Syllabus

for

B. Voc. in

Software Development

(First Year)

Semester I Structure

Sr. No.	Course Code	Name of the Course	Teaching scheme			Evaluation Scheme			Credits	Total Marks
			L	T	P	IA	MSE	ESE		
General Education										
		Theory								
1	BVSWC101	IT Foundation and Programming Concepts	3	0	0	10	0	40	3	50
2	BVSWC102	Web Designing	3	0	0	10	0	40	3	50
3	BVSWC103	Programming in C	3	0	0	10	0	40	3	50
4	BVSWC104	Operating System (OS)	3	0	0	10	0	40	3	50
		Total							**12**	**200**
Skill Components										
		Lab/Practical								
5	BVSWL105	Web Designing Lab	0	0	1	25	0	25	1.5	50
6	BVSWL106	C Programming Lab	0	0	1	25	0	25	1.5	50
		On-Job-Training (OJT)/Qualification Packs (Any One)							**Group GSD1**	
7	BVSWE117	Technical Writer (SSC/Q0505)	200 (Any One)						15	200
8	BVSWE128	Infrastructure Engineer (SSC/Q0801)								
9	BVSWE139	Associate – CRM (SSC/Q2202)								
		Total							**18**	**300**

Semester II Structure

Sr. No.	Course Code	Name of the Course	Teaching scheme			Evaluation Scheme			Credits	Total Marks
			L	T	P	IA	MSE	ESE		
General Education										
		Theory								
1	BVSWC201	Data Structures	3	0	0	10	0	40	3	50
2	BVSWC202	Concepts of Data Mining	3	0	0	10	0	40	3	50
3	BVSWC203	OOPs with Java	3	0	0	10	0	40	3	50
4	BVSWC204	Multimedia Tools & Applications	3	0	0	10	0	40	3	50
		Total							**12**	**200**
Skill Components										
		Lab/Practical								
5	BVSWL205	Data Structure Lab	0	0	1	25	0	25	1.5	50
	BVSWL206	Java Lab	0	0	1	25	0	25	1.5	50
		On-Job-Training (OJT)/Qualification Packs (Any one more QP to be opted from the QPs mentioned in the semester I)							**Group GSD2**	
7	BVSWE217	Web Developer (SSC/Q0503)	200 (Any one)						15	200
8	BVSWE228	Test Engineer (SSC/Q1301)								
								Total	**18**	**300**

Semester

I

Syllabus

Subject Name: IT foundation and IT tools	
Course Code :BVSWC101	**Semester: I**
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**
TH Exam Duration: 02 Hours	**Scheme of Marking PR: --**
Credit :03	

Course Objective :

1. To learn and understand basic input output devices.
2. To learn and understand basic digital design techniques
3. To know the difference between different types of network
4. To understand different addressing techniques used in network

Course Outcome:

1. Spectacle an awareness and apply knowledge of number systems, codes, Boolean algebra
2. Use logic function representation for simplification with K-Maps
3. To know the difference between different types of network.
4.. To know Responsibilities, services offered and protocol used at each layer of network

	Content	**Hours**
Unit – I	**1.0 Computer System Characteristics**	06
	A Brief History of Computers, Von Neumann Architecture, Harvard Architecture Basic structure, ALU, memory, CPU, I/O devices. Development of computers. Classification of computers:(Micro, mini frame, super computer, pc, server, workstations) **Input Devices and Output Devices** Keyboard, Direct Entry: Card readers, scanning devices (BAR CODE, OMR, MICR),Voice input devices, Light pen, Mouse, Touch Screen, Digitizer, scanner. CRT, LCD/TFT, Dot matrix printer, Inkjet printer, Drum plotter, Flatbed plotter Data Representation: BIT, BYTE, WORD, ASCII, EBCDIC, BCD Code.	
Unit – II	**2.0 Fundamentals of Digital Electronics**	08
	Introduction to Number system: Binary, Octal, Decimal and Hexadecimal. Number Systems and Boolean Algebra Basics of Analog and Digital. Boolean algebra, De-Morgan's law, Truth tables. Conversation from one number system to another number system. Introduction to Basic Gates. Signed Binary number representation and Arithmetic's Logical Circuits Logic gates: AND, OR, NOT, NOR, NAND, XOR, XNOR. Combinational Circuits: (i) Arithmetic Circuits: Half adders, Full adders , Subtractors, (ii) Data Processing Circuits: Encoders, Decoders, Multiplexers, DeMultiplexers,	
Unit – III	**3.0 Integrated Circuits and Memories**	06

	Introduction to IC's, Importance and applications, Linear and Digital IC's, Introduction to SSI, MSI, LSI and VLSI (Terminology & Definitions). RAM, ROM, PROM, EPROM, EEPROM. - Base memory, extended memory, expanded memory, Cache memory - Storage devices Tape, FDD, HDD, CDROM, Pen Drive.	
Unit – IV	**4.0 IT Tools and Troubleshooting: Hardware, Software and Networking**	05
	Networking and Internet. • Network Safety concerns. • Network Security tools and services. • Cyber Security. • Safe practices on Social networking. Commonly encountered problems. (Monitor: No display, KB/Mouse not responding, monitor giving beeps, printer not responding, check for virus, Delete temporary files if system is slow, adjust mouse speed).	
Unit – V	**5.0 Computer Networks**	08
	Introduction to computer Network - Communication: An Essential Part of Our Lives, Communicating in a Network-Centric World, Network as a Platform, Architecture of the Internet, Trends in Networking Communicating over the Network - Platform for Communications, LANs, WANs, MANs and Internetworks, Protocols, Using Layered Models, Network Addressing(IP, MAC,DOMAIN) Internet connections: ISP, Dial-up, cable modem, WLL, DSL, leased line Wireless and Wi-Fi connectivity ; email, email software features (send receive, filter, attach, forward, copy, blind copy);	
Unit – VI	**6.0 Study of Layers**	12
	Application Layer Functionality and Protocols - Applications: The Interface Between the Networks, Making Provisions for Applications and Services, Application Layer Protocols and Services Examples OSI Transport Layer - Roles of the Transport Layer, IPv4 Addresses, TCP: Communicating with Reliability, UDP: Communicating with Low Overhead OSI Network Layer - IPv4, Networks: Dividing Hosts into Groups, Routing, How Data Packets Are Handled, Routing Processes Addressing the Network- IPv4 Addresses for Different Purposes, Assigning Addresses, Calculating Addresses, Testing the Network Layer OSI Data Link Layer - Data Link Layer, MAC Techniques, MAC Addressing and Framing Data	

Text Books		
Name of Authors	**Title of the Book**	**Publisher**
R.P. Jain	Modern Digital Electronics ",	3rd Edition, TataMcGraw-Hill, ISBN: 0–07–049492–4
Andrew S. Tanenbaum	Computer Networks	PHI, Fifth Edition, ISBN : 978-0132-126953
R.K jain	IT Tools	Khanna Publishing House
Ajit Mittal	Mastering PC and Hardware and networking	Khanna Publishing House
Sarika Gupta	Information Security and cyber laws	Khanna Publishing House

Reference Books		
Ashok Arora	Fundamentals of Computer Systems.	
Russell A Stultz	Fundamentals of Computer Systems	
James F. Kurose and Keith W. Ross	"Computer Networking: A Top-Down Approach Featuring the Internet	Pearson Education, 6th Edition, ISBN : 978-02737-68968
Flyod	"Digital Principles"	Pearson EducationISBN:978-81-7758-643-6

Name of the Subject : Web Designing		
Course Code : BVSWC102	**Semester:**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**	
TH Exam Duration: 02 Hours	**Scheme of Marking PR: --**	
Credit :03		
Content		**Hours**
Unit – I	**Web Design Principles and Introduction to HTML**	5
	Basic principles involved in developing a web site, Planning process, rules of web designing, designing a vigation bar, Page design, Home Page Layout, Design Concept, Brief History of Internet, what is World Wide Web, Why create a website, Web Standards What is HTML, HTML Documents, Basic structure of an HTML document, Creating an HTML document, Markup Tags, Heading-Paragraphs, Line Breaks, Introduction to elements of HTML, Working with Text, Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls	
Unit – II	**Movie Editing Tools and Customizing and Embedding Multimedia components in Web Pages**	7
	. • Familiarization of interface components. • Importing pictures. • Importing Audio and Video Files. • Splitting and Joining Movie Clips. • Adding Titles and publishing. • Compatible Multimedia file formats for Web Pages. • Embedding Audio file. • Embedding Video file. • Embedding Flash file.	
Unit – III	**Introduction to Cascading Style Sheets and Java script**	7
	Concept of CSS, Creating Style Sheet, CSS Properties, CSSS tyling (Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, CSS Color, CSS templates Javascript Basics, JavaScript Events, Javascript conditions and loop control structures, Alert, Prompt and Confirm statements, Javascript validation. Web Scripting – Java Script. • Java Script review. • Functions – user defined. • String Object. • Math Object. • Array Object. • Events. • Case Studies.	
Unit – IV	**Introduction to Web Publishing or Hosting and Bootstrap**	7
	Dynamic Web templates, SEO - Search Engine Optimization. • Forms – Advanced, Creating the Website, Saving the site, Working on the website, Creating website structure, Themes-Publishing web sites, Authoring tools History, Fundamentals of Bootstrap, Bootstrap Grid System, Bootstrap Form and Form	

