	3	3	6
SK6: Multimedia	3	3	6
Outcome: • Office Assistant • Programming Assistant • Technical Assistant • Hardware Technician • Desktop Publishers			

Semester-III	Lecture Credits	Tutorial/Practical Credits	Credits
General Education Component			
G7: Environment Studies-1	2		2
G8: Business Communication	4		4
G9: Accounting & Financial Management	4		4
Internship	2		2
Skill Component			
SK7: Object Oriented Technologies	3	3	6
SK8: Computer Network	3	3	6
SK9: Database Management System	3	3	6
Semester-IV	Lecture Credits	Tutorial/Practical Credits	Credits
General Education Component			
G10: Organizational Behavior	4		4
G11: Personality Enhancement	4		4
G12: Environmental Studies-2	2		2
Internship	2		2
Skill Component			
SK10: Server Side programming	3	3	6
SK11: Agile Software Engineering	3	3	6
SK12: Mobile Application Development	3	3	6
Outcome: • Assistant Programmer • Android Application Developer • Web Designer • Network Administrator • Database Administrator			

Semester-V	Lecture Credits	Tutorial/Practical Credits	Credits
General Education Component			
G13: Entrepreneurship	4		4
G14:Business Economics	4		4
G15: Human Values & Professional Ethics	4		4
Skill Component			
SK13: Internet of Things	3	3	6
SK14: Software Testing	3	3	6
Project Work			6
Semester-VI	Lecture Credits	Tutorial/Practical Credits	Credits
General Education Component			
G16: E-Governance	4		4
G17: Business Ethics	4		4
G18: Innovation in Science	4		4
Skill Component			
SK15: Network Security	3	3	6
SK16: Digital Marketing and E-Commerce	3	3	6
Project Work			6
Outcome: • Software Programmer • Software Developer • Server Administrator • Software Project Analyst • Software Tester • Lab Instructor			

Parvatibai Chowgule College of Arts and Science (Autonomous)
Margao, Goa

Semester I & Semester II Syllabi for Skill Component

B.Voc.(Software Development)

(2017-2018)

Semester I Syllabus

Paper Title: Office Automation Tools
Paper Code: SK1
Marks: 75
Credits : 03

Course Prerequisites : Nil

Course Objectives:

- The main objectives of this course to provides basic training of computer and its most common software use in office work..

Learning Outcome:

- To become proficient in using:

- Spreadsheet Applications

- Desktop Publishing Applications

Syllabus:

PART-I
MS Excel and Open Office-Calc: [6L]

Spread Sheet & its Applications, Opening Spreadsheet, Menus - main menu, Formula Editing, Formatting, Toolbars, Using Icons, Using help, Shortcuts, Spreadsheet types. Working with Spreadsheets- opening, Saving files, setting Margins, Converting files to different formats (importing, exporting, sending files to others), Spread sheet addressing - Rows, Columns & Cells, Referring Cells & Selecting Cells – Shortcut Keys. Entering & Deleting Data- Entering data, Cut, Copy, Paste, Undo, Redo, Filling Continuous rows, columns, Highlighting values, Find, Search & replace, Inserting Data, Insert Cells, Column, rows & sheets, Symbols, Data from external files, Frames, Clipart, Pictures, Files etc, Inserting Functions, Manual breaks, Setting Formula - finding total in a column or row.

Mathematical operations: **[5L]**

(Addition, Subtraction, Multiplication, Division, Exponentiation), Using other Formulae. Formatting Spreadsheets- Labeling columns & rows, Formatting- Cell, row, column & Sheet, Category - Alignment, Font, Border & Shading, Hiding/ Locking Cells, Anchoring objects, Formatting layout for Graphics, Clipart etc., Worksheet Row & Column Headers, Sheet Name, Row height & Column width, Visibility - Row, Column, Sheet, Security, Sheet Formatting & style, Sheet background, Color etc, Borders & Shading – Shortcut keys. Working with sheets – Sorting, Filtering, Validation, Consolidation, and Subtotal. Creating Charts - Drawing. Printing. Using Tools – Error checking, Spell Checks, Formula Auditing, Creating & Using Templates, Pivot Tables, Tracking Changes, Security, Customization.

