Scheme & Syllabus of

Bachelor of Vocational Studies
(B.Voc.)
Web Technology & Multimedia

Batch 2019

By Department of Academics
IKG Punjab Technical University

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Semester 1st

Course Code	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM101-19	Introduction to Internet & MS-Office	3	0	40	60	100	3
BVWM102-19	Programming Fundamentals in C++	3	0	40	60	100	3
BVWM103-19	Communicative English	3	0	40	60	100	3
BVWM104-19	Basic IT Skills	3	0	40	60	100	3
BVWM105-19	Introduction to Internet & MS-Office Laboratory	0	3	30	20	50	1.5
BVWM106-19	Programming Fundamentals in C++ Laboratory	0	3	30	20	50	1.5
On-Job Training / Qualification Pack*							
BVWM107-19	Test Engineer (SSC/Q1301)	On Job Training (OJT) in Collaboration with MoU Industry			200	200	15
Total		12	6	220	480	700	30

***The qualification packs may vary from institute to institute.**

Semester 2nd

Course Code	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM201-19	Database Management Systems	3	0	40	60	100	3
BVWM202-19	Programming in Java	3	0	40	60	100	3
BVWM203-19	Web Technologies	3	0	40	60	100	3
BVWM204-19	Database Management Systems Laboratory	0	3	30	20	50	1.5
BVWM205-19	Programming in Java Laboratory	0	3	30	20	50	1.5
BVWM206-19	Web Programming with PHP–I	3	0	40	60	100	3
On-Job Training / Qualification Pack *							
BVWM207-19	Web Developer (SSC/Q0503)	On Job Training (OJT) in Collaboration with MoU Industry			200	200	15
Total		12	6	220	480	700	30

***The qualification packs may vary from institute to institute.**

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Semester 3rd

Course Code	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM301-19	Graphic Design	3	0	40	60	100	3
BVWM302-19	RDBMS with MS SQL Server	3	0	40	60	100	3
BVWM303-19	Web Applications	3	0	40	60	100	3
BVWM304-19	Operating System	3	0	40	60	100	3
BVWM305-19	Graphic Design Lab	0	3	30	20	50	1.5
BVWM306-19	RDBMS with MS SQL Laboratory	0	3	30	20	50	1.5
On-Job Training / Qualification Pack*							
BVWM107-19	Media Developer (SSC/Q0504)	On Job Training (OJT) in Collaboration with MoU Industry (NASSCOM)			200	200	15
Total		12	6	220	480	700	30

***The qualification packs may vary from institute to institute.**

Semester 4th

Course Code	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM401-19	Computer Graphics	3	0	40	60	100	3
BVWM402-19	JavaScript – I	3	0	40	60	100	3
BVWM403-19	Computer Networks	3	0	40	60	100	3
BVWM204-19	Software Engineering	3	0	40	60	100	3
BVWM405-19	Computer Graphics Laboratory	0	3	30	20	50	1.5
BVWM406-19	JavaScript – I Laboratory	0	3	30	20	50	1.5
On-Job Training / Qualification Pack *							
BVWM207-19	Security Analyst (SSC/Q0901)	On Job Training (OJT) in Collaboration with MoU Industry (NASSCOM)			200	200	15
Total		12	6	220	480	700	30

***The qualification packs may vary from institute to institute.**

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Semester 5th

Course Code	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM501-19	Multimedia	**3**	**0**	**40**	**60**	**100**	**3**
BVWM502-19	Android Application Development	**3**	**0**	**40**	**60**	**100**	**3**
BVWM503-19	E-Commerce	**3**	**0**	**40**	**60**	**100**	**3**
BVWM504-19	Computer Network Security	**3**	**0**	**40**	**60**	**100**	**3**
BVWM505-19	Multimedia Lab	**0**	**3**	**30**	**20**	**50**	**1.5**
BVWM506-19	Android Application Development Lab	**0**	**3**	**30**	**20**	**50**	**1.5**
On-Job Training / Qualification Pack*							
BVWM507-19	Software Engineer (SSC/Q4601)	**On Job Training (OJT) in Collaboration with MoU industry**			**200**	**200**	**15**
Total		**12**	**6**	**220**	**480**	**700**	**30**

