HSNC UNIVERSITY, MUMBAI
Board of Studies in BVOC
In the subject of Web Technology, KC College

1. **Name of Chairperson: -**
   a. **Dr. Rakhi Gupta,** Assistant Professor, Dept. of Information Technology, KC College, HSNC University, rakhi.gupta@kccollege.edu.in, 9619914191

2. **Name of Co-chairperson: -**
   a. **Ms. Geeta N. Brijwani,** Assistant Professor, Dept. of Comp. Sci., KC College, HSNC University, geeta.brijwani@kccollege.edu.in, 9890857969

3. **Two to five teachers each having minimum five years teaching experience amongst the full time teachers of the Departments, in the relevant subject.**
   a. **Mrs. Neha Patel,** Assistant Professor, Dept. of Information Technology, KC College, HSNC University, neha.patel@kccollege.edu.in, 9820609142
   b. **Ms. Nashrah Gowalker,** Assistant Professor, Dept. of Information Technology, KC College, HSNC University, nashrah.gowalker@kccollege.edu.in, 9664774108
   c. **Mr. Naveen Pahuja,** Assistant Professor, Dept. of Comp. Sci., KC College, HSNC University, naveenpahuja94@gmail.com, 8856881398
4. **One Professor / Associate Professor from other Universities or professor / Associate Professor from colleges managed by Parent Body; nominated by Parent Body;-**
   a. **Dr. Sushil Kulkarni,** Associate Professor, Head, Dept. of Mathematics, Jai Hind College Autonomous, Mumbai, sushiltry@gmail.com, 9967770658

5. **Four external experts from Industry / Research / eminent scholar in the field relevant to the subject nominated by the Parent Body;**
   a. **Mr. Ravi Gupta,** Director, Frameboxx 2.0, ravi@frameboxx.in, 9820711434
   b. **Mr. Harish Chandar,** Director, India Tech International Pvt. Ltd., Mumbai, harishchandarb@gmail.com, 9821528022
   c. **Ms. Reshma Desai,** Assistant Professor, Dept. of Comp. Sci., Thakur College of Science and Commerce, Kandivili, reshma09desai@gmail.com, 9820080427
   d. **Mr. Wilson Rao,** Co-ordinator, Dept. of Information Technology & BVOC, Jai Hind College, Autonomous, wilsonrao@gmail.com, 9821354297
   e. **Mr. Maunash A. Jani**, Software Developer, Genius Lynx, Mumbai, maunash08@gmail.com, 9022155698

6. **Top rankers of the Final Year Graduate and Final Year Post Graduate examination of previous year of the concerned subject as invitee members for discussions on framing or revision of syllabus of that subject or group of subjects for one year.**
   a. **Mr. Ajit Vishwakarma,** Corporate Master Trainer, Managing Director, Vinayavish LLP, Mumbai, ajit@vinayavish.com, 9987230297

HSNC University Mumbai

(2020-2021)

Ordinances and Regulations

With Respect to

For the Programme Under

Bachelor of Vocational Studies in Web Technology

Curriculum – First Year BVoc Programme

Semester-I and Semester -II

2020-2021

HSNC University, Mumbai

Syllabus for F.Y.B.Voc

Program: B.Voc

Course: Web Technology

With effect from the academic year 2020-21

First Year Semester - I Subject Information

Sr. No.	Subject Code	Subject Title	Unit	Credits
1.	**F.Y BVoc 101**	Communication Skills	4	6
2.	**F.Y BVoc 102**	Discrete Mathematics	4	6
3.	**F.Y BVoc 103**	Working on Linux OS + Practical	4	3
4.	**F.Y BVoc 104**	Design of Web Application with HTML and CSS + Practical	4	3
5.	**F.Y BVoc 105**	Programming with C+ Practical	4	3
6.	**F.Y BVoc-1P1**			3
7.	**F.Y BVoc-1P2**			3
8.	**F.Y BVoc-1P3**			3

Detailed Scheme Theory
F. Y. BVoc 2020-2021
SEM 1
Subject 1: Communication Skills