OpenOffice-Calc : **[4L]**

Introduction – Introduction to Spreadsheets, Overview of a Worksheet, Creating Worksheet & Workbooks, Organizing files, Managing files & workbooks, Functions &Formulas, Working with Multiple sheets, Creating Charts & Printing Charts – Operating with MS Excel documents, which are already created and saved in MS Excel.

PART-II

Adobe Page Maker **[5L]**

Basic concept: Creating and opening publication, using the tool box, working with palettes, text and graphics, starting a publication from the template, saving and closing a publication. Tutorial - positioning ruler guides, typing text, formatting graphics. Creating columns, creating styles, changing type style and alignment. Rotating and moving of text block and graphics, placing text file, setting tab, indents, and leaders copying graphics between publication, positioning and resizing the logo.

Constructing a publication : **[6L]**

setting up pages, changing document setup, using masterpages, choosing a measurement system and setting up rulers, adjusting layout, numbering pages, rearranging pages creating running header and footers importing text, threading text blocks, balancing columns, edit story. Customizing the dictionary, hyphenation, leading frames layers, locking, objects wrapping text around graphics cropping a graphic using libraries assembling publication into a book, indexing a publication , creating table of contents ,applying color, edit color creating custom color, color libraries table editor, importing, linking and exporting a graphic. OLE (object linking and embedding).TIFF image. PDF HTML formats printing of publication proof corrections with appropriate proof reading marks. Typography - Types(Fonts), Type sizes, Different families , Point system and other system of measuring , Casting off, typography, proof reading, familiarization with

symbols/proofreading marks used in marking copy, typescript for press, Determining line measure and depth and margins, House of style, Page composition through Page Maker.

Corel Draw: - Graphic design: **[9L]**

Introduction:

Creating. Opening drawing. Setting up the drawing page. Using the rulers. Grid. And guidelines. Viewing document. Drawing and Shaping Objects:- Drawing. Moving & Shaping Object, drawing lines and curves, dimensions line. * Working with Style & Templates Organizing Objects: Changing the order of objects. Grouping, Ungrouping locking and unlocking objects. Using and setting layers . Aligning & editing objects data. Working with pattern and texture draw. fills. Applying and editing line ending shapes, splitting and erasing portions of objects positioning moving stretching and rotating objects.

Working with multiple on screen color palettes: [10L]

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Adding graphics symbols and specials characters. Editing. Formatting text and paragraph. Hyphenating text. Linking paragraph text frames, using spell checker and grammar, using thesaurus. Creating and editing blends. Envelopes , Creating and modifying vector and bitmap. Extrusions. Creating drop shadows. Creating and editing transparencies, contoured. Objects, Working with linked bitmap, cropping, coloring and converting bitmaps. Applying special effects to bitmaps by 3D ,effects, blur effects, contour effects, Creating documents for various formats, using layout. Previewing sizing and positioning a print job. Creating color separations, working with halftone and bitmap screens Importing and exporting files. OLE (Object linking and embedding).

Text Book:

1. PageMaker-Complete by R. Shamms, Mortier &Rick Wallacl ,Techmedia
2. Learning PageMaker 7 by Ramesh Bangia of Khanna Book Publishing Co Pvt Ltd\
3. Straight to the Point – MS Office 2003 By Dinesh Maidasani, Publisher: firewall
4. Master Visually Microsoft Office 2003 By Michael S. Toot, Publisher: visual
5:Mastering Excel: Building Dashboards by Mark Moore
6. Mastering WORD 6 for Windows - Mansfield – BPB
7. Mastering EXCEL 4 for Windows - Townsend –BPB

Lab : Office Automation Tools
Credit : 03
Marks: 25

Suggested list of Practical

PART-I

1. Using formulas and functions:
   To prepare a Worksheet showing the monthly sales of a company in different branch offices (Showing Total Sales, Average Sales).
   Prepare a Statement for preparing Result of 10 students in 5 subjects (using formula to get Distinction, I Class, II Class and Fail under Result column against each student).

2. Operating on the sheets:
   Finding, deleting and adding records, formatting columns, row height, merging, splitting columns etc. Connecting the Worksheets and enter the data.