***The qualification packs may vary from institute to institute.**

Semester 6th

Course Code	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM601-19	**Audio Editing**	**3**	**0**	**40**	**60**	**100**	**3**
BVWM602-19	**Video Editing**	**3**	**0**	**40**	**60**	**100**	**3**
BVWM603-19	**Cloud Technology**	**3**	**0**	**40**	**60**	**100**	**3**
BVWM604-19	**Programming using Python**	**3**	**0**	**40**	**60**	**100**	**3**
BVWM605-19	**Audio and Video Editing Lab**	**0**	**3**	**30**	**20**	**50**	**1.5**
BVWM606-19	**Programming using Python Lab**	**0**	**3**	**30**	**20**	**50**	**1.5**
On-Job Training / Qualification Pack*							
BVWM607-19					**200**	**200**	**15**
Total		**12**	**6**	**220**	**480**	**700**	**30**

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM102-19**
Course Name: **Introduction to Internet & MS-Office**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **1st**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To develop an understanding & practical exposure to MS Office used as business tool.
CO2	To equip the students with the relevant skills and working knowledge of various office management tools
CO3	To develop an understanding of the practices and technology required for the Internet.

Detailed contents	Contact hours
Unit 1: Introduction: About internet and its working, business use of internet, services. Internet Protocol: Introduction, file transfer protocol (FTP), Gopher, Telnet, other protocols like HTTP and TCPIP. WWW: Introduction, working of WWW, Web browsing (opening, viewing, saving and printing a web page and bookmark)	9
Unit 2: Microsoft Word: Interface, Toolbar, Working with a document (Create, open, Save, Export etc.), Working with text, Images and Tables, Page layout (Headers and footers, Margins, Page and line numbers), Mail Merge, Automating tasks (Smart documents, Macros), File formats and Export features.	8
Unit 3: MS-Excel: Introduction, Components of Excel History, Creating, Saving, Opening, Spreadsheet, Formatting numbers and Text, Graph and Chart Formatting Commands, Menu Bar, Toolbars, Producing Charges, Protecting Cell Macro and Printing Operation, Spell Checking, Cell Editing, Calculation of various Financial and Statistical Functions using Formulas.	8
Unit 4: Microsoft Power Point: Interface, Working with a document (Create, open, Save, Export etc.), Creating and editing power point presentations (Slideshows, Animations, Transitions, graphics and charts), File formats and Export features.	8

Text Books:

1. Understanding The Internet by Kieth Sutherland, Butterworth-Heinemann.
2. Internet Technologies by S. K. Bansal, APH Publishing Corporation.
3. MS-Office 2007 Training Guide by S. Jain, BPB Publication.

Reference Books:

1. Computer Basics and Beyond by Michael A. Price.
2. MS-Office 2007 for Dummies by Wallace Wang, Wiley Publishing Inc.
3. Fundamentals of Computers. Delhi: Prentice-Hall.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM1032-19**
Course Name: **Programming Fundamentals in C++**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **1st**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To learn programming from real world examples.
CO2	To understand Object oriented approach for finding Solutions to various problems with the help of C++ language.
CO3	To create computer based solutions to various real-world problems using C++.
CO4	To learn various concepts of object oriented approach towards problem solving.

Detailed contents	Contact hours
Unit 1: Fundamentals: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants. Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators. Data Input and Output: single character Input, single character output, entering input data, writing output data.	9
Unit 2: Control Statements: Preliminaries, While, Do–while and For statements, Nested loops, If–else, Switch, Break – Continue statements. Functions: Declaring and defining function, Local, global variables, Passing argument to function, Reference arguments, Overloading functions.	8
Unit 3: Object Oriented Programming: Objects & Classes, Constructor & Destructor, Operator overloading, Overloading unary operators, Overloading binary operators, Data conversion, Pitfalls operator overloading and conversion.	8
Unit 4: Inheritance: Derived class and Base Class, Derived Class Constructors, Overriding member functions, Inheritance in the English distances class, class hierarchies, Public and Private inheritance, Level of inheritance. Polymorphism: Problems with single inheritance, Multiple inheritance.	8

Text Books:

1. Object Oriented Programming with C++, E. Balagurusami, 4th Edition, TMG.
2. Object Oriented Progg. in Turbo C++, Robert Lafore, 4th Edition Galgotia Publications.