Unit	Content	No. of Lectures
1	**1.1 The Seven Cs of Effective Communication**: Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness. **1.2 Listening:** Concept, difference between hearing and listening, purpose of listening, process of listening, principles of effective listening, **1.3 Speaking:** Introduction, purpose principles of effective speaking, improving your speaking skills. **1.4 Understanding Business Communication**: Nature and Scope of Communication, Non-verbal Communication, Cross cultural communication, Technology-enabled Business Communication.	**15**
2	**2.1 Reading**: Concept, purposes, Types, Stages, Strategies for effective reading, techniques and practices, Concept, Purposes, Process of writing in classroom, Principles of effective writing, Different types of writing. **2.2 Writing**: Non-Technical Communication: Memorandum, noting and drafting, Meeting procedure. **2.3 Writing Business Documents**: Business writing, Business Correspondence, Business Reports and Proposals, Career building and Resume writing. **2.4 Developing Oral Skills**: Effective Listening, Business Presentations and Public Speaking, Conversations, Interviews.	**15**
3	**3.1 Developing Skills for Business**: Meetings and Conferences, Group Discussions and Team Presentations, Team Briefing, **3.2 Understanding Communication Needs**: Communication across Functional Areas. **3.3 Specific Communication Needs**: Corporate Communication, Persuasive Strategies Communication, Ethics in Business Communication, Business Communication Aids.	**15**
4	**4.1 Presentation Process**: Planning the presentations, executing the presentations, Impressing the audience by performing. **4.2 Planning stage**: Brainstorming, mind maps / concept maps, executing stage: chunking theory, creating outlines, Use of templates. **4.3 Adding graphics to your presentation**: Visual communication, Impress stage: use of font, color, layout, Importance of practice and performance. Interactive hands on sessions on confidence building and placements. **4.4 Active Learning:** Concept of Active learning, Major Characteristics of Active learning, Elements of active learning, Benefits of active learning, Requirements to create active learning classroom, Active learning techniques to achieve learning objectives at various levels of Blooms' Taxonomy, Classification of Active learning techniques, Barriers to active learning, Overcomes barriers to active learning.	**15**

References:

1. Business Communication Edited by Meenakshi Raman and Prakash Singh, Oxford University Press,2nd Edition.
2. Professional Communication by Aruna Koneru Tata McGraw Hill, 1st Edition.
3. Strategies for improving your business Communication by Prof. M. S. Rao, Shroff Publishers, 2016.
4. Nonverbal Communication: Notes on the Visual Perception of Human Relations by Ruesh, Jurgen and Weldon Kees, 4th Edition

Subject 2: Discrete Mathematics

Unit	Content	No. of Lectures
1	**1.1 Introduction:** The Language of Sets, Definitions, Properties of Sets, The language of Relations and Functions. **1.2 Relations:** Relations on Sets, Reflexivity, Symmetry and Transitivity, Equivalence Relation, Partial Order Relation. **1.3 Functions:** Functions Defined on General Sets, One-to-One, Onto and Inverse Functions, Composition of Functions. **1.4 Logic:** Propositional Logic, Applications of Propositional Logic, Propositional Equivalences, Predicates and Quantifiers.	**15**
2	**2.1 Combinatorics:** Counting Principles - Sum and Product Rules, Tree diagram for solving counting problems, Pigeonhole Principle (without proof); Simple examples. Inclusion Exclusion Principle (Sieve formula) (Without proof), Permutations, Combinations, Binomial theorem, Pascal's triangle, Solving combinatorial problems recursively, Applications of combinatorics in graph theory, number theory and optimization problems.	**15**
3	**Matrices:** Introduction, Matrix Arithmetic, Properties of Matrices, Elementary Transformations, Inverse of a matrix, Rank of a matrix, Echelon form, Normal form, System of Linear Equations, Linear dependence and linear independence of vectors, Eigen values and Eigen vectors.	**15**
4	**4.1 Graphs:** Definition and elementary results, Representing graphs, Graph Isomo rphism, Operations on graph with algorithms - searching in a graph, Insertion in a graph, Deleting from a graph, Traversing a graph- Breadth-First search and Depth-First search, Spanning trees and shortest path algorithm. **4.2 Trees:** Definition and elementary results, Ordered rooted tree, Binary trees, Complete and extended binary trees, representing binary trees in memory, traversing binary trees, binary search tree, Algorithms for searching and inserting in binary search trees, Algorithms for deleting in a binary search tree.	**15**

