F. Y. B. Voc. (Software Development)

Semester

I

Syllabus

Subject Name: Problem Solving using C Language		
Course Code : BVSD-111	**Semester: I**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
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**
1	**Problem Solving using Computers** 1.1 Problem-Solving 1.2 Fundamental Algorithms 1.3 Algorithms 1.2 Flowcharts	**6**
2	**Programming Languages as Tools** 2.1 Machine language 2.2 Assembly language 2.3 High level languages 2.4 Compilers and Interpreters	**2**
3	**Introduction to C** 3.1 History 3.2 Structure of a C program 3.3 Functions as building blocks 3.4 Application Areas 3.5 C Program development life cycle	**2**
4	**C Tokens** 4.1 Keywords 4.2 Identifiers 4.3 Variables 4.4 Constants – character, integer, float, string, escape sequences 4.5 Data types – built-in and user defined 4.6 Operators and Expressions Operator types (arithmetic, relational, logical, assignment, bitwise, conditional , other operators) , Precedence and associativity rules.	**5**

5	**Input and Output** 5.1 Character input and output 5.2 String input and output 5.3 Formatted input and output	**2**
6	**Control Structures** 6.1 Decision making structures If, if-else, switch 6.2 Loop Control structures While, do-while, for 6.3 Nested structures 6.4 break and continue	**5**
7	**Functions in C** 7.1 What is a function 7.2 Advantages of Functions 7.3 Standard library functions 7.4 User defined functions :Declaration, definition, function call, parameter passing (by value), return keyword, 7.5 Scope of variables, storage classes 7.6 Recursion	**5**
8	**Arrays** 8.1 Array declaration, initialization 8.2 Types – one, two and multidimensional 8.3 Passing arrays to functions	**3**
9	**Pointers** 9.1 Pointer declaration, initialization 9.2 Dereferencing pointers 9.3 Pointer arithmetic 9.4 Pointer to pointer 9.5 Arrays and pointers 9.6 Dynamic memory allocation	**4**
10	**Strings** 10.1 Declaration and initialization 10.2 Standard library functions 10.3 Strings and pointers 10.4 Array of strings	**3**
11	**Structures and Unions** 11.1 Creating structures 11.2 Accessing structure members (dot Operator) 11.3 Array of structures 11.4 Passing structures to functions 11.5 Nested structures 11.6 Pointers and structures 11.7 Unions 11.8 Difference between structures and unions	**3**
12	**C Preprocessor** 12.1 Format of Preprocessor directive 12.2 File Inclusion directive 12.3 Macro substitution, nested macro, argumented macro	**1**

13	**Command Line Arguments** 13.1. Accessing command line arguments	**1**
14	**File Handling** 14.1 Streams 14.2 Types of Files 14.3 Operations on files 14.4 Random access to files	**3**

TEXT BOOKS		
Name of Author	**Title of the Book**	**Publisher**
Yashavant Kanetkar	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		

Subject Name: HTML 5 Programming		
Course Code : BVSD-112	**Semester: I**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
1. To learn how to design and develop a Web page using HTML5.		
2. To learn how to link pages so that they create a Web site.		
3. To design and develop a Web site using text, images, links, lists, and tables for navigation and layout.		
4. To learn how to use graphics in Web design		
Course Outcomes :		
1. Student will be able to insert a graphic within a web page.		
2. Students will be able to create a link and a table within a web page.		
3. Students will be able to insert heading levels, ordered and unordered lists within a web page.		
4. Students will be to Use cascading style sheets		
5. Students will be to create, validate and publish a web page		
	Contents	**Hours**
1	**Introduction** 1.1 The World Wide Web (www) 1.2 HTML History 1.3 Hypertext and Hypertext Markup Language 1.4 Introduction to Internet 1.5 Understanding Browsers and types of browsers	4
2	**HTML5 Documents** 2.1 Dividing the document into 2 parts. 2.1.1 Headers 2.1.2 Body 2.2 Tags 2.3 Elements of an HTML Document 2.3.1 Text Elements (Text Attributes and Formatting) 2.3.2 Tag Elements 2.4 HTML Page Structure 2.5 Marquee and Blink Text	4
3	**Simple HTML5 pages** 3.1 Headings 3.2 Paragraphs 3.3 Links 3.4 Images 3.5 Comments	5
4	**Formatting HTML Documents** 4.1 Logical styles (source code, text enhancements, variables) 4.2 Physical Styles (Bold, Italic, underlined, crossed)	6
5	**HTML5 Lists**	6