	Components, Introduction Jquery, Element Selector, Document ready function, Events, Event handling with Html or Bootstrap components	
Unit – V	**Introduction to Database Management System**	10
	Database Concepts – RDBMS Tool. • Basics of RDBMS. • SQL – Creating and Opening Database. • Creating and populating tables. • Modifying the content and structure of table. • Ordering and Grouping. • Operating with multiple tables. CURD Operation using MONGODB and My SQL, Single Valued Normalization: 1NF, 2NF, 3NF, BCNF	
Unit – VI	**Operating Web Based Applications**	4
	. • Online Reservation Systems. • E-Governance. • Online Shopping and Bill payments. • Online Tutorials and Tests. • Project Management – Web Based Application development. • Project essentials and tips. • Case Study - Online Game. • Case Study - Online Quiz. • Case Study – Online Bill Calculator	

Text Books		
Name of Authors	Title of the Book	Publisher
Kogent Learning Solutions Inc.	HTML 5 in simple steps	Dreamtech Press
Murray,Tom/Lynchburg	Creating a Web Page and Web Site	College,2002
Tanweer Alam	Web Designing and Development	Khanna Publishing House
Murray,Tom/Lynchburg	Creating a Web Page and Web Site	College,2002
Reference Books		
	Web Designing & Architecture-Educational Technology Centre	University of Buffalo
Steven M. Schafer	HTML, XHTML, and CSS Bible, 5ed	Wiley India
John Duckett	Beginning HTML, XHTML, CSS, and JavaSc	Wiley India
Ian Pouncey, Richard York	Beginning CSS: Cascading Style Sheets for Web Design	Wiley India

Subject Name: Programming in C	
Course Code :BVSWC103	**Semester: I**
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**
TH Exam Duration: 02 Hours	**Scheme of Marking PR: -- 25 Practical 25 Term**
Credit :3	

Course Objectives :
1.To learn basic concepts of programming language.
2.To study different control structure .
3. To learn C language constructs and pointers in depth
Course Outcomes :
1. Student will be able to apply appropriate constructs of C language, coding standards for application development
2 Students will be able to use different control structure.
3.Students will be to use dynamic memory allocation concepts in various application developments
4.Students will be to file handling in various application developments.

	Contents	**Hours**
Unit – I	**1.0 Programming Concepts & Techniques:**	06
	Program Concept, Characteristics of Programme, Stages in Program Development, Tips for Program Designing, Programming Aids, Algorithms, Pseudo code, Notations, Design, Flowcharts, Symbols, Rules, compiler & Interpreter. Introduction to programming techniques, Top-down & Bottom-up approach, Unstructured, & Modular programming, Cohesion, Coupling, Debugging, Syntax & Logical Errors, Linking and Loading, Testing and Debugging, Documentation	
Unit – II	**2.0 Data I/O, Control Structures**	06
	Introduction to problem solving through algorithm and flowchart, Overview, Character set, Keywords and Identifiers, Constants and Variables, Data types, Operators and Expressions, Operator precedence and associativity, Type casting. Definition and properties, Principles of flowcharting, Flowcharting symbols, Converting algorithms to flowcharts Basic structure of C program, Formatted and Unformatted Input and Output, Conditional branching - if, switch statement, Iterative loops – while, do while and for statement, break and continue statement, goto statement.	
Unit –III	**3.0 Arrays, Structure, Union**	06
	Introduction, Declaration and Initialization, Accessing Array elements, Memory, representation of Array, One dimensional Arrays, Two dimensional Arrays(matrix) ,Character Arrays and Strings (Operations on String) Defining Structure, Declaration, Initialization, Array of Structures, Structure and Functions, Nested Structures, Unions , Enumerated data type, typedef	
Unit –	**4.0 Functions**	06
	Introduction, Standard Library Functions, User Defined Functions (UDF) – Declaration, Definition, Function call, Formal parameter list, Return Type, Function call, Block structure, Passing arguments to a Function: call by reference, call by value, Recursive Functions, arrays as function arguments.	

Unit – V	**5.0Pointers**	06
	Introduction to Pointers, dynamic memory allocation, pointer to pointer, pointer to single and multidimensional arrays, array of pointers, string and structure manipulation using pointers, pointer to functions, Pointers and Dynamic Memory Allocation, Link List(SLL)	
Unit –	**6.0 File Handling**	06
	Concept of Files, File opening in various modes and closing of a file, reading from a file, writing onto a file Pointer to file structure and basic operations on file, file handling in C.	

Text Books		
Name of Author	**Title of the Book**	**Publisher**
YashavantKanetkar	Let us C	BPB Publication
E. Balagurusamy	Programming in ANSI C	Tata McGraw Hill
Reference Books		
Byron Gottfried	Programming with C	Tata McGraw Hill
YashavantKanetkar	Exploring C	BPB Publication
Kernighan BW, Dennis M.	The C Programming Language	PrenticeHall
Digital Reference		
1. http://www.cprogramming.com/tutorial/c-tutorial.html		
2. http://nptel.ac.in/courses/106104128/		
3. http://nptel.ac.in/courses/106105085/1		

	File system basics, File operations, File opening modes, String I/O in files, and Record I/O in files, Text and Binary files, Command Line Arguments	

Subject Name: Operating System	
Course Code :BVSWC104	**Semester: I**
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**
TH Exam Duration: 02 Hours	**Scheme of Marking PR: --**
Credit:3	

Course Objective :

1. To study and understand different system software like Assembler, Macro-processor and Loaders / Linkers.
2. To introduce basic concepts and functions of modern operating systems
3. To understand the concept of a process and thread
4. To apply the cons of process/thread scheduling.
5. To apply the concept of process synchronization

Course Outcome

1. To learn independently modern software development tools and creates novel solutions for language processing applications
2. Fundamental understanding of the role of Operating Systems
3. To understand the concept of a process and thread
4. To apply the cons of process/thread scheduling
5. To apply the concept of process synchronization, mutual exclusion and the deadlock

Content		Hours
Unit – I	**System Software**	06
	System software, Application software; concepts of files and folders; Basic features of two GUI operating systems: Windows & Linux (Basic desk top management); Programming Languages, Compiler, Interpreter, Databases; Application software: Generic Features of Word processors, Spread sheets and Presentation software	
Unit – II	**Introduction to Operating System**	06
	What is an operating system? History of operating system, Computer hardware & Software, Different operating systems, Various System Software associated with Operating Systems, Shell and Kernel, Systems Calls and Theirs types and implementation	
Unit – III	**Process & Threads**	
	Processes, PCB, Process States, Threads & TCB, difference and Similarities in Threads and Process. Inter-process communication, CPU scheduling, IPC problems.	
Unit – IV	**Process Synchronization & deadlocks**	06
	Critical Section Problems &Semaphores, Classical Problems of process Synchronization, Introduction to deadlocks, Deadlock detection and recovery, Deadlock avoidance, Deadlock prevention, issues	
Unit – V	**Memory Management and File Management**	06
	Address Spaces and Address Translation, Swapping & memory allocation, Paging & Segmentation, Virtual Memory & Demand Paging, Page Replacement Algorithm, Thrashing File Systems: Files, directories, file system & Directories implementation, file-system management and optimization, File Allocation Methods, MS-DOS file system, UNIX V7 file system	

Unit – VI	**Disk Management & Case Study**	06
	Disk Structure ,Disk Scheduling Algorithm (FCFS, RAID, Network Operating System, Real Time Operating System, Distributed Operating System	

Text Books		
Name of Authors	**Title of the Book**	**Publisher**
Silberschatz, Galvin, Gagne	Operating System Principles	Wiley
William Stalling	Operating System-Internal and Design Principles	Pearson Education India
Andrews Tanenbaum	Modern Operating System	Pearson Education India
Reference Books		
DhanjayDhamdhere	Operating System –A Concept-Based Approach	McGraw Hill Education
Dietel, Chofenes	Operating System	Pearson Education India
Achyut Godbole & Atul Kahate	Operating System	McGraw Hill Education