References:

1. Discrete Mathematics and Its Applications, Seventh Edition by Kenneth H. Rosen, McGraw Hill Education (India) Private Limited. (2011)
2. Discrete Mathematics with Applications, fourth edition by Sussana S. Epp, Cengage Learning (2010).
3. Higher Engineering Mathematics, Dr. B. S. Grewal, Khanna Publications.
4. Applied Combinatorics, Mitchel T. Keller and William T. Trotter, 2016, http://www.rellek.net/appcomb.
5. Coding the Matrix Linear Algebra through Applications to Computer Science Edition 1, PHILIP N. KLEIN, Newtonian Press (2013)

6. Linear Algebra and Its Applications, Gilbert Strang, fourth addition.

Subject 3: Working on Linux OS

Unit	Content	No. of Lectures
1	**1.1 Linux System:** History, Design Principles, Kernel Modules, Process Management, Scheduling, Memory Management, File system, I/O. (SGG: 20.1 to 20.8) **1.2 Linux Basics:** Looking into the Linux Kernel, GNU Utilities, and Desktop environments. (RB: Chapter-1)**,** The Linux console (RB: Chapter-2) The Unix/Linux architecture, Features of Unix/Linux. **1.3 Basic bash shell commands:** Starting the shell, Shell prompt, File system Navigation, File and directory listing, File handling, Directory handling, Viewing file contents.	**15**
2	**2.1 More bash shell commands:** Monitoring programs, Monitoring disk space, working with data files: Filter commands, Sorting, Searching, Compressing, Archiving. **2.2 The Linux environment variable:** Environment variables, setting environment variables, Removing environment variables, Default shell environment variables, setting the PATH environment variables, Locating system environment variables, Variable arrays, Using command aliases. **2.3 Understanding Linux file permission:** Linux security, Using Linux groups, Decoding file permissions, Changing security settings, Sharing files.	**15**
3	**3.1 Basic script building:** Using multiple commands, Creating a script file, Displaying messages, Using variables, Redirecting Input and Output, Pipes, Performing math, Exiting the script. **3.2 Using structured commands:** Working with the if-then, if-then-else and nesting if statements, test command, Compound condition testing, advanced if then features, the case command. **3.3 More structured commands:** for command, C-style for command, while command, until command, nesting loops, Looping on file data, controlling the loop, processing the o/p of a loop. **3.4 Handling user input:** Command line parameters, Special parameter variables, Getting user i/p.	**15**
4	**4.1 Script control:** Handling signals, Running scripts in background mode, Running scripts without a console, Job control, Job Scheduling Commands: nice, renice, at, batch, cron table, Running the script at boot. **4.2 Essential System Administration:** root: The system administrator's login, The administrator's privileges, Startup & Shutdown **4.3 TCP/IP networking:** TCP/IP Basics, TCP/IP Model, Resolving IP addresses, Applications, telnet, ftp, Berkeley commands. SD: Chapter-17) **4.4 Editors:** vi, Sed and awk	**15**

References:

1. **SGG:** Operating System Concepts, 6e, Silberschatz, Galvin and Gagne, Wiley.
2. **SD:** Unix Concepts and Applications, 4e, Sumitabha Das., TMH.
3. **RB:** Linux Command line and Shell Scripting: Bible, Richard Blum, Wiley-India.
4. **CS:** Linux Networking Cookbook, Carla, Schroder, O'reilly.

Additional References:

1. Unix Complete Reference, TMH.
2. Linux Complete Reference, TMH.
3. Linux Command Reference. Shroff.

Subject 4: Design of Web Application with HTML and CSS

Unit	Content	No. of Lectures
1	**1.1 Introduction to Web:** What is Internet? Introduction to internet and its applications, E-mail,telnet, FTP, e-commerce, video conferencing, e-business, Internet service providers. **1.2 Introduction to Word Wide Web**(WWW) and its evolution, domain name server, internet address, uniform resource locator (URL), browsers- internet explorer, Netscape Navigator, Open Fireforx, chrome, Mozilla. Search engine, web server-apache, Internet Information Services(IIS), proxy servers, HTTP protocol: Request and Respons. **1.3 Bandwidth and Cache,** display resolution, Look and Feel of the Website, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation.Basic Stucture of HTML.	**15**
2	**2.1 Introduction, Why HTML5?** Formatting text by using tags, using lists and backgrounds, Creating hyperlinks and anchors. Style sheets, CSS formatting text using style sheets, formatting paragraphs using stylesheets	**15**
3	**3.1 Creating navigational aids:** planning site organization, creating text based navigation bar, creating graphics based navigation bar, creating graphical navigation bar, creating image map, redirecting to another URL, creating division based layouts: HTML5 semantic tags, creating divisions, creating HTML5 semantic layout, positioning and formatting	**15**
4	**4.1 Introduction to CSS3** : Power of CSS, Anatomy of CSS Rule,Element Class and ID Selector, Style Placement,Box Model,Background Property,Responsive Design,Media Queries,Relative and Absolute Element Positioning. **4.2 HTML5 Tables, Forms and Media:** Creating tables: creating simple table, specifying the size of the table,specifying the width of the column, merging table cells, using tables for page layout, formatting tables: applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment **4.3 Creating user forms:** creating basic form, using check boxes and option buttons, creating lists, additional input types in HTML5, Incorporating sound and video: audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page	**15**

References:

1. Web Design The Complete Reference by Thomas Powell, Tata McGraw
2. HTML5 Step by Step by Faithe Wempen, Microsoft Press, 2011.
3. HTML & CSS: Design and Build Web Sites Book by Jon Duckett

Subject 5: Programming with C

Unit	Content	No. of Lectures
1	**1.1 Introduction**: Types of Programming languages, History, features and application. Simple program logic, program development cycle, pseudocode statements and flowchart symbols, sentinel value to end a program, programming and user environments, evolution of programming models., desirable program characteristics. **1.2 Fundamentals:** Structure of a program. Compilation and Execution of a Program, Character Set, identifiers and keywords, data types, constants, variables and arrays, declarations, expressions, statements, Variable definition, symbolic constants.	**15**
2	**2.1 Operators and Expressions:** Arithmetic operators, unary operators, relational and logical operators, assignment operators, assignment operators, the conditional operator, library functions. **2.2 Data Input and output:** Single character input and output, entering input data, scanf function, printf function, gets and puts functions, interactive programming. .	**15**
3	**3.1 Conditional Statements and Loops:** Decision Making Within A Program, Conditions, Relational Operators, Logical Connectives, If Statement, If-Else Statement, Loops: While Loop, Do While, For Loop. Nested Loops, Infinite Loops, Switch Statement **3.2 Functions:** Overview, defining a function, accessing a function, passing arguments to a function, specifying argument data types, function prototypes, recursion, modular programming and functions, standard library of c functions, prototype of a function: parameter list, return type, function call, block structure, passing arguments to a function: call by reference, call by value.	**15**
4	**4.1 Arrays:** Definition, processing, passing arrays to functions, multidimensional arrays, arrays and strings. **4.2 Pointers:** Fundamentals, declarations, Pointers Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Functions and Pointers, Arrays And Pointers, Pointer Arrays, passing functions to other functions **4.3 Structures and Unions:** Structure Variables, Initialization, Structure Assignment, Nested Structure, Structures and Functions, Structures and Arrays: Arrays of Structures, Structures Containing Arrays, Unions, Structures and pointers.	**15**

References:

1. Programming with C, Byron Gottfried, Tata McGRAW-Hill, 2nd, 1996.
2. Programming Logic and Design, Joyce Farell, Cengage Learning, 8th, 2014.
3. Let us C, Yashwant P.Kanetkar, BPB publication.
4. C for beginners, Madhusudan Mothe, X-Team Series, 1st, 2008.