	5.1 Ordered Lists 5.2 Unordered Lists 5.3 Description Lists 5.4 Examples on Lists	
6	**HTML5 Tables** 6.1 Tags used in table definition 6.2 Tags used for border thickness 6.3 Tags used for cell spacing 6.4 Tags used for table size 6.5 Dividing table with lines 6.6 Dividing lines with cells 6.7 Cell types 6.7.1 Titles cells 6.7.2 Data cells	5
7	**HTML5 images** 7.1 Image format (quality, size, type, …) 7.2 Tags used to insert images 7.3 Frames 7.3.1 Using Frameset 7.3.2 Inline Frame(iframe)	6
8	**Creating HTML5 forms** 8.1 Input tags 8.2 Text Field 8.3 Password Field 8.4 Radio Button 8.5 Checkbox 8.6 Submit Button	9

References:

Name of Author	Title of the Book
Jeremy Keith	HTML5 for Web Designers
Sergey Mavrody	Sergey's HTML5 & CSS3 Quick Reference
Remy and Bruce	Introducing HTML5
Matthew David	HTML5: Designing Rich Internet Applications
Tantek Çelik	HTML5 Now: A Step-by-Step Video Tutorial for Getting Started Today

Subject Name: Introduction to Database Management System		
Course Code : BVSD-113	**Semester: I**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
1. To learn and practice data modeling using the entity-relationship and developing database designs.		
2. To understand the use of Structured Query Language (SQL) and learn SQL syntax.		
3. To apply normalization techniques to normalize the database.		
4. To understand the needs of database processing and learn techniques for controlling the consequences of concurrent data access.		
Course Outcomes :		
1. Student will be able to identify Level of abstraction, describing and storing data in database.		
2. Student will be able to describe ER data model and conceptual design using ER model.		
3. Student will be able to explain structure of relational databases and conversion of ER to relational model.		
4. Student will be able to perform relational algebra operation like selection, projection and set operation on database.		
5. Student will be able to use SQL different command and modify the DB. Also use SQL mechanism for joining relationship.		
6. Student will be able to use concept of normalization and apply different normal forms to DB.		
7. Student will be able to illustrate transaction, properties of transaction and use of schedules with its types.		
8. Student will be able to solve deadlock and deadlock detection recovery graph to DB.		
Contents		**Hours**
1	**Introduction of DBMS** 1.1 Overview 1.2 File system Vs. DBMS 1.3 Describing & storing data (Data models(relational, hierarchical, network)) 1.4 Levels of abstraction 1.5 Data independence 1.6 Structure of DBMS 1.7 Users of DBMS 1.8 Advantages of DBMS	4
2	**Conceptual Design (E-R model)** 2.1 Overview of DB design 2.2 ER data model (entities , attributes, entity sets, relations, relationship sets) , 2.3 Additional constraints (Key constraints, Mapping constraints, Strong & Weak entities, aggregation / generalization) 2.4 Conceptual design using ER modelling (entities VS attributes, Entity Vs. relationship, binary Vs. ternary, constraints beyond ER),	5

	2.5 Case studies	
3	**Relational data model** 3.1 Structure of Relational Databases (concepts of a table, a row, a relation, a Tuple and a key in a relational database) 3.2 Conversion of ER to Relational model 3.3 Integrity constraints (primary key, referential integrity, unique constraint, Null constraint, Check constraint)	4
4	**Relational algebra** 4.1 Preliminaries 4.2 Relational algebra (selection, projection, set operations, renaming joins, division) 4.3 Relational algebra queries	5
5	**SQL** 5.1 Introduction 5.2 Basic structure 5.3 Set operations 5.4 Aggregate functions 5.5 Null values 5.6 Nested Subqueries 5.7 Modifications to Database 5.8 DDL commands with examples 5.9 SQL mechanisms for joining relations (inner joins, outer joins and their types) 5.10 Views and Triggers in SQL 5.11 Examples on SQL (case studies)	8
6	**Relational Database Design** 6.1 Pitfalls in Relational-Database Design (undesirable properties of a RDB design like repetition, inability to represent certain information), 6.2 Functional dependencies (Basic concepts, F+, Closure of an Attribute set, Concept of a Super Key and a primary key (Algorithm to derive a Primary Key for a relation) 6.3 Concept of Decomposition 6.4 Desirable Properties of Decomposition (Lossless join & Dependency preservation) 6.5 Concept of Normalization 6.6 Normal forms (only definitions) 1NF, 2NF, 3NF, BCNF 6.7 Examples on Normalization.	9
7	**Transaction Concepts** 7.1 Describe a transaction, properties of transaction, state of the transaction. 7.2 Executing transactions concurrently associated problem in concurrent execution. 7.3 Schedules, types of schedules, concept of serializability, precedence graph for Serializability. 7.4 Ensuring Serializability by locks, different lock modes, 2PL and its variations. 7.5 Basic timestamp method for concurrency, Thomas Write Rule.	10