Reference Books:

1. Computer Basics and Beyond by Michael A. Price.
2. Mastering C++ by K R Venugopal and Raj Kumar Buyya.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM1043-19**
Course Name: **Communicative English**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **1st**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To introduce students to the theory, fundamentals and tools of communication.
CO2	To help the students become the independent users of English language.
CO3	To develop vital communication skills integral to their personal, social and professional interactions.
CO4	The syllabus shall address the issues relating to the Language of communication.
CO5	Students will become proficient in professional communication such as interviews, group discussions, office environments, important reading skills and writing skills.

Detailed contents	Contact hours
Unit 1: Introduction • Theory of Communication • Types and modes of Communication	9
Unit 2: Language of Communication • Verbal and Non-verbal • Spoken and Written • Personal, Social and Business • Barriers and Strategies • Intra-personal, Inter-personal and Group communication	8
Unit 3: Reading and Understanding • Close Reading • Comprehension & Summary Paraphrasing • Analysis and Interpretation • Translation(from Hindi/Punjabi to English and vice-versa • Literary/Knowledge Texts	8
Unit 4: Writing Skills • Documenting & Report Writing • Making notes & Letter writing	8

Text Books:

1. Fluency in English - Part II, Oxford University Press, 2006.
2. Business English, Pearson, 2008.

Reference Books:

1. Practical English Usage by Michael Swan. OUP. 1995.
2. Communication Skills by Sanjay Kumar and Pushp Lata. Oxford University Press. 2011.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM104-19**
Course Name: **Basic IT Skill**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **1st**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Understanding the concept of input and output devices of Computers.
CO2	Learn the functional units and classify types of computers, how they process information and how individual computers interact with other computing systems and devices.
CO3	Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.
CO4	Study to use the Internet safely, legally, and responsibly.
CO5	To develop an understanding and practical exposure to different IT tools used as an aid in business and ecommerce.

Detailed contents	Contact hours
Unit 1 : Human Computer Interface, Concepts of Hardware and Software; Data and Information. Functional Units of Computer System: CPU, registers, system bus, main memory unit, cache memory, SMPS, Motherboard, Ports and Interfaces, expansion cards, ribbon cables, memory chips, processors. Devices: Input and output devices, keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter. Memory: Primary, secondary.	9
Unit 2: Types of Languages: Machine, assembly and High level Language; Operating system as user interface, utility programs. Word processing: Editing features, formatting features, saving, printing, table handling, page settings, spell-checking, macros, mail-merge, equation editors.	8
Unit 3: Spreadsheet: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cell references, replication, sorting, filtering, functions, Charts & Graphs. Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.	8
Unit 4: The Impact of Computing and the Internet on Society. Electronic Payment System: Secure Electronic Transaction, Types of Payment System: Digital Cash, Electronic Cheque, Smart Card, Credit/Debit Card E-Money, Immediate Payment System (IMPS).	8

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Text Books:

1. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.
2. Computer Fundamentals, A. Goel, 2010, Pearson Education.
3. Fundamentals of Computers, P. K.Sinha& P. Sinha, 2007, BPB Publishers.

Reference Books:

1. Introduction to Computers by Peter Norton.
2. Computers Today by D. H. Sanders, McGraw Hill.
3. Computers by Larry long & Nancy long, 12th edition, Prentice Hall.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM105-19**
Course Name: **Introduction to Internet & MS-Office Laboratory**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology & Multimedia**	Credits: **1.5**
Semester: **1st**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course outcomes
CO1	Familiarizing with Open Office (Word processing, Spreadsheets and Presentation).
CO2	To acquire knowledge on editor, spread sheet and presentation software.
CO3	The students will be able to perform documentation and accounting operations.
CO4	Students can learn how to perform presentation skills.