PRACTICALS TITLE :Working on Linux OS
F.Y BVoc-1P1

Practical No.	Practical
1.	Installation of Linux
2.	Working in LINUX – Introduction to GUI and Command line interface, Understanding File System, Procedure for logging in and out, creation of user accounts.
3.	General Purpose Utilities, Directory related commands
4.	Basic LINUX file related commands: touch, cat, cp, rm, ls,
5.	Study of filter commands: more, find, tr, head, tail, wc, file, sort, and split, ln, cut, paste
6.	Study of more filter commands: od, cmp, comm, diff, uniq.
7.	Study of Commands: grep, egrep, fgrep.
8.	Advance Shell programming I
9.	Advance Shell programming II
10.	System Administration commands

PRACTICALS TITLE : Design of Web Application with HTML & CSS

F.Y BVoc-1P2

Practical No.	Practical
1.	Demonstrate the use of List Tags.
2.	Demonstrate the use of block formatting Tags.
3.	Design web pages for your college containing a description of the courses, departments, teaching staff members. Use hyperlinks, list tags and image tags wherever necessary.
4.	Program to create text based and graphic based navigation bars.
5.	Create hyperlinks and anchors in web document.
6.	Insert an image on the webpage and link another page to it.
7.	Create image maps with at least 2 hotspots of different shapes.
8.	Demonstrate checkboxes, radio buttons, and various types of buttons in HTML5.
9.	Insert an audio file to a web document.
10.	Insert a video file to a web document.
11.	Program on Stylesheets.

PRACTICALS TITLE: Programming with C
F.Y BVoc-1P3

Practical No.	Practical
1.	Basic Programs: a. Write a program to display the message HELLO WORLD. b. Write a program to declare some variables of type int, float and double. Assign some values to these variables and display these values.
2.	Programs on variables: a.Write a program to swap two numbers without using third variable. b.Write a program to find the area of rectangle, square and circle. c. Write a program to find the volume of a cube, sphere, and cylinder.
3.	Programs on Conditional statements and loops(basic)
4.	Programs on Conditional statements and loops(advanced)
5.	Programs on patterns
6.	Programs on Functions.
7.	Programs on Recursive functions a. Write a program to find the factorial of a number using recursive function. b. Write a program to find the sum of natural number using recursive function.
8.	Programs on Arrays
9.	Pointers: a.Write a program to demonstrate the use of pointers. b.Write a program to perform addition and subtraction of two pointer variables.
10.	Structures and Unions : a.Programs on structures. b.Programs on unions.

First Year Semester -II Subject Information

Sr No.	Subject Code	Subject Title	Unit	Credits
1.	**F.Y BVoc-201**	EVS I	4	6
2.	**F.Y BVoc-202**	Statistics	4	6
3.	**F.Y BVoc-203**	Database System + Practical	4	3
4.	**F.Y BVoc-204**	JavaScript and JQuery + Practical	4	3
5.	**F.Y BVoc-205**	Object Oriented Programming with C++ + Practical	4	3
6.	**F.Y BVoc-2P1**			3
7.	**F.Y BVoc-2P2**			3
8.	**F.Y BVoc-2P3**			3

Detailed Scheme Theory
F. Y BVoc 2020-2021
SEM 2

Subject 1: EVS I

Unit	Content	No. of Lectures
1	**The Environment and Ecosystem** **1.1 Environment and Environmental studies:** Definition, concept, components and importance. **1.2 Ecosystem and Ecology:** Structure and Function of ecosystem, Brief concept of Autecology and Synecology. **1.3 Food chain**, food web and ecological pyramids . **1.4 Biogeochemical cycles** in an ecosystems: (Carbon, Nitrogen and Phosphorous cycle) **1.5 Ecological succession:** Definition, types, concept and process (Hydrosere, Xerosere and Lithosere).	**15**
2	**Environmental Pollution and Disaster Management** 2.1 Definition , causes, effects and control measures of : a. Air pollution b. Water pollution(thermal and marine pollution) c. Land pollution d. Radiation pollution and Nuclear hazard. e. Noise pollution **2.2 Solid waste management:** Causes , effects and control measures. **2.3 Global warming** and climate change Ozone depletion **2.4 Acid rain:** Causes , effects and control measures **2.5 Types and management of Natural disasters** (Earthquakes; Droughts; Floods; Landslides).	**15**
3	**Environmental treaties and law** **3.1 . Environmental Treaties** : National and International(Brief account) **3.2. Salient features of following Acts:** a. Wildlife (Protection) Act, 1972. b. Water (Prevention and control of pollution) Act, 1974. c. Forest (Conservation) Act, 1980. d. Air (Prevention and control of pollution) Act, 1981. e. Environmental Protection Act, 1986.	**15**
4	**Environmental Ethics** **4.1 National Green Tribunal:** Structure, composition and functions. 4.2. Environmental Ethics 4.3. Need for Sustainable Development..	**15**