Lab-Web Designing	
Course Code :**BVSWL105**	Semester: **I**
Weekly Practicals: PR: **01** Tut: **00**	Scheme of Marking TH: **--**
TH Exam Duration:--	Scheme of Marking PR: **25,** IA: **25,** Total: **50**
Credit:1.5	

Content

1. Introduction to HTML Tags :- Working of Web browser, Introduction to static Web pages and dynamic web pages, HTML body structure, HTML Tags:- Elements, Attribute, Heading tag, Paragraph tag, Formatting tags (Bold text, Important text, Italic text, Emphasized text, Marked text, Small text, Deleted text, Inserted text, Subscripts, Superscripts), Background color, image, font color, effects, Table tag List.
2. Advance HTML tags :- Frames iframes, anchor tag, Multimedia
3. Create Static Website by using all HTML Tags.
4. Introduction to Internal CSS
5. Introduction to External CSS
6. HTML Form tags(Elements, Attributes, properties, etc)
7. Introduction to JAVA Script(Programming basics)
8. Advance JAVA Script programming basics(Alert, Confirm, prompt) and Validations.
9. Create 3 Web page using Bootstrap framework use bootstrap table, image and form elements etc.
10. Create the web page using Jquery effects, events on different elements.
11. Design any database with at least 3 entities and relationships between them. Apply DCL and DDL commands. Draw suitable ER/EER diagram for the system

Design and implement a database and apply at least 10 different DML queries for the following task. For a given input string display only those records which match the given pattern or a phrase in the search string. Make use of wild characters and LIKE operator for the same. Make use of Boolean and arithmetic operators wherever necessary.

12. Execute the aggregate functions like count, sum, avg etc. on the suitable database. Make use of built in functions according to the need of the database chosen. Retrieve the data from the database based on time and date functions like now (), date (), day (), time () etc. Use group by and having clauses

Lab-Programming in C	
Course Code :**BVSWL105**	Semester: **I**
Weekly Practicals: PR: **01** Tut: **00**	Scheme of Marking TH: **--**
TH Exam Duration:--	Scheme of Marking PR: **25,** IA: **25,** Total: **50**
Credit:1.5	
Content	

Suggested List of Experiments:

1. Represent sets using one dimensional arrays and implement functions to perform i. Union ii. Intersection iii. Difference iv. Symmetric difference of two sets
2. Represent matrix using two dimensional arrays and perform following operations with and without pointers: i. Addition ii. Multiplication iii. Transpose iv. Saddle point
3. Implement following operations on string with / without pointers (without using library functions)

   i. Length ii. Palindrome iii. String comparison iv. Copy v. Reverse vi. Substring
4. Create a Database using array of structures and perform following operations on it:

   i. Create Database ii. Display Database iii. Add record

   iv. Search record v. Modify record vi. Delete record
5. a) Sort the set of strings in ascending order using Bubble sort and descending order by using Selection sort or Insertion sort.(Display pass by pass output) b) Search a particular string using binary search with and without recursion
6. Implement a singly linked list with following options i. Insertion of a node at any location ii. Deletion of a node from any location iii. display a list iv. Display in reverse v. Revert the list without using additional data structure
7. Implement sequential file and perform following operations: i. Display ii. Add records iii. Search record iv. Modify record v. Delete record

Semester I - On-Job-Training (OJT)/Qualification Packs (Any One)

Group GSD1 of Qualifier Packs

SubjectName: Technical Writer	
Course Code : **BVSWE117**	Semester: **I**
Weekly Skilling Hours: PR: **24** Tut: **00**	Scheme of Marking TH: **00,** IA: **00,** Total: **00**
PR Exam Duration: **06 Hours**	Scheme of Marking PR: **200,** IA: **00,** Total: **200**
Credit:**15**	**Choose any one from specified Group GSD1 of Qualification Packs**
Syllabus for this qualifier Pack is available on **http://www.sscnasscom.com/qualification-pack/SSC/Q0505/**	

Subject Name: Infrastructure Engineer (SSC/Q0801)	
Course Code : **BVSWE128**	Semester: **I**
Weekly Skilling Hours: PR: **24** Tut: **00**	Scheme of Marking TH: **00,** IA: **00,** Total: **00**
PR Exam Duration: **06 Hours**	Scheme of Marking PR: **200,** IA: **00,** Total: **200**
Credit:**15**	**Choose any one from specified Group GSD1 of Qualification Packs**
Syllabus for this qualifier Pack is available on **http://www.sscnasscom.com/qualification-pack/SSC/Q0801/**	

Subject Name: Associate – CRM (SSC/Q2202)	
Course Code : **BVSWE139**	Semester: **I**
Weekly Skilling Hours: PR: **24** Tut: **00**	Scheme of Marking TH: **00,** IA: **00,** Total: **00**
PR Exam Duration: **06 Hours**	Scheme of Marking PR: **200,** IA: **00,** Total: **200**
Credit:**15**	**Choose any one from specified Group GSD1 of Qualification Packs**
Syllabus for this qualifier Pack is available on **http://www.sscnasscom.com/qualification-pack/SSC/Q0202/**	

***Skill Practical assessment will be done rules/ procedure of respective Skill Sector Council of India.**

Semester

II

Syllabus

Subject Name :Data Structure		
Course Code :BVSWC201	**Semester: II**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**	
TH Exam Duration: 02 Hours	**Scheme of Marking PR: --**	
Credit:3		
Content		**Hours**
Unit – I	**Introduction**	06
	Introduction: Data Structures types, Importance of Data Structure, Abstract data Type. Algorithms: Complexity, Time space Trade-offs, Arrays: Operation Performed on array Dynamic Memory Allocation	
Unit – II	**Searching Techniques**	06
	Searching Techniques: List Searches using Linear Search, Binary Search, Sorting Techniques: Basic concepts, Sorting by: Bubble, Insertion and selection. Hash Function: Address calculation techniques, Common hashing Functions, Collision resolution, Linear probing, quadratic probing	
Unit –III	**Unit 3**	06
	Stack: LIFO structure, PUSH and POP operations, Polish Notation, Queue: FIFO structure, Circular Queue, Operations on Queues.	
Unit – IV	**Unit IV**	06
	Introduction, single linked list, Operations on a Single linked list, Advantages and disadvantages of single linked list, circular linked list, Double linked list	
Unit – V	**Unit V**	06
	Tree: General tree terminology, Tree traversal, Operation on Binary Tree Heap : Heap Sort	
Unit – VI	**Unit 6**	06
	Graphs: Graph Storage structure (Adjacency Matrix, Adjacency List)Operations on graphs Traverse Graph (Depth-First, Breadth-First), Minimum Spanning Tree, Kruskal's algorithm, Prim's algorithm,	

Text Books		
Name of Authors	**Title of the Book**	**Publisher**
Ellis Horowit Sartaj Sahani, Susan Anderson Freed	Fundamentals of Data Stmctures in C 12 nd Edition]	Universities Press.
Lipschut	Data structure	MGH
Reference Books		
A. Tanenbaum	Data and file structure	PHI

Subject Name :Concepts of Data Mining	
Course Code :BVSWC202	**Semester: II**
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**
TH Exam Duration: 02 Hours	**Scheme of Marking PR: --**
Credit : 3	

Content		**Hours**
Unit – I	**1.0 Introduction** Data warehousing	06
	Introduction to Data warehousing, needs for developing data Warehouse, Datawarehouse systems and its Components, Design of Data Warehouse, Dimension and Measures, Data Marts:-Dependent Data Marts, Independents Data Marts & Distributed Data Marts, Conceptual Modeling of Data Warehouses: -Star Schema, Snow flake Schema, Fact Constellations, Multidimensional Data Model & Aggregates	
Unit – II	**2.0 Preprocessing**	06
	OLAP, Characteristics of OLAP System, Motivation for using OLAP, Multidimensional View and Data Cube, Data Cube Implementations, Data Cube Operations, Guidelines for OLAP Implementation, Difference between OLAP & OLTP, OLAP Servers: -ROLAP, MOLAP, HOLAP	
Unit – III	**3.0 Introduction** to Data Mining	06
	Introduction to Data Mining, Knowledge Discovery, Data Mining Functionalities, Data Mining System categorization and its Issues. Data Processing:-Data Cleaning, Data Integration and Transformation. Data Reduction, Data Mining Statistics. Guidelines for Successful Data Mining	
Unit – IV	**4.0 Data Mining Association**	06
	Association Rule Mining:-Introduction, Basic, The Task and a Naïve Algorithm, Apriori Algorithms, Improving the efficiency of the Apriori Algorithm, Apriori - Tid, Direct Hasing and Pruning (DHP), Dynamic Item set Counting (DIC), Mining Frequent Patterns without Candidate Generation (FP-Growth), Performance Evaluation of Algorithms	
Unit – V	**5.0 Classification**	06
	Classification:-Introduction, Decision Tree, The Tree Induction Algorithm, Split Algorithms Basedon Information Theory, Split Algorithm Based on the Gini Index, Over fitting and Pruning, Decision Trees Rules, Naïve Bayes Method.	
Unit – VI	**6.0Data Mining Tools**	06
	Cluster Analysis: -Introduction, Desired Features of Cluster Analysis, Types of Cluster Analysis Methods: -Partitioned Methods, Hierarchical Methods, Density-Based Methods, Dealing with Large Databases. Quality and Validity of Cluster Analysis Methods. WEKA (Waikato Environment for Knowledge Analysis): is a well-known suite of machine learning software that supports several typical data mining tasks, particularly data preprocessing, clustering, classification, regression, visualization, and feature selection. RapidMiner: Formerly called YALE (Yet another Learning Environment), is an environment for machine learning and data mining experiments that is utilized for both research and real-world data mining tasks.	