3. Creating a Chart:
   To create a chart for comparing the monthly sales of a company in different branch offices.

4. Using the data consolidate command:
   To use the data consolidate command to calculate the total amount budgeted for all departments
   (wages, travel and entertainment, office supplies and so on) or to calculate the average amount budgeted for – say, department office expenses.

5. Sorting Data, Filtering Data and creation of Pivot tables

PART-II

CorelDraw/Page Maker

1. Introduction
2. Basic Drawing Skills
3. Using Text and Color
4. Working with Objects
5. Adding special effects
6. Creating output
7. Layout and layers
8. Styles and templates

9. Advanced Effects.

Paper Title: Web Designing
Paper Code: SK2
Marks: 75
Credits : 03

Prerequisite Courses : Nil

Course objectives:

- How to design good user interfaces covering important design principles such as learnability , visibility, error prevention, efficiency and graphic design

Learning Outcomes:

- Implementation of user interfaces following design principles and using technologies such as HTML, CSS, JavaScript and Jquery.

Syllabus

Unit I : User Interface – Introduction, its importance, design principles–learnability, visibility, error prevention, efficiency, graphic design. Design Patterns for GUI – View tree, Listener, Widget, Model-View-Controller. Approaches to GUI programming – Procedural, Declarative, Direct Manipulation. Web UI – HTML, Javascript, Jquery. **[6L]**

Unit II : Structure and Style with HTML and CSS

HTML **[6L]**

Introduction. The development process, basic HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, simple HTML forms, web site structure, Meta tags, Character entities, frames and frame sets.

HTML5 **[6L]**

Introduction, New Elements, Canvas, SVG, Drag/Drop, Geolocation, Video, Audio, Input types, form elements, form attributes, semantic, web storage, app cache, web workers, SSE

CSS **[5L]**

Introduction – Syntax, Id & Class, Backgrounds, Text, Fonts, Links, Lists, Tables. CSS Box Model – Border, Outline, Margin, Padding. Advanced - Grouping/Nesting, Dimension, Display, Positioning, Floating, Align, Pseudo-class, Pseudo-element, Navigation Bar, Image Gallery, Image Opacity, Image Sprites, Media Types, Attribute Selectors.

CSS3 **[5L]**

Introduction, Borders, Backgrounds, Gradients, Text Effects, Fonts, 2D Transforms, 3D Transforms, Transitions, Animations, Multiple Columns.

Unit 3 : Javascript **[10L]**

Introduction - What is JavaScript, Understanding Events, JavaScript Example, External JavaScript. Basic Elements – Comment, Variable, Global Variable, Data Types, Operators, If Statement, Switch, Loop: for and while, Function. JavaScript Objects – objects, Array. Browser Object Model - Browser Objects, Window Object, Document Object – getElementById, getElementsByName, getElementsByTagName, innerHTML property, inner Text property. Validation- form validation, email validation.

Unit 4 : Introducing jQuery **[7L]**

JQuery : Introduction - Syntax, Selectors, Events. Effects- Hide/Show, Fade, Slide, Animate, stop(), Callback, Chaining. HTML/CSS- Add, Remove, CSS Classes, css(), Dimensions, slider. Traversing – ancestors, descendants, siblings, filtering.

Text Book:

1.Elisabeth Robson, Eric Freeman, ―Head First HTML and CSS‖, O'Reilly

2.Ivan Bayross, ―HTML 5 and CSS 3 Made Simple‖, BPB publication

3.Kogent Learning Solutions Inc., ―HTML5 Black Book: Covers CSS3, Javascript, XML, XHTML, Ajax, PHP and Jquery‖, Pearson Education.