References:

1. Environmental Law and Ethics Book by John Alder and David Wilkinson
2. Ecology and the Environment Editors: Monson, Russell K. (Ed.)
3. Fundamentals Of Ecology And Environment Book by Pranav Kumar and Usha Mina

Subject 2: Statistics

Unit	Content	No. of Lectures
1	**1.1 Mean, Median, Mode and Other Measures of Central Tendency:** Index, or Subscript, Notation, Summation Notation, Averages, or Measures of Central Tendency, The Arithmetic Mean, The Weighted Arithmetic Mean ,Properties of the Arithmetic Mean, The Arithmetic Mean Computed from Grouped Data ,The Median, The Mode, The Empirical Relation Between the Mean, Median, and Mode, The Geometric Mean G, The Harmonic Mean H ,The Relation Between the Arithmetic, Geometric, and Harmonic Means, The Root Mean Square, Quartiles, Deciles, and Percentiles. **1.2 Measures of variation:** Dispersion, or Variation, The Range, The Mean Deviation, The Semi-Interquartile Range, The 10–90 Percentile Range, The Standard Deviation, The Variance, Short Methods for Computing the Standard Deviation, Properties of the Standard Deviation.	**15**
2	**2.1 Moments:** Moments: raw moments, central moments, relation between raw and central moments **2.2 Measures of Skewness & Kurtosis:** based on moments, quartiles, relation between mean, median, and mode for symmetric, asymmetric frequency curve. **2.3 Curve fitting & Method of least squares:** Relationship Between Variables, Curve Fitting, Equations of Approximating Curves, Freehand Method of Curve Fitting, The Straight Line, The Method of Least Squares, The Least-Squares Line, Nonlinear Relationships, The Least-Squares Parabola, Regression, Applications to Time Series, Problems Involving More Than Two Variables.	**15**
3	**3.1 Correlation & Regression:** Bivariate data, Scatter plot, Correlation and Regression, Karl Pearson's coefficients of correlation, fitting of linear regression using least square method, Regression of Y on X, Regression of X on Y, coefficient of determination, properties of regression coefficients (only statement).	**15**
4	**4.1 Probability:** Introduction, Sample Space and Events, Axioms of Probability, Some Simple Propositions (without proof), Sample Spaces Having Equally Likely Outcomes, Conditional Probability, Bayes theorem, Independent Events.	**15**

References:

1. Fundamentals of Mathematical Statistics,Gupta, S.C. and Kapoor, V.K. (2011): Eleventh edition, S. Chand and Sons, New Delhi.