Text Books		
Name of Authors	**Title of the Book**	**Publisher**
Jiawei Han, Micheline Kamber	Data Mining: Concepts and Techniques	Morgan Kaufmann Publishers
Reference Books		
Tan, Steinbach, Kumar	Introduction to Data Mining	Pearson Addison Wesley, 2006
David Hand, Heikki Mannila & Padhraic Smyth	Principles of Data Mining	PHP Publication

Subject Name :OOPs with Java		
Course Code :BVSWC203	**Semester: II**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**	
TH Exam Duration: 02 Hours	**Scheme of Marking PR: --**	
Credit : 3		
Content		**Hours**
Unit – I	**1.0 Basics of Java**	06
	History of java, Advantages of java, JVM, Java Environment Setup, Programming Structure and naming conventions, Variables and Data types, Operators, Decision and Control Statements, Arrays and Strings AVA program structure, Tokens, Statements, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting	
Unit – II	**2.0 Object Oriented Programming with Java**	08
	Object Oriented Programming, Features of OOPS, Class and Object, Access modifiers, Methods, , Static variables and static methods, Overloading methods, Passing and returning object as argument, Constructors and Overloading constructors,	
Unit –	**3.0 Inheritance**	04
	Use of inheritance, IS-A,HAS-A,USES-A relationship, Method overriding, Super keyword and Final keyword,(Final Variables and Methods), Abstract classes and methods, Packages, interfaces, Visibility Control Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using System Package, Adding a Class to a Packages, Hiding Classes.	
Unit –	**4.0 Exception handling and Multithreading**	06
	Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface Exceptions and their types ,Handling exceptions, Use of Multithread programming, Thread class and Runnable interface, Thread priority, Thread synchronization	
Unit – V	**5.0 File handling and JDBC**	06
	Stream classes, Class hierarchy, Creation of text file, Reading and writing text files, JDBC Architecture, JDBC Drivers, Java Database Connectivity using JDBC	

Unit –	**6.0 GUI Applications**	06
	Applets and its life cycle, Graphics Class, AWT, Layout managers, Event handling classes and interfaces, SWING and Its Components	

Reference Books		
Name of Authors	**Title of the Book**	**Publisher**
Herbert Schildt	Java™: The Complete Reference, Seventh Edition	TMH
Cay S Horstmann, Fary Cornell	Core Java Vol I	Sun Microsystems Press
Ken,D.Holmers, J. Gosling, P. Goteti	The Java Programming Language 3rd Edition	Sun Microsystems Press
Deitel&Deitel	How To Program JAVA	Pearson Education
Text Books		
E Balguruswamy	Programming with Java- A Primer	TMH
Steven Holzner	JAVA 2 Programming Black Book,	Wiley India

Reference Website:http://www.tutorialspoint.com, http://www.javatpoint.com, http://www.roseindia.net, http://www.studytonight.com/

Subject Name : Multimedia Tools and Applications	
Course Code :BVSWC204	**Semester: II**
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 40 IA: 10 Total: 50**
TH Exam Duration: 02 Hours	**Scheme of Marking PR: --**
Credit : 3	

Content		**Hours**
Unit – I	1.0 **Multimedia System**	06
	Introduction To Multimedia, Needs and Areas of use, Identifying Multimedia Elements - Text, Images, Sound, Animation and Video, Making Simple Multimedia With PowerPoint. TEXT - Concepts of Plain & Formatted Text, RTF & HTML Texts, Using Common Text Preparation Tools, Conversion to and from of Various Text Formats, Creating text using standard software.	
Unit – II	**2.0 Sound**	06
	SOUND - Sound and its Attributes, Sound and Its Effects in Multimedia, Frequency, Sound Depth, Channels and its Effects on Quality and Storage, Size Estimation of Space of a Sound File, Sound Card Standard – FM Synthesis Cards, Waves Table Cards, MIDI and MP3 Files and Devices, 3D Sounds, Recording and editing sound using sound editors like Audacity, Sound forge etc.	
Unit – III	**3.0 Images**	06
	IMAGES - Importance of Images Graphics in Multimedia, Vector and Raster Graphics, Regular Graphics vs. Interlaced Graphics, Image Capturing Methods - Scanner, Digital Camera Etc. Color models-RGB, CYMK, Hue, Saturation, and Brightness, Various Attributes of Images Size, Color, Depth Etc, Various Image File Format BMP, DIB, CIF, PIC, and TIF Format Their Features And Limitations, Image format conversion, various effects on images. Create images using Photoshop, CorelDraw and apply various effects, Using Layers, Channels and Masks in	

	images.	
Unit – IV	**4.0 Video**	06
	VIDEO- Basic of Video, Analog and Digital Video Type of Video, Digitization of Analog Video, Video Standard – NTSC, Pal, HDTV, Video Capturing Media /Instruments Videodisk Camcorder Compression Techniques, File Formats AVI, MJPG, MPEG, Video Editing and Movie Making Tools, converting formats of videos, recording and editing videos using video editing software like adobe premiere or Sony Vegas.	
Unit – V	**5.0 Animation**	09
	ANIMATION- Concepts of animation, 2D and 3D animation, tools for creating animation, character and text animation, creating simple animation using GIF animator and flash, Morphing and Applications.	
Unit – VI	**6.0 Authoring tools for Multimedia**	3
	Introduction to various types of multimedia authoring tools, CD/DVD based and web based tools, features and limitations, creating multimedia package using all components.	

Name of Authors	**Title of the Book**	**Publisher**
P. K. ANDLEIGH, KIRAN THAKRAR	MULTIMEDIA SYSTEM DESIGN	
RALF STEINMETZ, & KLARA NASHTEDT	MULTIMEDIA COMPUTING COMMUNICATION & APPLICATION	
V.K. Jain,	Multimedia & Its Applications	Khanna Publishing House
Ramesh Bangia	. Fundamentals of Multimedia	Khanna Publishing House
Reference Books		
K sayood	Introduction to data compression	

LAB -Data Structure Using C	
Course Code :**BVSWL205**	Semester: **II**
Weekly Practical: PR: **01** Tut: **00**	Scheme of Marking TH: **--**
TH Exam Duration:--	Scheme of Marking PR: **25,** IA: **25,** Total: **50**
Credit:1.5	
Contents	

Suggested List of Experiments:

1. Write a program to demonstrate insertion, deletion, search and displaying of an element in an array,
2. Write a program to demonstrate sorting algorithm. (using any one of these techniques: bubble, Insertion, selection)
3. Write a program to demonstrate operations performed on stack.
4. Program to convert infix expression to postfix and infix to postfix.
5. Write a program to demonstrate operations on queue.
6. Write a program to demonstrate operations on singly link list.
7. Write a program to implement Stack as Linked List.
8. Write a program to implement operations on double link list.
9. Write a program to demonstrate creation, traversing and searching in Binary Search Tree.
10. Write a program to traverse a graph using DFS with an adjacency matrix.
11. Write a program to traverse a graph using BFS with an adjacency matrix.