4.Steven M. Jacobs, Ben Shneiderman, ―Designing the User Interface : Strategies for effective human-computer interaction‖, 5th Edition, Pearson Education

Lab : Web Designing
Marks: 25
Credits: 03

List of Assignments: (the numbers in brackets indicate number of practicals) :

1) Case studies to review UI designs

2) Create a HTML page with the following :

   a) title heading paragraph emphasis strong and image elements

   b)complex HTML table

   c)simple HTML Form covering major form elements

   d)Embed Video in an HTML page

3) Using CSS do the following :

   a)Create a Navigation bar (with dropdown) with CSS

   b)Create a CSS Grid

   c)Create a CSS3 based button

   d)make an image rounded shape

   e)Create a CSS based sticky footer

   f)Create CSS3 Corner Ribbon

   g)Create CSS3 blurry text effect

   h)Create CSS3 speech bubble shape

   i)Create image cross fade with CSS3 transition

   j)Set style for link hover active and visited states of hyperlink

4)Write JavaScript functions to :

   a) accept a string as a parameter and converts the first letter of each word of the string in upper case

   b) check whether a given credit card number is valid or not.

c) check whether a given value is an valid url or not.

d) check whether a given email address is valid or not.

e) print an integer with commas as thousands separators

f) remove items from a dropdown list.

5)Use JQuery to :

a) Disable buttons

b) Make textbox read only

c) Uncheck check boxes

d) Confirm again

e) Sort

f) Switch rows and columns

A mini project combining all the technologies learnt using a front-end development framework such as bootstrap is recommended.

Paper Title : **Introduction to Programming**
Paper Code: SK3
Marks : **75**
Credits : 0**3**

Prerequisite Courses : Nil
Course Objectives :

- To provide skills of data analysis using Python programming language

Learning Outcome:

Students will learn Python programming, and apply it in data analysis & visualization.

Syllabus

Introduction to Python **[3L]**
Motivation, programming paradigms, What Python can do, Python's technical strength, Python interpreter, Program execution, Execution model variations, How to run programs

Basic Syntax **[6L]**
Variable and Data Types, Operator, Conditional Statements - if, if- else, Nested if-else. Looping – For, While, Nested loops. Control Statements – Break, Continue, Pass.

String Manipulation **[5L]**
Accessing Strings, Basic Operations, String slices, Function and Methods.

Lists **[3L]**
Introduction, Accessing list, Operations, Working with lists, Function and Methods

Tuple **[4L]**
Introduction, Accessing tuples, Operations, Working, Functions and Methods

Dictionaries **[4L]**
Introduction, Accessing values in dictionaries, Working with dictionaries, Properties, Functions

Functions **[6L]**
Defining a function, Calling a function, Types of functions, Function Arguments, Anonymous functions, Global and local variables

Modules **[5L]**
Importing module. Math module. Random module. Packages. Composition

Input-Output **[5L]**
Printing on screen, Reading data from keyboard, Opening and closing file, Reading and writing files, Functions

Exception Handling **[4L]**
Exception. Exception Handling - Except clause, Try ? finally clause. User Defined Exceptions

Text Book:
1. Mark Lutz, Learning Python, O'Reilly Media, Third Edition, 2008
Reference Books:

1. Alex Martelli, Python – A Nutshell, O'Reilly Media, Second Edition, 2006
2. Wes McKinney, Python for Data Analysis, O'Reilly Media, 2012

Lab: Introduction to Programming
Credit: 03
Marks: 25

List of Experiments using Python Language

1) Program to compute a given formula

2) if else
3) nested if else
4) loop
5) loop
6) string manipulation
7) string manipulation
8) list
9) tuple
10) dictionary
11) function
12) module
13) Input-Output
14) Input-Output
15) exception handling

Semester II Syllabus
Skill Component

Paper Title: Computer Organization and Operating System
Paper Code: SK4
Marks: 75
Credits: 03

Prerequisite Courses : Nil

Course Objectives:

- To have a thorough understanding of the basic structure and operation of a digital computer.

Learning Outcome:

- Understand the CPU architecture and organization.
- Study the hierarchical memory system.
- Study the different ways of communicating with I/O devices and standard I/O interfaces& management of the I/O device.
- Students will understand Memory Management

Syllabus:

Computer System: **[3L]**
Function and structure of a computer, Interconnection of components, Performance of a computer. Computer Architecture – Princeton (Von Neumann) and Harvard architecture.

Memory Subsystem: **[10L]**
Characteristics of memory system, the memory hierarchy, Semiconductor memories, Types of ROM & RAM, Cache memory unit - Concept of cache memory, Organization of a cache memory unit, replacement algorithms, write policy, block size.