Task 1:	Microsoft Word: To familiarize with parts of Word, to create and save a document, to set page settings, create headers and footers, to edit a document and resave it, to use copy, cut and paste features, to use various formatting features such as bold face, italicize, underline, subscript, superscript, line spacing, etc. To use spelling and grammar checking feature, to preview print a document. To create a table with specified rows and columns, to enter data in a table, to select a table, a row, a column or a cell, to inset new row and/or a column, to delete a row and/or a column, to split and merge a row, column or a cell. To understand the mail-merge and to use mail merge feature of MS-Word.
Task 2:	Microsoft Excel: To familiarize with parts of Excel window, to create and save a workbook with single and/or multiple worksheets, to edit and format text as well numbers, to apply operations on range of cells using built-in formulae, to preview and print a worksheet, to insert new row and/or column in a worksheet, to delete a row and/or column in a worksheet, to create a variety of charts, to import and export data to or from worksheet.
Task 3:	Microsoft PowerPoint: To familiarize with parts of PowerPoint, to create and save a new presentation, to apply design templates to a presentation, to insert, edit and delete a slide, to use different views of slides, to use slide show from beginning or from the current slide, to preview and print a presentation, to check spellings in a presentation, to add clip art and pictures in a slide, to add chart, diagram and table in a slide, to set animation for a selected slide and/or for entire presentation, to create slide master and title master, to create a custom show.

Recommended Hardware & Software:

Intel Core i-3 / i-5 / i-7 processor with a speed of minimum 2 GHz, RAM 2 GB or higher, HDD 200 GB or higher, LED / LCD screen and Microsoft MS Office 2003 / XP / 2007

Test Books:

1. IT Tools, R.K. Jain, Khanna Publishing House.
2. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM1066-19**
Course Name: **Programming Fundamentals in C++Laboratory**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology & Multimedia**	Credits: **1.5**
Semester: **1st**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course outcomes
CO1	To learn programming from real world examples.
CO2	To understand Object oriented approach for finding Solutions to various problems with the help of C++ language.
CO3	To create computer based solutions to various real-world problems using C++.
CO4	To learn various concepts of object oriented approach towards problem solving**.**

Task 1 :	Write a program to enter mark of 6 different subjects and find out the total mark (Using cin and cout statement).
Task 2 :	Write a function using reference variables as arguments to swap the values of pair of integers.
Task 3 :	Write a function to find largest of three numbers.
Task 4 :	Write a program to find the factorial of a number.
Task 5 :	Define a class to represent a bank account which includes the following members as Data members: a) Name of the depositor b) Account Number c) Withdrawal amount d) Balance amount in the account Member Functions: e) To assign initial values: i. To deposit an amount, ii. To withdraw an amount after checking the balance & iii. To display name and balance.
Task 6 :	Write a program for single inheritance.
Task 7 :	Write a program for use of constructor and destructors.
Task 8 :	Write a program for Multiple inheritances.
Task 9 :	Write a program for Multilevel inheritance
Task 10 :	Write a program for file handling.

Recommended Hardware & Software:
Intel Core i-3 / i-5 / i-7 processor with a speed of minimum 2 GHz, RAM 2 GB or higher, HDD 200 GB or higher, LED / LCD screen and Borland C++ / Turbo C++

Text Books:

1. The C++ Programming Language, BjarnaStroustrup, Third Edition, AddisonWesley Publishing Company.
2. Object Oriented Programming Using C++, Salaria, R. S, Fourth Edition, Khanna Book Publishing.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM201-19**

Course Name: **Database Management Systems**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **2nd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Understand the basic concepts of DBMS.
CO2	Formulate, using SQL, solutions to a broad range of query and data update problems.
CO3	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
CO4	Understand the concept of Transaction and Query processing in DBMS.