2. Schaum's Outline of Theory and problems of Statistics,Murray R. Spiegel, Larry J. Stephens, McGraw Hill, 4th Edition.

3. A First Course in Probability,Sheldon Ross (2010), eighth edition, Pearson.

4. Principles of Data Science, Shan Ozdemir (2016), Packt Publishing

Subject 3: Database System

Unit	Content	No. of Lectures
1	**1.1 Introduction to DBMS:** Database, DBMS – Definition, Overview of DBMS, Advantages of DBMS, Levels of abstraction, Data independence, DBMS Architecture **1.2 Data models:** Client/Server Architecture, Object Based Logical Model, Record Based Logical Model (relational, hierarchical, network) **1.3 Entity Relationship Model:** Entities, attributes, entity sets, relations, relationship sets, Additional constraints (key constraints, participation constraints, weak entities, aggregation / generalization, Conceptual Design using ER (entities VS attributes, Entity Vs relationship, binary Vs ternary, constraints beyond ER)	**15**
2	**2.1 Relational data model:** Domains, attributes, Tuples and Relations, Relational Model Notation, Characteristics of Relations, Relational Constraints - primary key, referential integrity, unique constraint, Null constraint, Check constraint **2.2 ER to Table**: Entity to Table, Relationship to tables with and without key constraints. **2.3 Normalization Concepts:** 1NF, 2NF, 3NF, BCNF, examples.	**15**
3	**3.1 DDL Statements**: Creating Databases, Using Databases, data types, Creating Tables (with integrity constraints – primary key, default, check, not null), Altering Tables, Renaming Tables, Dropping Tables, Truncating Tables, Backing Up and Restoring databases **3.2 DML Statements:** Viewing the structure of a table insert, update, delete, Select all columns, specific columns, unique records, conditional select, in clause, between clause, limit, aggregate functions (count, min, max, avg, sum), group by clause, having clause **3.3 Functions:** String Functions (concat, instr, left, right, mid, length, lcase/lower, ucase/upper, replace, strcmp, trim, ltrim, rtrim), Math Functions (abs, ceil, floor, mod, pow, sqrt, round, truncate) Date Functions (adddate, datediff, day, month, year, hour, min, sec, now, reverse)	**15**
4	**4.1 Joining Tables:** inner join, outer join (left outer, right outer, full outer) **4.2 Sub queries:** Sub queries with IN, EXISTS, sub queries restrictions, Nested sub queries, ANY/ALL clause, correlated sub queries **4.3 Views:** Creating, altering dropping, renaming and manipulating views **4.4 DCL Statements:** (creating/dropping users, privileges introduction, granting/revoking privileges, viewing privileges)	**15**

References:

1. Ramez Elmasri & Shamkant B.Navathe, Fundamentals of Database Systems, Pearson Education, Sixth Edition, 2010
2. Ramakrishnam, Gehrke, Database Management Systems, McGraw-Hill, 2007
3. Joel Murach, Murach's MySQL, Murach, 2012.
4. Robert Sheldon, Geoff Moes, Begning MySQL, Wrox Press, 2005.

Subject 4: JavaScript and JQuery

Unit	Content	No. of Lectures
1	**Java Script**: Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security,Operators: Assignment Operators, Comparison Operators, Arithmetic Operators, % (Modulus), ++(Increment), --(Decrement), -(Unary Negation), Logical Operators, Short-Circuit Evaluation, String Operators, Special Operators, ?: (Conditional operator), (Comma operator), delete, new, this, void. Break, comment, continue, delete, do...while, export, for, for...in, function, if...else, import, labelled, return, switch, var, while	**15**
2	**Core JavaScript (Properties and Methods of Each)** : Array, Boolean, Date, Function, Math, Number, Object, String, regExp **Document and its associated objects:** document, Link, Area, Anchor, Image, Applet, Layer Events and Event Handlers : General Information about Events, Defining Event Handlers, event, onAbort, onBlur, onChange, onClick, onDblClick,onDragDrop,onError,onFocus,onKeyDown, onKeyPress, onKeyUp, onLoad, onMouseDown, onMouseMove, onMouseOut, onMouseOver, onMouseUp, onMove, onReset, onResize, onSelect, onSubmit, onUnload **The DOM and web browser environments, Manipulation using DOM, forms and validations** **DHTML** : Combining HTML, CSS and Javascript, Events and buttons	**15**
3	What is jQuery? Structure of jQuery Using jQuery and including .js file to HTML Type of Selectors Handling Events with jQuery jQuery Introduction Install and Use jQuery Library Un-Obstructive JavaScript jQuery Syntax How to escape a special characters	**15**
4	**Basic Selectors :**Element and ID Selectors jQuery DOM Traversal jQuery DOM Manipulation jQuery Effects **HTML Manipulation:** Getting Setting values from elements Handling attributes Inserting New elements Deleting/Removing elements CSS manipulations Dimensions Positioning **Effects:** Showing/Hiding elements Sliding elements ϖ Fading elements ϖ Deleting animation elements Custom animation, Working with Events	**15**

References:

1. Javascript 2.0 the complete reference by Thomas Powell and Fritz Schneider Tata Mcgraw Hill

Subject 5: Object Oriented Programming with C++

Unit	Content	No. of Lectures
1	**1.1 Object Oriented Methodology:** Introduction, Advantages and Disadvantages of Procedure Oriented Languages, what is Object Oriented? What is Object Oriented Development? Object Oriented Themes, Benefits and Application of OOPS. **1.2 Principles of OOPS:** OOPS Paradigm, Basic Concepts of OOPS: Objects, Classes, Data Abstraction and Data Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Passing. **1.3 Classes and Objects:** Simple classes (Class specification, class members accessing), Defining member functions, passing object as an argument, Returning object from functions, friend classes, Pointer to object, Array of pointer to object. 1.4 Use of arrays to represent textual data. Multidimensional arrays. Design of medium size programs. A miniature program for marks and ranks display. Command line arguments.	**15**
2	**2.1 Constructors and Destructors:** Introduction, Default Constructor, Parameterized Constructor and examples, Destructors **2.2 Program development using Inheritance:** Introduction understanding inheritance, Advantages provided by inheritance, choosing the access specifier, Derived class declaration, derived class constructors, class hierarchies, multiple inheritance, multilevel inheritance, containership, hybrid inheritance. **2.3 Virtual Functions:** Introduction and need, Pure Virtual Functions, Static Functions, this Pointer, abstract classes, virtual destructors.	**15**
3	**3.1 Polymorphism:** Introduction to polymorphism, need of polymorphism. **3.2 Operator Overloading In C++:** Concept of function overloading, overloaded operators, Overloading unary and binary operators, overloading comparison operator, overloading arithmetic assignment operator, data conversion between objects and basic types.	**15**
4	**4.1 Working with Files:** Introduction, Various File Modes, File Pointer and their Manipulation, File Operations **4.2 Exception Handling:** Introduction, Exception Handling Mechanism, Concept of throw & catch with example. **4.3 Templates:** Introduction, Function Template And Examples, Class Template And Examples	**15**

References:

1. Object Oriented Programming with C++ E. Balagurusamy, Tata McGraw Hill 4th,2012.
2. Object Oriented Analysis and Design Timothy Budd TMH 3rd Edition, 2012

PRACTICAL TITLE: Database System
F.Y BVoc-2P1

Practical No.	Practical
1.	For given scenario, Draw E-R diagram and convert entities and relationships to table.
2.	Design a database for any case study with tables and normalize using normalization concept.
3.	Perform the following: Viewing all databases, Creating a Database, Viewing all Tables in a Database
4.	Creating Tables (With and Without Constraints), Inserting/Updating/Deleting Records in a Table, Saving (Commit) and Undoing (rollback)
5.	Perform the following: Altering a Table, Dropping/Truncating/Renaming Tables, Backing up / restoring a Database.
6.	Perform the following: Simple Queries, Simple Queries with Aggregate functions, Queries with Aggregate functions (group by and having clause)
7.	Queries involving Date Functions, String Functions, Math Functions, Join Queries, Inner Join, Outer Join
8.	Sub-queries: With IN clause, With EXISTS clause
9.	Views : □ Creating Views (with and without check option), Dropping views, Selecting from a view
10.	DCL statements : □ Granting and revoking permissions

PRACTICALS TITLE: JavaScript and JQuery
F.Y BVoc-2P2

Practical No.	Practical
1.	Write a program in java script to demonstrate operators.
2.	Write a program related to Statements in java script
3.	WAP to display tomorrow's date.
4.	WAP to accept a value from the user, display whether the number is odd or even.
5.	Design a basic calculator in java script.
6.	Demonstrate any 5 string functions in JavaScript.
7.	Demonstrate the onBlur, onFocus, onKeyPress and onMouseDown event handlers.
8.	Demonstrate the DOM and perform validations.
9.	Demonstrate basic selectors in JQuery
10.	Demonstration on effect in JQuery

PRACTICALS TITLE: OBJECT ORIENTED PROGRAMMING WITH C++
F.Y BVoc-2P3

Practical No.	Practical
1.	Practical will be based on Classes and methods
2.	Practical will be based on friend functions
3.	Practical will be based on Constructors and method overloading
4.	Practical will be based on Operator Overloading
5.	Practical will be based on Inheritance
6.	Practical will be based on Virtual functions and abstract classes
7.	Practical will be based on String handling
8.	Practical will be based on Exception handling
9.	Practical will be based on File handling
10.	Practical will be based on Templates