Input/ Output Subsystem: **[8L]**

General block diagram of External device & I/O module, Programmed I/O, Interrupt driven I/O, DMA, I/O channels and I/O processors. I/O interfaces –Serial port, Parallel port, PCI bus, SCSI bus, USB bus, Firewire and Infiniband.

Introduction to Operating System: [4L]

Basic elements of a computer system: Processor, Main Memory, I/O Modules, System Bus, Instruction Execution; Operating Systems: Definition, Operating system Structure, operating system operations, Relationship between Kernel, OS, and Hardware, Operating system services, System calls, Types of system calls, System programs.

Process Management: [5L]

Process Definition, Process Control Block, Process States, Operations on Process; Interprocess communication, Threads and Microkernels

Memory Management: [10L]

Introduction, Swapping, Contiguous Memory Allocation, Paging, Page Table, Segmentation

Virtual Memory: Introduction, Demand Paging, Page Replacement, Allocation of Frames, Thrashing

Storage Management [5L]

File System, Concepts, File Organization and Access Methods, Directory and Disk Structure.

Secondary Storage Structure - Overview, disk structure, Disk attachment, Disk scheduling

Text Book:

1. William Stallings, ―Computer Organization and Architecture - Designing for performance‖, EEE, PHI, 9th Edition.
2. A. Silberchatz, Galvin, Gagne, 2008, Operating System Concepts, Wiley publication 8thEdition

Reference Books:

1. M. Morris Mano, ―Computer System Architecture‖, Pearson Education, 3rd Edition, 2008
2. William Stallings, Operating Systems: Internals and Design Principles,Prentice Hall, 6th Edition

Lab: Computer Organization and Operating System
Marks: 25
Credits: 03

PART-I

Exploring the Functions and Components of a PC

1. Recognizing CPU Sockets, Removing and Installing a CPU, Cooling CPU
2. Identifying BIOS ROM, Accessing BIOS via the CMOS Setup Program, Configuring and Clearing CMOS Setup Program Passwords, Configuring BIOS Settings
3. Identifying Internal Expansion Slots, Installing Expansion Cards, Managing Hardware with Device Manager
4. Removing and Labeling Components and Cables, Removing a Motherboard, Identifying Motherboard Features, Researching New Motherboards, Installing a Motherboard.
5. Installing Parallel ATA Hard Drives, Installing Serial ATA Hard Drives, Configuring CMOS Settings, Comparing Solid-State Drives and Magnetic Hard Drives, troubleshooting Hard Drive Installations, Data Recovery from hard drive.
6. Installing Video, Configuring Multiple Displays.
7. Researching Laptop Upgrade Paths, Replacing and Upgrading RAM, Adjusting Power Management to Optimize Battery Life,
8. Examining Types of Printers, Installing a Printer, Maintaining and Troubleshooting Printers

PART-II

1. Demo/Review of Installing Linux / Windows Operating System, Partitioning and formatting disk, Installing applications device drivers, working with files, mounting file systems, checking system space, creating, modifying and deleting user accounts
2. Study of Basic commands of Linux.
3. Shell Programming in Unix/Linux, arithmetic operations, loops
5. Menu Driven Shell scripting
6. Filters and Pipes in LINUX

Paper Title: Data Structure
Paper Code: SK5
Marks: 75
Credits: 03

Prerequisite Courses : Knowledge of Programming

Course Objectives:

To understand different methods of organizing data and efficiently implement different data structures.

Learning outcome:

On completion of the course student will learn:

- Different data structures like Stack, Queues, Linked Lists, Graphs and their applications.
- Implementation of data structures.

Syllabus

Introduction to data structures: [3L]

Concept, Data type, Data object, ADT, Need of Data Structure, Types of Data Structure

Algorithm analysis: [3L]

Algorithm – definition, characteristics, Space complexity, time complexity, Asymptotic notation (Big O)

Linked List: [8L]

Introduction to List, Implementation of List – static & dynamic representation, Types of Linked List, Operations on List, Applications of Linked List, polynomial manipulation, Generalized linked list – concept & representation.

Stacks: [8L]

Introduction, Representation-static & dynamic, Operations, Application - infix to postfix & prefix, postfix evaluation, Simulating recursion using stack.

Queues: [5L]

Introduction, Representation -static & dynamic, Operations, Circular queue, priority queue (with implementation), Concept of doubly ended queue.