	7.6 Locks with multiple granularity, dynamic database concurrency (Phantom Problem). 7.7 Timestamps versus locking. 7.8 Deadlock handling methods 7.9 Detection and Recovery (Wait for graph). 7.10 Prevention algorithms (Wound-wait, Wait-die) 7.11 Log based Recovery	

Reference Books		
Name of Author	**Title of the Book**	**Publisher**
A Silberschatz, H Korth, S Sudarshan	Database System and Concepts	McGraw-Hill - Fifth Edition
Rob, Coronel	Database Systems	Cengage Learning - Seventh Edition,
Raghu Ramkrishnan and Johannes Gehrke	Database Management Systems	Tata McGraw-Hill
Elmasri and Navathe	Fundamentals of Database Systems	PEARSON Education - 5th Edition

Subject Name: Computer Fundamentals and Programming Concepts		
Course Code : BVSD-114	**Semester: I**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
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		
5. To understand basic programming concepts		
Course Outcomes :		
1. Student will be able to Spectacle awareness and apply knowledge of number systems, codes, Boolean algebra.		
2. Students will be able to know the difference between different types of network.		
3. Students will be to know Responsibilities, services offered and protocol used at each layer of network.		
4. Students will be to understand algorithms and flowchart.		
Contents		**Hours**
1	**Computer System Characteristics** **1.1** A Brief History of Computers, **1.2** Basic structure, ALU, memory, CPU, I/O devices. **1.3** Development of computers.	**6**

	1.4 Classification of computers:(Micro, mini frame, super computer, pc, server, workstations) **1.5** 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) **1.6** Data Representation: BIT, BYTE, WORD, ASCII, EBCDIC, BCD Code.	
2	**Fundamentals of Digital Electronics** 2.1 Introduction to Number system 2.2 Basics of Analog and Digital. 2.3 Conversion from one number system to another number system.. 2.4 Introduction to Basic Gates. 2.5 Logical Circuits	**8**
3	**Integrated Circuits and Memories** 3.1 Introduction to IC's, 3.2 Importance and applications, 3.3 Linear and Digital IC's, 3.4 Introduction to SSI, MSI, LSI and VLSI (Terminology & Definitions). 3.5 RAM, ROM, PROM, EPROM, EEPROM. 3.6 Base memory, extended memory, expanded memory, Cache memory 3.7 Storage devices Tape, FDD, HDD, CDROM, Pen Drive	**6**
4	**Computer Networks** 4.1 Introduction to computer Network – Communication 4.2 Architecture of the Internet, 4.3 Trends in Networking 4.4 Communicating over the Network - Platform for Communications, LANs, WANs, MANs and Internetworks, Protocols, Using Layered Models, Network Addressing(IP, MAC, DOMAIN) 4.5 Internet connections: ISP, Dial-up, cable modem, WLL, DSL, leased line Wireless and Wi-Fi connectivity ; 4.6 email, email software features (send receive, filter, attach, forward, copy, blind copy);	**8**
5	**Study of Layers** **5.1** Application Layer Functionality and Protocols **5.2** OSI Transport Layer **5.3** OSI Network Layer **5.4** OSI Data Link Layer	**12**
6	**Programming Concepts** 6.1 Program Concept, 6.2 Characteristics of Programme, 6.3 Stages in Program Development, 6.4 Tips for Program Designing,	**5**

	6.5 Algorithms, 6.6 Flowcharts, 6.7 Compiler & Interpreter. 6.8 Introduction to programming techniques, Top-down & Bottom-up approach, Unstructured, & Modular programming,	