Detailed Contents	Contact hours
Unit-I: Introduction of DBMS, Data Modeling for a Database, Three level Architecture of DBMS, Components of a DBMS. Introduction to Data Models, Hierarchical, Network and Relational Model, Comparison of Network, Hierarchical, Relational & Entity Relationship Model.	9
Unit-II Relational Database, Relational Algebra and Calculus, SQL Fundamentals, DDL, DML, DCL, PL/SQL Concepts, Cursors, Stored Procedures, Stored Functions, Database Triggers.	8
Unit-III Introduction to Normalization, First, Second, Third Normal Forms, Dependency Preservation, Boyce-Codd Normal Form, Multi-valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form, Domain-key normal form (DKNF).	8
Unit-IV Database Recovery, Concurrency Management, Database Security, Integrity and Control. Structure & Design of a Distributed Database.	8

Text Books:

1. An Introduction to Database System by Bipin C. Desai, Galgotia Publications Pvt Ltd-New Delhi, Revised Edition, (2012).
2. An Introduction to Database Systems by C. J. Date, A. Kannan & S. Swamynathan, 8th Edition, Pearson Education, (2006).

Reference Books:

1. SQL, PL/SQL The Programming Language of Oracle", Ivan Bayross, BPB Publications, 4th Revised Edition (2009).
2. Database System Concepts by Abraham Silberschatz, Henry F. Korth & S. Sudharshan, Tata McGraw Hill, 6th Edition, (2013).
3. Database Management Systems, Raghu Ramakrishnan, McGraw-Hill, 3rd Edition, 2014.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM202-19**

Course Name: **Programming in Java**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **2nd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Familiarization with the concept of Object Oriented concepts by implementing Java Programming.
CO2	Learn the concepts of classes & objects with the features of reusability and implementation of the same with various control structures to solve real world problems.
CO3	Understand and design built-in and user defined functions/methods, interfaces and packages etc.
CO4	Able to handle various types of data using arrays & strings and handling of exceptions occurred in programs.
CO5	Utilize multithreading and applet features of Java for efficient and effective programming.

Detailed Contents	Contact hours
Unit-I: Java Programming Fundamentals: Introduction to Java, Stage for Java, Origin, Challenges of Java, Java Features, Java Program Development, OOP. Java Essentials: Elements of Java Program, Java API, Variables and Literals, Primitive Data Types, The String class, Variables, Constants, Operators, Scope of Variables & Blocks, Types of Comment in Java.	9
Unit-II: Control Statements: Decision making statements (if, if-else, nested if, else if ladder, switch, conditional operator), Looping statements (while, do-while, for, nested loops), Jumping statements (Break and Continue). Classes and Objects: Basic concepts of OOPS, Classes and Objects, Modifiers, Passing arguments, Constructors, Overloaded Constructors, Overloaded Operators, Static Class Members, Garbage Collection. Inheritance: Basics of inheritance, Inheriting and Overriding Superclass methods, Calling Superclass Constructor, Polymorphism, Abstract Classes, Final Class.	8
Unit-III: Arrays and Strings: Introduction to array, Processing Array Contents, Passing array as argument, Returning array from methods, Array of objects, 2D arrays, Array with three or more dimensions. String class, string concatenation, Comparing strings, Substring, Difference between String and String Buffer class, String Tokenizer class. Interface and Packages: Basics of interface, Multiple Interfaces, Multiple Inheritance Using Interface, Multilevel Interface, Packages, Create and Access Packages, Static Import and Package Class, Access Specifiers. Exception Handling: Introduction, Try and Catch Blocks, Multiple Catch, Nested Try, Finally, Throw Statement, Built-In Exceptions.	8

Unit-IV: Multithreading: Introduction, Threads in Java, Thread Creation, Lifecycle of Thread, Joining a Thread, Thread Scheduler, Thread Priority, Thread Synchronization. Applets: Introduction, Applet Class, Applet Life Cycle, Graphics in Applet, Event-Handling. File and I/O Streams: File Class, Streams, Byte Streams, Filtered Byte Streams, Random Access File Class, Character Streams.	8

Text Books:

1. Programming with Java A Primer, 5th Edition by E. Balagurusamy, TMH.
2. Java Programming for Core and Advanced Learners by Sagayaraja, Denis, Karthik & Gajalakshmi, Universities Press.