References:

1. Unix Concepts and Applications by Sumitabha Das
2. http://www.ossec.net/
3. www.linuxmanpages.com/man1/**pflogsumm**.1.php
4. www.**webalizer**.org/
5. http://www.computersecuritystudent.com/SECURITY_TOOLS/DVWA/
6. https://www.wireshark.org/#learnWS
7. https://wiki.openssl.org

Lab - Java	
Course Code :**BVSWL206**	Semester: **II**
Weekly Practicals: PR: **01** Tut: **00**	Scheme of Marking TH: **--**
TH Exam Duration:--	Scheme of Marking PR: **25,** IA: **25,** Total: **50**
Credit:1.5	

Contents

- Design a simple java class with appropriate programming structure and naming conventions
- Sample programs on conditional statements and loop controls
- Demonstrate class, object and methods with various access modifiers
- Sample program on static variables and static methods
- Sample program on passing and returning object as argument
- Demonstrate constructors overloading
- Demonstrate types of inheritance
- Abstract classes and methods
- Program on Packages and Interfaces
- Demonstration of threads using Thread class and Runnable Interface
- Sample programs on file handling operations
- CRUD operations using JDBC

Reference Books		
Name of Authors	**Title of the Book**	**Publisher**
Herbert Schildt	Java™: The Complete Reference, Seventh Edition	TMH
Cay S Horstmann, Fary Cornell	Core Java Vol I	Sun Microsystems Press
Ken,D.Holmers, J. Gosling, P. Goteti	The Java Programming Language 3rd Edition	Sun Microsystems Press
Deitel&Deitel	How To Program JAVA	Pearson Education
Text Books		
E Balguruswamy	Programming with Java- A Primer	TMH
YashavantKanetkar	"Let Us Java	BPB
Steven Holzner	JAVA 2 Programming Black Book,	Wiley India

Semester II - On-Job-Training (OJT)/Qualification Packs (Any One)

Group GSD2 of Qualification Packs

Subject Name: Web Developer (SSC/Q0503)	
Course Code : **BVSWE217**	Semester: **II**
Weekly Skilling Hours: PR: **24** Tut: **00**	Scheme of Marking TH: **00,** IA: **00,** Total: **00**
PR Exam Duration: **06 Hours**	Scheme of Marking PR: **200,** IA: **00,** Total: **200**
Credit:**15**	**Choose any one from specified Group GSD2 of Qualification Packs**
Syllabus for this qualifier Pack is available on **http://www.sscnasscom.com/qualification-pack/SSC/Q0503/**	

Subject Name: Test Engineer (SSC/Q1301)	
Course Code : **BVSWE228**	Semester: **II**
Weekly Skilling Hours: PR: **24** Tut: **00**	Scheme of Marking TH: **00,** IA: **00,** Total: **00**
PR Exam Duration: **06 Hours**	Scheme of Marking PR: **200,** IA: **00,** Total: **200**
Credit:**15**	**Choose any one from specified Group GSD2 of Qualification Packs**
Syllabus for this qualifier Pack is available on **http://www.sscnasscom.com/qualification-pack/SSC/Q1301/**	

Curriculum
For
Bachelor of Vocational (Engg)
Second and Third Year Software Development
(Choice Based Credit System) (2020 Course)

(With Effect from Academic Year 2020-21)

B. Voc Software Development Syllabus for Second Year-

Structure of sem –I										
Sr. No.	**Course Code**	**Name of the Course**	**Teaching Scheme**			**Evaluation Scheme**			**Credits**	**Total Marks**
			L	**T**	**P**	**IA**	**MSE**	**ESE**		
General Education										
		Theory								
1		Linux Operating System – Operations and Management	3			50		50	3	100
2		Software Engineering	3			50		50	3	100
3		Web Development using PHP	3			50		50	3	100
4		Windows Development Fundamental	3			50		50	3	100
		Total							**12**	**400**
Skill Components										
		Lab/Practical								
5		Web Development using PHP Lab			1	25		50	1.5	75

		Window Development Fundamentals Lab			1	25		50	1.5	75
		On-Job-Training (OJT)/Qualification Packs (Any one more QP to be opted from the QPs mentioned in the semester I)							**Group GSD2**	
7		Junior Data Associate (SSC/Q0401)	200 (Any one)						15	200
8		IP Executive (SSC/Q6201)								
9		Security Analyst (SSC/Q0901)								
		Total							**30**	**750**

B. Voc Software Development Syllabus for Second Year-

Structure of sem –II

Sr. No.	**Course Code**	**Name of the Course**	**Teaching Scheme**			**Evaluation Scheme**			**Credits**	**Total Marks**
			L	**T**	**P**	**IA**	**MSE**	**ESE**		
General Education										
		Theory								
1		Software Testing and Project Management	3			50		50	3	100
2		Android Application Development	3			50		50	3	100
3		Window Configuration and Server Administration	3			50		50	3	100
4		Management Information Systems	3			50		50	3	100
		Total							**12**	**400**
Skill Components										
		Lab/Practical								
5		Android Application Development Lab			1	25		50	1.5	75
		MIS Lab			1	25		50	1.5	75
		On-Job-Training (OJT)/Qualification Packs (Any one more QP to be opted from the QPs mentioned in the semester I)							**Group GSD2**	
7		QA Engineer (SSC/Q1302)	200 (Any one)						15	200
8		Software Engineer (SSC/Q4601)								
		Total							**30**	**750**

Structure of Sem – II										
Sr. No.	**Course Code**	**Name of the Course**	**Teaching Scheme**			**Evaluation Scheme**			**Credits**	**Total Marks**
			L	**T**	**P**	**IA**	**MSE**	**ESE**		
General Education										
		Theory								
1		Technology Trends in IT	3			50		50	3	100
2		Window Mobile Application Development	3			50		50	3	100
3		Introduction to Python Programming	3			50		50	3	100
4		Introduction to Microprocessors	3			50		50	3	100
		Total							**12**	**400**
Skill Components										
		Lab/Practical								
5		Window Mobile Application Development Lab			1	25		50	1.5	75
		Python Programming Lab			1	25		50	1.5	75
		On-Job-Training (OJT)/Qualification Packs (Any one more QP to be opted from the QPs mentioned in the semester I)							**Group GSD2**	
7		Management Trainee (SSC/Q6301)	200 (Any one)						15	200
8		Associate - Transactional F&A (SSC/Q2301)								
9		Consultant Network Security (SSC/Q0917)								
		Total							**30**	**750**

B. Voc Software Development Syllabus for Third Year-

B

B. Voc Software Development Syllabus for Third Year-

		Theory								
1		Introduction to AI	3			50		50	3	100
2		e-Commerce	3			50		50	3	100
3		Computer Network Security	3			50		50	3	100
4		Introduction to Biometrics	3			50		50	3	100
		Total							**12**	**400**
Skill Components										
		Lab/Practical								
5		AI Lab			1	25		50	1.5	75
		Computer Network Security Lab			1	25		50	1.5	75
		On-Job-Training (OJT)/Qualification Packs (Any one more QP to be opted from the QPs mentioned in the semester I)							**Group GSD2**	
7		Master Trainer for Software Developer (SSC/Q0509)	200 (Any one)						15	200
8		Hardware Engineer (SSC/Q4701)								
9										
		Total							**30**	**750**

Detailed Curriculum

Level 6 (Semester I)

(6.GV.01) Linux Operating System - Operations & Management

UNIT – I

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, How Linux access files, storage files, Linux standard directories, Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, more, less, creating and viewing files, using cat, file comparisons, View files, disk related commands, checking disk free spaces.

Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down.

UNIT–II

Essential Linux commands Understanding shells, Processes in Linux process fundamentals, connecting processes with pipes, redirecting input output, manual help, Background processing, managing multiple processes, changing process priority, scheduling

of processes at command, batch commands, kill, ps, who, sleep, Printing commands, grape, fgrep, find, sort, Cal, banner, touch, file, file related commands-ws, sat, cut, grep, dd, etc.
Mathematical commands- bc, expr, factor, units. vi, joe, vim editor

UNIT–III

Shell programming Basic of shell programming, Various types of shell, shell programming in bash, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, shell keywords, Creating Shell programs for automate system tasks and report printing, use of grep in shell, awk programming.

UNIT–IV

System administration Common administrative tasks, identifying administrative files – configuratinn 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 disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su.Getting system information - host name, disk partitions & sizes, users, kernel.
Backup and restore files, linuxconf. utility in GUI, reconfiguration hardware with kudzu Configure desktop-X configurator, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical interfaces, changing X settings.

UNIT–V

Basic networking administration Setting up a LAN using Linux, choosing peer to peer vs client/server model, setting up an Ethernet Lan, configuring host computers, checking Ethernet connecting, connecting to internet, administration in a networked environment, common networking administrative tasks, the network file system, configuring Ethernet, initializing Ethernet Interface, ifconfig, netstat and netconfig commands a TCP/IP networks, DNS services, routing using Linux, SLIP & PPP services, UUCP.
Installation & Administration of mail server, ftp server and Apache web server.

(6.GV.02)Software Engineering

UNIT - I

SOFTWARE **:** Software Characteristics, Components & Applications, Software Engineering - A Layered Technology, Software Process Models - Linear Sequential Model, Prototype & Rad Model., Evolutionary Software Process Model – Incremental Model and Spiral Model.