TEXT BOOKS		
Name of Author	**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
Ajit Mittal	Mastering PC and Hardware and networking	Khanna Publishing House
Reference Books		
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

Subject Name: Lab Course on Problem Solving using C Language	
Course Code : BVSD-115	**Semester: I**
Weekly Practical: PR: 01 Tut: 00	**Scheme of Marking TH:**
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --** PR: 50, IA: 50, Total: 100
Credit : 4	

List of Experiments

1. Assignment to demonstrate use of data types, simple operators (expressions)
2. Assignment to demonstrate decision making statements (if and if-else, nested structures)
3. Assignment to demonstrate decision making statements (switch case)
4. Assignment to demonstrate use of simple loops
5. Assignment to demonstrate use of nested loops
6. Assignment to demonstrate menu driven programs.
7. Assignment to demonstrate writing C programs in modular way (use of user defined functions)
8. Assignment to demonstrate recursive functions.
9. Assignment to demonstrate use of arrays (1-d arrays) and functions
10. Assignment to demonstrate use of multidimensional array(2-d arrays) and functions
11. Assignment to demonstrate use of pointers
12. Assignment to demonstrate concept of strings (string & pointers)
13. Assignment to demonstrate array of strings.
14. Assignment to demonstrate structures and unions
15. Assignment to demonstrate command line arguments and preprocessor directives
16. Assignment to demonstrate file handling (text files)

Subject Name: Lab course on Introduction to Database Management System	
Course Code : BVSD-116	**Semester: I**
Weekly Practical: PR: 01 Tut: 00	**Scheme of Marking TH:**
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --** PR: 50, IA: 50, Total: 100
Credit : 4	

List of Experiments

1. Assignment to create simple tables
2. Assignment to create simple tables, with only the primary key constraint (as a table level constraint & as a field level constraint) (include all data types).
3. Assignment to create more than one table, with referential integrity constraint, PK constraint.
4. Assignment to create one or more tables with following constraints, in addition to the first two constraints (PK & FK)
   a. Check constraint b. Unique constraint c. Not null constraint
5. Assignment to drop a table from the database, to alter the schema of a table in the Database.
6. Assignment to insert / update / delete records using tables created in previous Assignments. (use simple forms of insert / update / delete statements)
7. Assignment to insert / update / delete records using tables created in previous Assignments. (use simple forms of insert / update / delete statements)
8. Assignment to query the tables using simple form of select Statement Select <field-list> from table [where <condition> order by <field list>] Select <field-list, aggregate functions > from table [where <condition> group by <> having <> order by <>].
9. Assignment to query the tables using simple form of select Statement order by <field list>]
10. Assignment to query the tables using simple form of select Statement Select <field-list, aggregate functions > from table [where <condition> group by <> having <> order by <>].
11. Assignment to query table, using set operations -I
12. Assignments to query tables using nested queries.

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

Subject Name: Junior Software Developer (SSC/Q0508)	
Course Code : BVSD-117	**Semester: I**
Weekly Skill 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	
Syllabus for this qualifier Pack is available on https://www.sscnasscom.com/qualification-pack/SSC/Q0508/	

Subject Name: Engineer-Technical Support (SSC/Q0101)	
Course Code : BVSD-118	**Semester: I**
Weekly Skill 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	
Syllabus for this qualifier Pack is available on https://www.sscnasscom.com/qualification-pack/SSC/Q0101/	

F. Y. B. Voc.

Semester

II

Syllabus

Subject Name: Data Structure using C	
Course Code : BVSD-121	**Semester: II**
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**
Credit :03	

Course Objectives :

1. To learn the systematic way of solving problem
2. To understand the different methods of organizing large amount of data
3. To efficiently implement the different data structures
4. To efficiently implement solutions for specific problems

Course Outcomes :

1. Student will be able to Discuss fundamental concepts of Data Structure, abstract data type, and algorithm analysis;
2. Students will be able to summarize different searching and sorting techniques using array.
3. Students will be to describe linear data structure Stack and its application
4. Students will be to Explain linear data structure Queue and its types(Linear Queue, Circular Queue, Priority Queue).
5. Student will be able to summarize different types of Linked List (singly linked list, doubly linked list, linear and circular linked list)
6. Student will be able to discuss nonlinear data structure Tree using operations like searching, insertion ,deletion , and traversing mechanism
7. Student will be able to explain nonlinear data structure Graph using operations like traversing mechanism