Trees: **[10L]**

Concept & Terminologies, Binary tree, binary search tree, Representation – static & dynamic, Operations on BST – create, Insert, delete, traversals (preorder, inorder, postorder), counting leaf, non-leaf & total nodes, non recursive inorder traversal, Expression Tree.

Graph: **[8L]**

Concept & terminologies, Graph Representation – Adjacency matrix, adjacency list, Traversals – BFS & DFS, Application of BFS, DFS – Shortest path, Backtracking.

Text Book:

Data Structures and Algorithms in Python Roberto Tamassia, Michael H. Goldwasser Michael T. Goodrich, Wiley Student Edition

Reference:

1. Horowitz Ellis, Sahni Sartaj, *Fundamentals of Data Structures in C*, University Press, 2nd Edition, 2008.
2 . Michael T. Goodrich, Roberto Tamassia , *Data Structures and algorithms in Java, John Wiley & sons inc.,5th Edition, International Student version.*
3. Langsam Yedidyah, Augenstein J. Moshe, Tenenbaum M. Aaron , *Data Structures using C and C++,* Pearson Education, Second Edition ,2009
4. Gilbeg Richard, Forouzan Behrouz, Data Structures: A Pseudocode Approch with C++, Cengage Learning, Second Edition

Lab : Data Structures
Credit: 03
Marks: 25

Programs using C language / Java Language that covers the following concepts:

1. Stack: Static/Dynamic stack implementation.
2. Stack: infix to postfix.
3. Stack: Evaluation of Postfix expression.
4. Queues: Static and Dynamic Queue Implementation
5. Queues: Circular queue

6. List: Singly Linked List,
7. List: Doubly Linked List
8. List: Circular Linked List
9. Linked List: Polynomial addition
10. Trees: Binary Search Tree: create, add, delete, display nodes.
11. Trees: BST traversal.
12. Graph: Representation of Graphs, Graph Traversals.
13. Graph: DFS, BFS.

Paper Title: Multimedia
Paper Code:SK6
Marks: 75
Credits: 03

Prerequisites: Nil

Course Objectives:

- On completion of the course the students will develop specific skills and competencies by making them proficient in Designing Graphical Images, Audio and Video Capture and Editing using Software tools

Learning Outcomes:

- To study Multimedia Concepts
- To develop their Creativity and publish a self-contained multimedia Application using multimedia authoring tools in various application areas.

Syllabus

INTRODUCTION TO MULTIMEDIA: [6 L]
Commonly used terms associated with multimedia like CDROM, Storyboard, Script and Authoring tools.

Stages of a Multimedia Project: Planning and Costing, Designing and Producing, Testing and Delivering.
The Multimedia team and their roles: Project Manager, Writer, Video specialist, Audio specialist and Multimedia programmer.
Multimedia Software. Multimedia Hardware

MULTIMEDIA AUTHORING TOOLS: [3L]
Types of Authoring tools - card or page based tools, icon-based, event-driven tools, time-based and presentation tools and object-oriented tools.

MULTIMEDIA BUILDING BLOCKS:

TEXT **[4L]**
Designing with Text, menus and buttons for navigation
Animating text
Hypermedia and Hypertext

SOUND **[6L]**
Basic Sound Concepts
Music
Speech
MIDI and Digital Audio

IMAGES **[8L]**
Making still images, Bitmaps, Clipart,
Capturing and Editing Images
Scanning Images
Vector Drawing
3D Drawing and Rendering

ANIMATION **[8L]**
Principles of Animation- persistence of vision, animation file formats Computer animation- kinematics and morphing
Making animations that work- a rolling ball, a bouncing ball and creating an animated scene

VIDEO **[8L]**
Video Broadcast Standards- NTSC, PAL, SECAM, HDTV
Integrating Computers and Television like Video Overlay Systems, Digitized Video Playback, Differences between Computer and Television Video
Recording Formats like S-VHA Video, Component (YUV), Component Digital, Composite Digital, Video Hardware Resolutions
Video Tips like Shooting platforms, Lighting, Chroma Key or Blue Screen