SOFTWARE PROJECT MANAGEMENT: Project Management Concepts – People Problem and Process S/W process and Project Metrics : Metrics in The Process and Project Domains . Software Measurement –Size Oriented, Function Oriented Metrics, Extended Function

UNIT - II

SOFTWARE PROJECT PLANNING: Objectives, Scope, Project Estimation, Decomposition Techniques, Empirical Estimation Models.

ANALYSIS CONCEPT AND PRINCIPLES: Requirement Analysis, Communication Techniques, Analysis Principles, Software Prototyping, Specifications.

ANALYSIS MODELING: Elements of The Analysis Modeling, Data Modeling. Functional Modeling and Information Flow, Behavioral Modeling, Data Dictionary.

UNIT – III

DESIGN CONCEPTS AND PRINCIPLES: Design Process, Design Concepts, Design Principles, Effective Modular Design.

DESIGN METHODS : Architectural Design Process, Transform Mapping and Transaction Mapping, Interface Design, - Internal and External Design, Human Computer Interface Design, Interface Design Guidelines, Procedural Design.

UNIT - IV

S/W Quality Assurance : Quality Concepts, Matrix for Software Quality, Quality Movement, S/W Q A, S/W Review, Formal Technical Reviews, Formal Approaches to SQA, S/W Reliability, ISO 9000 quality Standards S/W TESTING MODELS : S/W Testing Fundamentals, Test Case Design, White and Black Box Testing, Basic Path Testing, Control Structure

S/W TESTING STRATEGIES : Strategic Approach To S/W Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging

UNIT - V

S/W REUSE : Reuse Process, Building Reuse Components, Classified And Retrieving Components, Economics Of S/W Reuse

COMPUTER AIDED S/W ENGINEERING: Introducing of Case, Building Block For Case, Taxonomy Of Case Tools, Integrating Case Environment, Integrating Architecture, Case Repository.

Reference Books:

1. Software Engineering, N.S. Gill, Khanna Publishing House
2. Software Engineering, R.P. Mahapatra, Khanna Publishing House

(6.GV.03)Web Development using PHP

UNIT I

Introduction to PHP as a programming Language: - Advantages of PHP, the server side architecture Decomposed, overview of PHP, history, object oriented support, benefits in running PHP as a server side script. Installing a web server, Internet information server, and IIS installation, testing web server setup.

UNIT II

The basics of PHP: - data types, variables, constants, operators, Arrays, Conditional statements (if statement, Executing Multiple Statements, else if clause and switch

statement), Iterations (for loop, while loop, controlling an array using a while loop, do while statement, for each loop and special loop key words)

UNIT III
Functions, user defined functions, functions with arguments, built in functions (print(), includer(), header(), phpinfo()), PHP server Variables, working with date and time , performing mathematical operations , working with string functions . System Variable (GET, POST, cookies& Session, Forums)

UNIT IV
Working with forms, form elements (Text Box, Text Area, Password, Radio Button, Checkbox, The Combo Box, Hidden Field and image), adding elements to a form, uploading files to the Web Server using PHP, building a challenge and response subsystem and understanding the functionality of the FORM attribute Method Regular Expressions: - Engine, types of Regular Expressions, symbols used in Regular Expressions. Error handling in PHP: - Displaying errors, warnings, types of errors, error levels in PHP, logging Errors and Ignoring errors.

UNIT V
Data base connectivity using PHP (MySQL, ODBC, ORACLE, SQL) Performing, executing Commands, different types of Data Base Operations like Insertion, deletion, update and query on data

Reference Books:

1. Mastering PHP, WebTech Solutions, Khanna Publishing House
2. Learning PHP, Ramesh Bangia, Khanna Publishing House

(6.GV.04)Window Development Fundamentals

- Programming web applications
- Working with data and services
- Troubleshooting and debugging web applications
- Working with client-side scripting
- Configuring and deploying web applications
- Understanding core programming
- Understanding object-oriented programming
- Understanding general software development
- Understanding web applications
- Understanding desktop applications
- Understanding databases

Reference Books:

1. Internet and Web Development, Soma Das Gupta, Khanna Publishing House

(6.VP.01) Web Development using PHP Lab

PHP programming language and 2D, 3D animation based on the theory covered in class.

(6.VP.02) Window Development Fundamentals Lab

- Client-side scripting Programs
- Deploying web applications
- Basic object-oriented programs
- Understanding desktop applications
- Basic SQL Queries

Level 6 (Semester II)

(6.GV.05) Software Testing & Project Management

UNIT - I

Testing basics and Development Models: Principals and context of testing in software production, Usability and Accessibility Testing, Phases of Software Project, Process models to represents different phases, Software Quality Control and its relation with testing, validating and verification, Software Development life cycle models, various development models.

White Box Testing: White Box Testing - Static Testing, Structural Testing-Unit code functional testing, Code coverage testing, code complexity testing,

Black Box Testing- What? Why and when to do Black box testing, Requirements based testing, Positive and Negative Testing, Boundary value testing, Decision Tables, Equivalence Partitioning, State Based or Graph Based Testing, Compatibility Testing, User Documentation Testing, Domain Testing.

UNIT - II

Integration Testing: Introduction and types of integration testing, Scenario testing, defect bash. **System and Acceptance Testing-** Overview, functional and non-functional testing, Acceptance testing.

Overview of some software testing tools: WinRunner, LoadRunner, Test Director. (Some practical should be conducted using these tools)

UNIT- III

Performance Testing- Introduction, factors related to performance testing, methodology for performing testing, Regression Testing,

Ad hoc Testing- Overview, Buddy & pair testing, Exploratory testing, Interactive testing, Agile and extreme testing.

Testing of Object Oriented Testing – Introduction, Differences in OO testing.

UNIT – IV

Software Project Management: Overview, Software Project Management Framework, Software Development life cycle, Organization Issues and Project Management, Managing Processes, Project Execution, Problems in Software Projects, Project Management Myths and its clarifications.

Software Project Scope: Need to scope a software project, scope management process, communication techniques and tools, communication methodology

Software Requirement Gathering and Resource allocation: Requirement specifications, SRS Document preparation, Resources types for a software projects, requirement for resources allocation.

UNIT – V

Software Project Estimation: Work Breakdown structure (WBS), steps in WBS, Measuring efforts for a project, techniques for estimation – SLOC, FP, COCOMO and Delphi methods.

Project Scheduling: Scheduling and its need, scheduling basics, Gannt Chart, Network scheduling techniques, Pert and CPM

Using a Project Management Tool: Introduction to MS Project 2000, Managing tasks in MS Project 2000, Tracing a project plan, creating and displaying project information reports.

(6.GV.06) Android Application Development

UNIT-I

Android Introduction, Smartphones future, Preparing the Environment, Installing the SDK, Creating Android Emulator, Installing and Using Eclipse, Installing Android Development Tools, Choosing which Android version to use
Android Architecture, Android Stack, Android applications structure
Creating a project, Working with the AndroidManifest.xml, Using the log system Activities Introduction to UI – Layouts, Fragments, Adapters, Action bar, Dialogs, Notifications , UI best practices
UI Architecture, Application context, Intents, Activity life cycle, Supporting multiple screen sizes

Unit - II

Designing User Interface Using Views – Basic Views- TextView, Button, Image Button, Check Box, Toggle Button, Radio Button etc., Progress Bar View and Auto Complete Text View, Time Picker and Date Picker View, List View,
Image View, Image Switcher and Grid View, Digital Clock & Analog Clock Views Notification and Toast, Parameters , on Intents, Pending intents, Status bar notifications Toast notifications

UNIT-III

Menus, Localization, Options menu, Context menu Dialogs-Alert dialog, Custom dialog, Dialog as Activity
Orientation and Movement- Pitch, roll and yaw, Natural device orientation, Reference frame remapping
SMS - Sending and Receiving
Working with Media –Playing audio and video, Recording audio and video

UNIT-IV

Location and Maps - Google maps, Using GPS to find current location
Working with data storage - Shared preferences, Preferences activity, Files access, Using External storage, SQLite database
Animation-View animation, Drawable animation
Working with Sensors- Finding sensors, Accelerometers, Gyroscopes, Other types Working with Camera – Controlling the camera, Preview and overlays, Taking pictures

UNIT-V

Content providers- Content provider introduction, Query providers
Network Communication - Web Services, HTTP Client, XML and JSON, Using e-mails. Services - Service lifecycle, Foreground service, Creating own services
Publishing and Distributing Your App -Preparing for publishing, Google Play requirements,
Signing and preparing the graphics, Publishing to the Android Market, Monetization, Tips on becoming a top app, Google analytics