	Contents	**Hours**
1	**Introduction to data structures** 1.1 Concept 1.2 Data type, Data object, ADT 1.3 Need of Data Structure 1.4 Types of Data Structure	**3**
2	**Algorithm analysis** 2.1 Algorithm – definition, characteristics 2.2 Space complexity, time complexity 2.3 Asymptotic notation (Big O, Omega Ω)	**3**
3	**Linear data structures** 3.1 Introduction to Arrays - array representation 3.2 Searching algorithms with efficiency - Linear search, binary search 3.3 Sorting algorithms with efficiency - Bubble sort, Insertion sort, Merge sort, Quick Sort	**5**
4	**Linked List** 4.1 Introduction to List 4.2 Implementation of List – static & dynamic representation, 4.3 Types of Linked List 4.4 Operations on List	**8**

	4.5 Applications of Linked List – polynomial manipulation 4.6 Generalized linked list – concept & representation	
5	**Stacks** 5.1 Introduction 5.2 Representation-static & dynamic 5.3 Operations 5.4 Application - infix to postfix & prefix, postfix evaluation, 5.5 Simulating recursion using stack	**4**
6	**Queues** 6.1 Introduction 6.2 Representation -static & dynamic 6.3 Operations 6.4 Circular queue, priority queue (with implementation) 6.5 Concept of doubly ended queue	**4**
7	**Trees** 7.1 Concept & Terminologies 7.2 Binary tree, binary search tree 7.3 Representation – static & dynamic 7.4 Operations on BST – create, Insert, delete, traversals (preorder, inorder, postorder), counting leaf, non-leaf & total nodes, non-recursive inorder traversal 7.5 Application - Heap sort 7.6 Height balanced tree- AVL trees- Rotations 7.7 Red black Tree	**10**
8	**Graph** 8.1 Concept & terminologies 8.2 Graph Representation – Adjacency matrix, adjacency list, inverse adjacency list, adjacency multilist, orthogonal list 8.3 Traversals – BFS & DFS 8.4 Applications – AOV network – topological sort, AOE network – critical path, Dijkstra's Shortest path algorithm	**8**

TEXT BOOKS		
Name of Author	**Title of the Book**	**Publisher**
Ellis Horowit Sartaj Sahani, Susan Anderson Freed	Fundamentals of Data Structures in C	Universities Press.
Lipschut	Data structure	MGH
Reference Books		
A. Tanenbaum	Data and file structure	PHI
Bandopadhyay & Dey	Data Structures using C	Pearson

Subject Name: PHP Programming		
Course Code : BVSD-122	**Semester: II**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
1. To designing of dynamic, attractive Web pages using PHP.		
2. To better understanding of how PHP, HTML and database work together to produce dynamic pages.		
3. To designing robust & rich professional web applications.		
Course Outcomes :		
1. Student will be able to describe server-side programming works on the web.		
2. Students will be able to discuss how to receive and process form submission data.		
3. Students will be to Perform PHP scripts to handle HTML forms.		
4. Students will be to Use of use PHP built-in functions and custom functions		
5. Students will be to analyze database in phpMyAdmin.		
6. Students will be to Perform read and process data in a MySQL database		
7. Students will be to Evaluate POST and GET in form submission		
8. Students will be to Design and implement web pages.		
	Contents	**Hours**
1	**Introduction to web techniques** 1.1 HTTP basics, Introduction to Web server and Web browser 1.2 Introduction to PHP 1.3 What does PHP do? 1.4 Lexical structure 1.5 Language basics	**3**
2	**Function and String** 2.1 Defining and calling a function 2.2 Default parameters 2.3 Variable parameters, Missing parameters 2.4 Variable function, Anonymous function 2.5 Types of strings in PHP 2.6 Printing functions 2.7 Encoding and escaping 2.8 Comparing strings 2.9 Manipulating and searching strings 2.10Regular Expressions	**5**
3	**Arrays** 3.1 Indexed Vs Associative arrays 3.2 Identifying elements of an array 3.3 Storing data in arrays 3.4 Multidimensional arrays 3.5 Extracting multiple values 3.6 Converting between arrays and variables	**5**