Reference Books:

1. Java Fundamentals, A Comprehensive Introduction, H. Schildt, D. Skrien, TMH.
2. Java, The complete Reference, H. Schildt, 7th Edition, TMH.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM203-19**
Course Name: **Web Technologies**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **2nd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Understand the basics of Internet and Web Services.
CO2	Describe and differentiate Programming Language and Markup Language.
CO3	Connect various web pages and web sites together.
CO4	Capture user input from the remote users.
CO5	Learn connectivity concepts of Front End and Back End.

Detailed Contents	Contact hours
Unit-I: Internet Basics: Basic concepts, communicating on the internet, internet domains, internet server identities, establishing connectivity on the internet client IP address, How IP addressing came into existence? A brief overview TCP/IP and its services, transmission control protocol. Introduction to HTML: Information Files Creation, Web Server, Web Client/Browser, Hyper Text Markup Language (HTML Tags, Paired Tags, Singular Tags), Commonly Used HTML Commands (Document Head, Document Body), Title & Footer, Text Formatting (Paragraph & Line Break), Emphasizing Material in Web Page (Heading Styles, Drawing Lines). Basic Formatting Tags: HTML Basic Tags, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines), Text Styles (Bold, Italic, Underline), Other Text Effects Centering (Text & Images), Spacing (Indenting Text), HTML Color Coding.	10
Unit-II: Type of Lists: (Unordered List (Bullets), Ordered Lists (Numbering), Definition Lists. Adding Graphics To HTML Documents: Using The Border Attribute, Using The Width And Height Attribute, Using The Align Attribute, Using The Alt Attribute. Tables: Introduction (Header, Data rows, The Caption Tag), Using the Width and Border Attribute, Using the Cell padding Attribute, Using the Cell spacing Attribute, Using the BGCOLOR Attribute, Using the COLSPAN and ROWSPAN Attributes Tag.	7
Unit-III: Linking Documents: Links (External Document References, Internal Document References), Image As Hyperlinks. Frames: Introduction to Frames: The tag, The tag, Targeting Named Frames. DHTML: Cascading Style Sheets. Introduction to JavaScript: Introduction to JavaScript: JavaScript in Web Pages (Netscape and JavaScript, Database Connectivity, Client side JavaScript, Capturing User Input); Advantages of JavaScript (an Interpreted	9

Language, Embedded within HTML, Minimal Syntax -Easy to Learn, Quick Development, Designed for Simple, Small Programs, Performance, Procedural Capabilities, Designed for Programming User Events, Easy Debugging and Testing, Platform Independence/Architecture Neutral); Writing JavaScript into HTML.	
Unit-IV: Forms Used by a Web Site: The Form Object, The Form Object's Methods (The Text Element, The Password Element, The Button Element, The Submit (Button) Element, The Reset (Button) Element, The Checkbox Element, The Radio Element, The Text Area Element, The Select and Option Element, The Multi Choice Select Lists Element) Other Built-In Objects in JavaScript (The String Object, The Math Object, The Date Object), User Defined Objects (Creating a User Defined Object, Instances, Objects within Objects).	7

Text Books:

1. Internet for Everyone: Alexis Leon, 1st Edition, Leon Techworld, Publication, 2009.
2. Greenlaw R; Heppe, "Fundamentals of Internet and WWW", 2nd Edition, Tata McGraw-Hill, 2007.

Reference Books:

1. Raj Kamal, "Internet& Web Technologies", edition Tata McGraw-Hill Education.2009.
2. Chris Payne, "Asp in 21 Days", 2nd Edition, Sams Publishing, 2003 PDCA.
3. A Beginner's Guide to Html.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM204-19**
Course Name: **Database Management Systems Laboratory**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology & Multimedia**	Credits: **1.5**
Semester: **2nd**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course outcomes
CO1	Able to understand various queries and their execution
CO2	Populate and query a database using SQL DML/DDL commands.
CO3	Declare and enforce integrity constraints on a database
CO4	Programming PL/SQL including stored procedures, stored functions, cursors, packages
CO5	Able to design new database and modify existing ones for new applications and reason about the efficiency of the result