Reference Books:

1. Learning Android, Ramesh Bangia, Khanna Publishing House

(6.GV.07) Windows Configuration and Server Administration

Understanding Windows Programming Basics: Identify Windows application types, Implement user interface design.
Creating Windows Forms Applications: Create and handle events, Understand Windows Forms inheritance, understand how to create new controls and extend existing controls, Validate and

implement user input, Debug a Windows-based application.
Creating Windows Services Applications: Create a Windows Services application, Installa Windows Services application.
Accessing Data in a Windows Forms Application: Understand data access methods for a Windows Application, Understand data bound controls.
Deploying a Windows Application: Understand windows application deployment methods, integrating data.
Network basics: Type of Networks, Topologies, Transmission media, Install UTP(Straight, Cross, Rollover Cables), IP Addressing, Subneting, OSI Model, TCP/IP Model, Wireless Network, Network Devices.
Installation: Installation Server, Drivers, Working with windows server Devices, Troubleshooting Devices & Drivers, Managing system updates.
Working With Disk Storage: Type of Disk Storage, Type of volumes, Implementing fault tolerance, Use disk management tools, Disk Quota, Troubleshooting disk management, Shadow copy**.**
Domain Controller: Install Active Directory, Manage Active Directory Component, Working with OU Structure, Working with Domain User account, Working with Domain Groups, Troubleshooting Active Directory.
Domain Name Services (DNS): Define Name resolution, Install DNS, Configure DNS Client, Manage and Troubleshoot DNS.
Dynamic Host Configuration Protocol: Configure DNS Server, Working With Super Scope, Configure DHCP Client, Manage and Troubleshoot DHCP Server.
Backup and Restore: Requirement for Backup and Recovery AD, Issue for AD Backup and Recovery, Steps for Backup and Recovery AD.

(6.GV.08) Management Information System

Unit I

An introduction to information systems, Information systems in organizations, Information Technology Concepts, The IS Revolution; Information requirement for the different levels lf management, transaction processing system, Management information 34 system, Decision support system. Strategic Role of Information Systems. Business Processes; Information management, and Decision Making. Computers and Information Processing;

Unit II

Transaction processing system; hardware and software requirements, tools used, case studies, merits and demerits of transaction processing system.

Unit III

Managerial control, Information and tools required, difference between transactional system and managerial system. Frequency of taking outputs, Need for interconnected system, common database, Redundancy control, case studies. Decision support system, concept and tools, case studies, virtual organizations, strategic decisions-unstructured approach, cost and values of unstructured information.

Unit IV

Optimization techniques, difference between optimization tools and DSS tools expert system, difference between expert system and management information system. Role of chief Information officer.

(6.VP.03) Android Application Development Lab

1. Write a simple Application which will print "Hello World!"
2. Write a simple Application that uses UI Layout and Control.

3. Write a simple Application that makes use of Style & Themes.
4. Write a simple Application that uses Event Handling.
5. Write a simple Application that uses Alarm, Notification.
6. Make a location based app.
7. Write a program that shows the use animation.
8. Write a program that shows the use of Image Effects.
9. Write a program that shows the use Image Switcher.
10. Write a program that shows the use of database.

(6.VP.04) MIS Lab

Experiments to be covered based on the theory covered in class

Level 7 (Semester I)

(7.GV.01)Technology Trends in IT

Unit-I
Internet of Things (IoT) – Definition of IoT, History of IoT, IoT vs. similar concepts, Application/Segment overview, Technology overview

Unit-II
Big Data Analytics: Concepts, examples of big data analytics, benefits of big data analytics, Technologies, and Applications, requirements for being successful with big data analytics

Unit-III
Cloud Computing – Introduction, Why cloud services are popular, advantages, Characteristics, Service models, Deployment of cloud services, Potential privacy risks

Unit-IV
Cyber Security – Introduction, risks, Malicious code, Hacker, attacker or intruder, Cyber security Principles, Information Security (IS) within Lifecycle Management, Risks & Vulnerabilities, Incident Response, Future Implications & Evolving Technologies

Unit-V
Wearable Technologies – Introduction, Applications of Wearable Technology, Challenges to Wearable Technology, various Wearable devices.

Reference Books:

1. Computer Today, A. Ravichandran, Khanna Publishing House
2. Internet of Things, Jeeva Jose, Khanna Publishing House
3. Big Data and Hadoop, V.K. Jain, Khanna Publishing House
4. Data Sciences and Analytics, V.K. Jain, Khanna Publishing House

(7.GV.02)Windows Mobile Application Development
Unit-I

INTRODUCTION TO WINDOWS 8 APPLICATION DEVELOPMENT - brief history of windows application development, History of APIs and Tools, Operating System Input Methods
The Windows Charm Bar, Start Button, Search Button, Share Button, Devices Button, Settings Button, Windows Desktop, Switching between Desktop Programs

WINDOWS 8 ARCHITECTURE FROM A DEVELOPER'S POINT OF VIEW - Windows 8 Development Architecture, Desktop Application Layers, Understanding Windows Runtime: Windows Runtime Architecture Overview, Metadata in Windows Runtime, .NET Framework 4.5: The Installation Model of .NET Framework 4.5, Window Runtime Integration, Picking the Appropriate Technology for Your Project, Choosing a Programming Language

GETTING TO KNOW DEVELOPMENT ENVIRONMENT - Introducing the Toolset, Visual Studio IDE: Creating a New Project, Lighting Up Your Applications with Expression Blend

UNIT-II

PRINCIPLES OF MODERN WINDOWS APPLICATION DEVELOPMENT - Windows 8 Style Application, Windows 8 Design Language, Introduction to Asynchronous Programming, Evolution of Asynchronous, Programming on the .NET Platform

CREATING WINDOWS 8 STYLE APPLICATIONS WITH HTML5, CSS, AND JAVASCRIPT - HTML5 and CSS on the Web, HTML5 Technologies, HTML5 Applications on Windows Runtime, The Windows Library for JavaScript (WinJS), Creating Windows 8 Style Applications with JavaScript, Accessing the Filesystem, Managing Data, Respecting the User's Device

UNIT-III

USING XAML TO CREATE WINDOWS 8 STYLE USER INTERFACES - Describing the User Interface Using XAML, Using Namespaces, Understanding the Layout Management System, Reusable Resources in XAML, Basic Controls in Windows 8 Style Applications: Controls with Simply Accessing the Internet: e Values, Content Controls, Working with Data: Data Binding Dependency Properties and Notifications, Binding Modes and Directions

WORKING WITH XAML CONTROLS - Using Animations in Application, Designing the Visual Look of a Control, Working with Complex Controls: Getting to Know the List View Base Controls, Using the Grid View Control, Binding to Data, Grouping Data, Defining Visual Groups

BUILDING WINDOWS 8 STYLE APPLICATIONS - The Lifecycle of a Windows 8 Application, Deploying Windows 8 Apps, Commanding Surfaces, Persisting Application Data, Applications and the Start Screen

UNIT-IV

CREATING MULTI-PAGE APPLICATIONS - Navigation Basics, working with Pages, Using the Split Application and Grid Application Templates

BUILDING CONNECTED APPLICATIONS - Integrating with the Operating System and Other Apps: Picker Unified Design to Access Data, Understanding the Concept of Contracts, Accessing the Internet: Detecting the Changes of Internet Connectivity, Using Feeds, Accessing Windows Live LEVERAGING TABLET FEATURES - Accommodating Tablet Devices, Building Location-Aware Applications, Using Sensors: Using Raw Sensor Data, Using Sensor Fusion Data

UNIT-V

ADVANCED PROGRAMMING CONCEPTS - Building Solutions with Multiple Languages: Hybrid Solutions, Background Tasks: Understanding Background Tasks, How Background Tasks Work, Cancelling Background Tasks, Implementing Background Tasks, creating a Simple Background Task, Managing Task Progress and Cancelation, Input Devices

TESTING AND DEBUGGING WINDOWS 8 APPLICATIONS - The Quality of Software, Becoming Familiar with Debugging, Controlling the Program Flow in Debug Mode, Monitoring and Editing Variables, Changing the Code While Debugging, Windows 8 Style Application-Specific Scenarios, Introduction to Software Testing, Introduction to Unit Testing, Unit Testing Windows 8 Style Applications

INTRODUCING THE WINDOWS STORE - Getting to Know the Windows Store, How Customers See an App in the Windows Store, Application Details, Making Money with Your App, The Developer Registration Process: Submitting the Application, The Application Certification Process, The Windows App Certification Kit.