	3.7 Traversing arrays 3.8 Sorting 3.9 Action on entire arrays 3.10Using arrays	
4	**Introduction to Object Oriented Programming** 4.1 Classes 4.2 Objects 4.3 Introspection 4.4 Serialization 4.5 Inheritance 4.6 Interfaces 4.7 Encapsulation	**6**
5	. **Files and directories** 5.1 Working with files and directories 5.2 Opening and Closing, getting information about file, Read/write to file, 5.3 Splitting name and path from file, Rename and delete files 5.4 Reading and writing characters in file 5.5 Reading entire file 5.6 Random access to file data 5.7 Getting information on file 5.8 Ownership and permissions	**4**
6	**Web Techniques** 6.1 Variables 6.2 Server information 6.3 Processing forms 6.4 Setting response headers 6.5 Maintaining state 6.6 SSL	**4**
7	**Databases** 7.1 Using PHP to access a database 7.2 Relational databases and SQL 7.3 PEAR DB basics 7.4 Advanced database techniques 7.5 Sample application (Mini project)	**6**
8	**Generating Graphics** 8.1 Basics of computer graphics 8.2 Working with Raster images 8.3 Manipulating Raster images 8.4 Using text in images	**4**
9	**XML** 9.1 What is XML? 9.2 XML document Structure 9.3 PHP and XML 9.4 XML parser 9.5 The document object model	**3**

	9.6 The simple XML extension 9.7 Changing a value with simple XML	
10	**Handling email with php** 10.1Email background 10.2Internet mail protocol 10.3Structure of an email message 10.4Sending email with php 10.5Email id validation and verification	**3**
11	**Web services** 11.1Web services concepts 11.2WSDL 11.3Introduction to 11.4SOAP XML-RPC 11.5Creating web services 11.6Calling web services	**2**

Reference Books		
Name of Author	**Title of the Book**	**Publisher**
Rasmus Lerdorf and Kevin Tatroe	Programming PHP, ,	O'Reilly
Matt Doyle	Beginning PHP 5	Wrox
Jeremy Allen and Charles Hornberger	Mastering PHP	BPB
Michele E. Davis, Jon A. Phillips.	PHP and MYSQL	O'Reilly

Subject Name: Web Development using CMS		
Course Code : BVSD-123	**Semester: II**	
Weekly Teaching Hours: TH: 03 Tut: 00	**Scheme of Marking TH: 50 IA: 50 Total: 100**	
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --**	
Credit :03		
Course Objectives :		
1. To introduce learners to the three most popular open source content management systems (CMS) in use on the web today, including WordPress, Drupal, and Joomla.		
2. To understand the difference between a CMS website, a static website, and websites using other server-side technologies.		
Course Outcomes :		
1. Student will be able to identify the basic forms of communication		
2. Student will be able to discuss concepts used in Business Communication		
3. Student will be able to demonstrate effective listening, speaking, reading and writing skills in communication		
4. Student will be able to illustrate with examples the objectives and principles related to communication		
5. Student will be able to determine the differences between oral, written, verbal and non-verbal communication		
6. Student will be able to draft business letters, reports, circulars, memorandum, emails, minutes and agenda of meetings and business proposals		
Contents		**Hours**
1	**Introducing Content Management Systems**. 1.1 Review of Syllabus and other materials 1.2 Grading and attendance policies 1.3 Purchasing and configuring a domain name and web hosting 1.4 Exploring CMS terminology, including open source, PHP, MySQL, server-side, client-side, static HTML website, how CMS web pages are generated, and so forth. 1.5 Website strategy and planning, site mapping, content planning	**7**
2	**Introduction to Joomla** 2.1 Installing Joomla 2.2 Exploring the Admin Interface 2.3 Content creation using the CAM model 2.4 Content customization: images, video, audio, tags, formats, etc.	**6**
3	**Joomla Menus** 3.1 Adding and displaying menus 3.2 Linking menus to articles and other features	**3**
4	**Extending Joomla** 4.1 Finding and adding Joomla extensions 4.2 Must have extensions for any Joomla site	**3**