Video Compression methods like MPEG and DVI

ASSEMBLING AND DELIVERING A PROJECT **[2L]**
The four primary navigational structures used in multimedia like linear, hierarchical, non-linear and composite

Text Book:

Vaughan, Tay , ―Multimedia: Making it Work‖, 3rd edition, Tata McGraw-Hill

Reference Books:

1. Jeffcoate, Judith, ―Multimedia in Practice, Technology and Applications‖, Prentice Hall India.

2. Buford, J.F. K , ―Multimedia Systems‖, Pearson Education

3. Elson-Cook, ―Principles of Interactive Multimedia‖, McGraw Hill Higher Education. ISBN- 13: 978-0077096106

Lab: Multimedia
Credit: 03
Marks: 25

List of suggested **PRACTICALS** using any Multimedia Software (the numbers in brackets indicate number of practicals) :

1.Image Handling: Cropping an image, adjusting image size, increasing the size of the work canvas, saving an image **[2]**

2. Layers: Adding layers, dragging and pasting selections on to layers, dragging layers between files, viewing and hiding layers, Editing layers, rotating selections, scaling an object, preserving layers transparency, moving and copying layers, duplicating layers, deleting layers, merging layers, using adjustment layers **[2]**

3. Channels and Masks: Channel palette, showing and hiding channels, splitting channels in to separate image, merging channels, creating a quick mask, editing masks using quick mask mode **[1]**

4. Painting and Editing: Brushes palette, brush shape, creating and deleting brushes, creating custom brushes, setting brush options, saving, loading and appending brushes, Options palette **[2]**

5. Opacity, pressure, or exposure , paint fade-out rate, making selections, using selection tools, adjusting selections, softening the edges of a selection, hiding a selection border, moving and copying selections, extending and reducing selections, pasting and deleting selections **[2]**

6. Sound : Recording Sound using Sound Recorder (Capture), Sound capture through sound editing software , Sound editing, Noise correction, Effect enhancement ; Voice Recognition; Importing audio and saving audio from Audio CD. Sound Quality types: CD Quality, Radio Quality, Telephone Quality **[2]**

7. Video: Record video from video capture devices, webcams, screen capture or even streaming video and Video Editing **[2]**

8. Mini Project/Problem Statement/Case Study (integrating the above experiments) **[2]**

Parvatibai Chowgule College of Arts and Science (Autonomous)
Margao, Goa

Syllabus for Mathematical Foundations of Computer Science

B.Voc.(Software Development)

(2017-2018)

Semester II

Paper Title: Mathematical Foundation of Computer Science
Paper Code:G5
Credits: 4

Prerequisite Courses : Nil

Course Objectives:

- To build mathematical foundations that are essential requirement in understanding various concepts related to computer science.

Learning Outcome:

On completion of the course students will learn the concepts of the following:

- Combination and permutation.
- Numbers systems and conversions
- Boolean Algebra and Logic
- Set, Relations and Functions

1. **Combinatory:** **[10L]**
   Permutations; Combinations; Counting; Summation; generating functions; recurrence relations.

2**. Binary Number System:** **[10L]**
   Decimal to binary conversion and vice versa, binary number representation (signed, 1's Complement and 2's complement) binary addition, subtraction, binary to octal, hexadecimal conversion and vice versa. Floating point representation.

3. **Boolean Algebra:** **[10L]**
   Boolean functions, truth table, DeMorgan's theorem, logic gates, Realization of Boolean Function using logic gates, Simplification using Karnaugh map.

4. **Set, Relations and Functions:** **[10L]**
   Venn diagram, set operations, relations and properties, closures, equivalence relations, Partial ordering, functions, function types, inverse of functions, composition of functions, recursive functions, growth of functions.

5. **Logic:** **[8L]**
   Propositional logic, first order logic, mathematical induction, deduction, proof by contradiction, program correctness.

6. **Linear Algebra** **[12L]**

Adjoint, inverse of a matrix; Rank; Linear equations; Characteristics roots and vectors

Text Book:

Rosen H. Kenneth, *Discrete Mathematics and its Applications*, Tata McGraw Hill, seventh edition, 2011.

Reference:

Sarkar Kumar Swapan, *A Textbook of Discrete Mathematics*, S Chand & Company, 2005.