(7.GV.03) Introduction to Python Programming

- Familiarization with the basics of Python programming: a simple “hello world" program, process of writing a program, running it, and print statements; simple data- types: integer, float, string
- Introduce the notion of a variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly)
- Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence.
- Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort numbers, and divisibility.
- Notion of iterative computation and control flow: for, while, flowcharts, decision trees and pseudo code; write a lot of programs: interest calculation, primarily testing, and factorials.
- Idea of debugging: errors and exceptions; debugging: pdb, break points.
- Lists, tuples and dictionary: finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary. Introduce the notion of accessing elements in a collection using numbers and names.
- Sorting algorithm: bubble and insertion sort; count the number of operations while sorting.
- Strings: compare, concat, substring; notion of states and transitions using state transition diagrams.

Reference Books:

1. Introduction to Computing and Problem Solving With Python, Jeeva Jose, Khanna Publishing House
2. Taming Python by Programming, Jeeva Jose, Khanna Publishing House

(7.GV.04) Introduction to Microprocessors

Digital Design and VHDL

1.1. Introduction
1.2. Combinational Logic
1.3. Structural Modeling
1.4. Sequential Logic
1.5. Finite State Machines
1.6. Parameterized Modules
1.7. Testbenches

2. Arithmetic Logic Unit (ALU)

2.1. Introduction
2.2. Arithmetic Circuits
2.3. ALU

2.4. Number Systems

3. Microprocessor I: Instruction Data Set. Machine Language
3.1. Introduction
3.2. Assembly Language
3.3. Machine Language
3.4. Programming
3.5. Addressing Modes
3.6. Lights, Camera, Action: Compiling, Assembling, and Loading
3.7. Odds and Ends

4. Microprocessor II: Control and Datapath Design. Single-Cycle Processor
4.1. Introduction
4.2. Performance Analysis
4.3. Single-Cycle Processor

5. Microprocessor III: Control and Datapath Design. Multi-cycle Processor
5.1. Introduction
5.2. Performance Analysis
5.3. Multicycle Processor
5.4. Pipelined Processor

6. Memory systems and I/O.
6.1. Introduction
6.2. Memory System
6.2.1. Caches
6.2.2. Virtual Memory
6.3. Memory-Mapped I/O
6.3.1. Memory map
6.3.2. I/O Devices
6.4. Buses and organization

Reference Books:

1. Fundamentals of Microprocessor, M.K. Ghodki, Khanna Publishing House
2. Advance Microprocessor, A.K. Gautam, Khanna Publishing House

(7.VP.01)Windows Mobile Application Development Lab

1. Working with J2ME Features
2. Threads & High level UI
3. Developing networked applications using the wireless toolkit
4. Authentication with a webserver
5. Study Windows API's. Find out their relationship with MFC classes. Appreciate how they are helpful in finding complexities of windows programming.

(7.VP.02) Python Programming Lab

- Find the largest and smallest numbers in a list.

- Find the third largest number in a list.
- Test for primarily.
- Find whether a string is a palindrome or not.
- Given two integers x and n, compute xn.
- Compute the greatest common divisor and the least common multiple of two integers.
- Test if a number is equal to the sum of the cubes of its digits. Find the smallest and largest such numbers

Level 7 (Semester II) (7.GV.05) Introduction to AI

UNIT – I
Overview of A.I: Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem Heuristic search techniques : Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction

UNIT - II
Knowledge Representation: Definition and importance of knowledge, Knowledge representation, Various approaches used in knowledge representation, Issues in knowledge representation. Using Predicate Logic: Represent ting Simple Facts in logic, Representing instances and is-a relationship, Computable function and predicate.

UNIT - III
Natural language processing: Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. Learning: Introduction learning, Rote learning, Learning by taking advice, Learning in problem solving, Learning from example-induction, Explanation based learning.

UNIT - IV
Expert System: Introduction, Representing using domain specific knowledge, Expert system shells. Knowledge acquisition: General concepts in knowledge acquisition, early work in Machine Learning, examples of Inductive Learners, computer vision, Robotics, overview of LISP- AI language.

Reference Books:
1. Artificial Intelligence, Munish Chandra Trivedi, Khanna Publishing House

(7.GV.06) e-Commerce

Unit I
Introduction E-Business: Origin and Need of E-Commerce, Factors affecting E -Commerce, Business dimension and technological dimension of E-Commerce, E-Commerce frame work Electronic Commerce Models, Value Chains in Electronic Commerce.

Unit II
Internet and E-Business: Introduction to Internet and its application, Intranet and Extranets. World Wide Web, Internet Architectures, Internet Applications, Business Applications on Internet, E - Shopping, Electronic Data Interchange, Components of Electronic Data Interchange, Creating Web Pages using HTML.

Unit III
Technology for Online Business: Internet, IT Infrastructure, Middleware Contents, Text and Integrating E-Business Applications, Mechanism of Making Payment Through Internet, Online Payment Mechanism, Electronic Payment Systems, Payment Gateways, Visitors to

Website, Tools for Promoting Website, Plastic Money, Debit Card, Credit Card, Laws Relating to Online Transactions.

Unit IV
Applications in E-commerce: E-commerce Applications in Manufacturing, Wholesale, Retail and Service Sector.

Reference Books:
1. E-Commerce, Sarika Gupta, Khanna Publishing House

(7.GV.07) Computer Network Security

UNIT-I
Network Concept, Benefits of Network, Network classification (PAN, LAN, MAN, WAN), Peer to Peer, Client Server architecture, Transmission media: Guided & Unguided, Network Topologies. Networking terms: DNS, URL, client server architecture, TCP/IP, FTP, HTTP, HTTPS, SMTP, Telnet OSI and TCP/IP Models: Layers and their basic functions and Protocols, Comparison of OSI and TCP/IP. Networking Devices: Hubs, Switches, Routers, Bridges, Repeaters, Gateways and Modems, ADSL.

UNIT-II
Ethernet Networking: Half and Full-Duplex Ethernet, Ethernet at the Data Link Layer, Ethernet at the Physical Layer. Switching Technologies: layer-2 switching, address learning in layer-2 switches, network loop problems in layer-2 switched networks, Spanning-Tree Protocol, LAN switch types and working with layer-2 switches, Wireless LAN

UNIT- III
Internet layer Protocol: Internet Protocol, ICMP, ARP, RARP. IP Addressing: Different classes of IP addresses, Sub-netting for an internet work, Classless Addressing. Comparative study of IPv4 & IPv6. Introduction to Router Configuration. Introduction to Virtual LAN.

UNIT- IV
Transport Layer: Functions of transport layer, Difference between working of TCP and UDP. Application Layer: Domain Name System (DNS), Remote logging, Telnet, FTP, HTTP, HTTPS. Introduction to Network Security.

Reference Books:
1. Information & Computer Security, Sarika Gupta, Khanna Publishing House
2. An Integrated Approach to Computer Networks, Bhavneet Sidhu, Khanna Publishing House

(7.GV.08) Introduction to Biometrics

Unit I
Concepts - biometric recognition, biometrics, requirements for biometrics Biometric systems, their modes and architectures Biometric system errors and evaluation

Unit II

Overview, comparison and evaluation of various biometrics
Unimodal biometric systems, their advantages, disadvantages and limits Multimodal biometric systems, their modes of operation, levels of fusion

Unit III

Biometric pattern recognition methods Privacy protection and social acceptance Biometric standardization, data formats Design and implementation of biometric systems, applications of biometric systems, biometric databases, security of biometric systems

(7.VP.03) AI Lab

1. Study of PROLOG.
2. Write a program to solve 8-queen's problem
3. Solve any problem using depth first search.
4. Solve any problem using best first search.
5. Solve 8-puzzle problem using best first search
6. Solve Robot (traversal) problem using means End Analysis
7. Solve traveling salesman problem.

(7.VP.04)Computer Network Security Lab

1. Identification of Connectors and Cables:
    a. Connectors: BNC, RJ-45, I/O box
    b. Cables: Co-axial, twisted pair, Optical fibre.
2. Identification of various networks components
    a. NIC (network interface card)
    b. Hub, Switch, Router.
3. Execution of basic networking Commands: Netstat, IPConfig, IfConfig, Ping, Arp-a, Nbtstat-a, Netdiag, Nslookup, Traceroute, Pathping
4. Design Ethernet Cables: Cross Cable, Straight Cable, Rollover Cable.
5. Demonstration to connect two computers with/without connecting device.
6. Demonstration of File sharing & Printer sharing.
7. Study of various topologies using topology trainer
8. Detailed study of Network and Internet Settings on PC.
9. Trouble shooting of networks & Installation of network device drivers.
10. Study of Router Configuration.
11. Logging into a router, Editing and Help features and Saving Router configuration.
12. Setting the Hostname, Descriptions, IP Address, and Clock Rate on a Router.