	4.3 Adding and setting up 2 “big” extensions (choose blog, calendar, image gallery, Paypal-based shopping cart, or portfolio. Other extensions on approval)	
5	**Custom Templates** 5.1 Creating customized Joomla templates 5.2 Modifying Joomla CSS and HTML parameters 5.3 Tweaking the Joomla backend 5.4 Mobile considerations	**3**
6	**Joomla User management and permissions** 6.1 User management 6.2 Permissions	**4**
7	**Introduction to WordPress** 7.1 WordPress.org vs. WordPress.com 7.2 Installing WordPress 7.3 Exploring the admin interface 7.4 Content creation: Posts vs. pages 7.5 Content customization: images, video, audio, tags, formats, etc.	**5**
8	**Extending WordPress** 8.1 CMS via plug-ins and widgets 8.2 Installing, and configuring	**4**
9	**Introduction to Drupal** 9.1 Installing Drupal 9.2 Exploring the admin interface 9.3 Content creation: nodes, basic content, site information 9.4 Content customization: images, video, audio, tags, formats, etc.	**3**
10	**Extending Drupal Content** 10.1 Customizing different content types for Drupal site.	**2**
11	**Drupal User management and permissions** 11.1 User management 11.2 Permissions	**5**

Reference Books

Name of Author	Title of the Book	Publisher
Stephen Burge	Drupal 7 Explained: Your Step-by-Step Guide	Prentice Hall ISBN 10: 0133124231ISBN 13: 9780133124231
Matt Beck and Jessica Neuman Beck	WordPress: Visual QuickStart Guide, 3rd Edition	Peachpit Press ISBN 10: 032195761X ISBN 13: 9780321957610
Stephen Burge	Joomla! Explained: Your Step-by-step Guide Joomla	Addison-Wesley Professional

Subject Name: Object Oriented Software Engineering		
Course Code : BVSD-124		**Semester: II**
Weekly Teaching Hours: TH: 03 Tut: 00		**Scheme of Marking TH: 50 IA: 50 Total: 100**
TH Exam Duration: 03 Hours		**Scheme of Marking PR: --**
Credit :03		
Course Objectives :		
1. To understand the basics of System Analysis and Design.		
2. To better understanding the principles of Software Engineering		
3. To understand the various process models used in practice.		
4. To know about the system engineering and requirement engineering.		
5. To build an analysis model.		
Course Outcomes :		
1. Student will be able to discuss about software development process models		
2. Student will be able to identify and select suitable process model for given problem		
3. Student will be able to analyse the requirements of a given software project		
4. Student will be able to design the Use case Diagrams, Sequence Diagrams, Class Diagram, State Diagrams, and Deployment Diagrams by applying the UML Standards		
5. Students will be able to apply an iterative, agile process		
6. Students will be to design documents for software projects.		
7. Students will be to present project deliverable		
8. Students will be to design software projects using different modeling techniques.		
Contents		**Hours**
1	**Object Oriented Concepts and Principles** 1.1 What is Object Orientation? - Introduction, Object, Classes and Instance, Polymorphism, Inheritance 1.2 Object Oriented System Development- Introduction, Function/Data Methods (With Visibility), Object Oriented Analysis, Object Oriented Construction 1.3 Identifying the Elements of an Object Model 1.4 Identifying Classes and Objects 1.5 Specifying the Attributes (With Visibility) 1.6 Defining Operations 1.7 Finalizing the Object Definition	**4**
2	**Introduction to UML** 2.1 Concept of UML 2.2 Advantages of UML	**2**
3	**Basic Structural Modeling** 3.1 Classes 3.2 Relationship 3.3 Common Mechanism 3.4 Class Diagram	**5**
4	**Advanced Structural Modeling** 4.1 Advanced Classes	**5**

	4.2 Advanced Relationship 4.3 Interface 4.4 Types and Roles 4.5 Packages 4.6 Object Diagram.	
5	**Basic Behavioral Modeling** 5.1 Interactions 5.2 Use Cases and Use Case Diagram with stereo types 5.3 Interaction Diagram 5.4 Sequence Diagram 5.5 Activity Diagram 5.6 State Chart Diagram	**8**
6	**Object Oriented Analysis** 6.1 Iterative Development and the Rational Unified Process 6.2 Inception 6.3 Understanding Requirements 6.4 Use Case Model from Inception to Elaboration 6.5 Elaboration	**8**
7	**Object Oriented Design** 7.1 The Booch Method, The Coad and Yourdon Method and Jacobson Method and Raumbaugh Method 7.2 The Generic Components of the OO Design Model 7.3 The System Design Process - Partitioning the Analysis Model, Concurrency and Sub System Allocation, Task Management Component, The Data Management Component, The Resource Management Component, Inter Sub System Communication 7.4 Object Design Process	**6**
8	**Architectural Modeling** 8.1 Component 8.2 Components Diagram 8.3 Deployment Diagram **8.4** Collaboration Diagram	**4**
9	**Object Oriented Testing** 9.1 Object Oriented Testing Strategies 9.2 Test Case Design for Object Oriented Software 9.3 Inter Class Test Case Design	**3**

Reference Books		
Name of Author	**Title of the Book**	**Publisher**
Grady Booch, James Rambaugh	The Unified Modeling Language	Pearson Education INC
Ivar Jacobson	Object Oriented Software Engineering	Pearson Education INC
Craig Larman	Applying UML and Patterns	Pearson Education INC
Bennett, Simon	Object Oriented Analysis and Design	McGraw Hill

Subject Name: Lab Course on Data Structure using C	
Course Code : BVSD-125	**Semester: II**
Weekly Practical: PR: 01 Tut: 00	**Scheme of Marking TH:**
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --** PR: 50, IA: 50, Total: 100
Credit : 4	

List of Experiments

1. Assignment to demonstrate searching algorithms (Linear, Binary search)
2. Assignment to demonstrate Sorting algorithms (Bubble, Insertion)
3. Assignment to demonstrate Sorting algorithms (Quick, Merge)
4. Assignment to demonstrate Linked List (Singly linked list)
5. Assignment to demonstrate operations on Singly linked list (union, intersection)
6. Assignment to demonstrate Linked List (Doubly linked list)
7. Assignment to demonstrate Polynomial manipulation (addition, Multiplication)
8. Assignments to demonstrate stack using static & dynamic implementation.
9. Assignment to demonstrate convert infix expression into postfix and evaluate it.
10. Assignment to demonstrate infix expression into prefix and evaluate it.
11. Assignment to demonstrate linear queue of strings using array.
12. Assignment to demonstrate Binary Search Tree creation and inorder, preorder, postorder recursive traversal of all nodes.
13. Assignment to demonstrate Non_recursive traversal using stack (inorder, preorder, postorder) on the BST
14. Assignment to demonstrate graph as adjacency matrix. Calculate indegree, outdegree and total degree of each vertex.
15. Assignment to demonstrate graph as adjacency matrix and convert it into adjacency list.

Subject Name: Lab Course on PHP Programming	
Course Code : BVSD-125	**Semester: II**
Weekly Practical: PR: 01 Tut: 00	**Scheme of Marking TH:**
TH Exam Duration: 03 Hours	**Scheme of Marking PR: --** PR: 50, IA: 50, Total: 100
Credit : 4	

List of Experiments

1. Assignment to demonstrate use of data types, simple operators (expressions), decision making statements (if and if-else, nested structures), simple loops, nested loops
2. Assignment to demonstrate menu driven programs of string handling functions (built-in & user defined functions)
3. Assignment to demonstrate functions (include require construct)
4. Assignment to demonstrate String Operations regular expressions (replace, split)
5. Assignment to demonstrate use of arrays (1-D arrays) and functions
6. Assignment to demonstrate use of multidimensional array (2-D arrays) and functions
7. Assignment to demonstrate menu driven program to perform the operations on an associative array (array_flip, shuffle, unset, keys, values)
8. Assignment to demonstrate classes, objects & derive classes
9. Assignment to demonstrate interfaces
10. Assignment to demonstrate menu driven program to perform various file operations. (size of file, Last Access, changed, modified time of file, details about owner and user of File, type of file, delete a file, copy a file, traverse a directory in hierarchy, Remove a directory)
11. Assignment to demonstrate directory related functions (opendir, readdir, rewindir)
12. Assignment to demonstrate session tracking using cookies
13. Assignment to demonstrate database connection with PHP application.

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

Subject Name: Web Developer (SSC/Q0503)	
Course Code : BVSD-127	**Semester: I**
Weekly Skill 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	
Syllabus for this qualifier Pack is available on https://www.sscnasscom.com/qualification-pack/SSC/Q0503/	

Subject Name: Media Developer (SSC/Q0504)	
Course Code : BVSD-128	**Semester: I**
Weekly Skill 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	
Syllabus for this qualifier Pack is available on https://www.sscnasscom.com/qualification-pack/SSC/Q0504/	