Task 1:	Used of CREATE, ALTER, RENAME, DROP, INSERT INTO, DELETE and UPDATE statement in the database tables (relations)
Task 2:	Use of simple select statement, select query on two relations, nesting of queries, aggregate functions, substring comparison & order by statement
Task 3:	Write a PL/SQL code to add two numbers and display the result. Read the numbers during run time.
Task 4:	Write a PL/SQL code to find sum of first 10 natural numbers using while and for loop.
Task 5:	Write a program to create a trigger which will convert the name of a student to upper case before inserting or updating the name column of student table.
Task 6:	Write a PL/SQL block to increase the salary of all doctors by 1000.
Task 7:	Write a PL/SQL code to multiply two numbers using procedure inside the block.
Task 8:	Design database for Student Management System for your college using E-R model and Normalization.
Task 9:	Design and Develop Conceptual Data Model (E-R Diagram) for Library Management System with all the necessary entities, attributes, constraints and relationships. Design and build Relational Data Model for application specifying all possible constraints.

Recommended Hardware & Software:
Intel Core i-3 / i-5 / i-7 processor with a speed of minimum 2 GHz, RAM 2 GB or higher, HDD 200 GB or higher, LED / LCD screen and Oracle/ Microsoft SQL Server/ MySQL/ Microsoft Access.

Text Books:

1. SQL, PL/SQL Programming Language of Oracle by 4th Revised Edition, Ivan Bayross.
2. Oracle PL/SQL Programming by 5th Edition, Steven Feuerstein and Bill Pribyl.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM205-19**

Course Name: **Programming in Java Laboratory**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology & Multimedia**	Credits: **1.5**
Semester: **2nd**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course Outcomes
CO1	Implement Core Java concepts.
CO2	Solve computational problems using various operators of Java.
CO3	Design solutions to complex by handling exceptions that may occur in the programs.
CO4	Solve complex and large problems using the concept of multithreading.
CO5	Implement interfaces and design packages.

Task 1:	Write a program to perform following operations on two numbers input by the user: Addition 2) subtraction 3) multiplication 4) division
Task 2:	Write a Java program to print result of the following operations. 1. -15 +58 * 45 2. (35+8) % 6 3. 24 + -5*3 / 7 4. 15 + 18 / 3 * 2 - 9 % 3
Task 3:	Write a Java program to compute area of: Circle, rectangle, triangle & square.
Task 4:	Write a Java program to convert temperature from Fahrenheit to Celsius degree.
Task 5:	Write a program through Java that reads a number in inches, converts it to meters.
Task 6:	Write a program to convert minutes into a number of years and days.
Task 7:	Write a Java program that prints current time in GMT.
Task 8:	Design a program in Java to solve quadratic equations using if, if else
Task 9:	Write a Java program to determine greatest number of three numbers.
Task 10:	Write a program to sum values of an Single Dimensional array.
Task 11:	Calculate the average value of array elements through Java Program.
Task 12:	Write a Java program to test if an array contains a specific value.
Task 13:	Write a Java program to remove a specific element from an array.
Task 14:	Design a program to copy an array by iterating the array.
Task 15:	Write a Java program to insert an element (on a specific position) into Multidimensional array.
Task 16:	Write a program to perform following operations on strings: Compare two strings, Count string length, Convert upper case to lower case & vice versa, Concatenate two strings & Print a substring.
Task 17:	Compute the average of three numbers through a Java Program.
Task 18:	Write a Program & design a method to count all vowels in a string.
Task 19:	Write a Java method to count all words in a string.
Task 20:	Write a method in Java program to count all words in a string.
Task 21:	To represent the concept of all types of inheritance supported by Java, design a program.
Task 22:	Write a program to implement *Multiple Inheritance* using interface.
Task 23:	Construct a program to design a package in Java.
Task 24:	To write and read a plain text file, write a Java program.

Task 25:	Write a Java program to append text to an existing file.
Task 26:	Design a program in Java to get a list of all file/directory names from the given.
Task 27:	Write a Java program to check if a file or directory has read and write permission.
Task 28:	Write a Java program to check if a file or directory has read and write permission.

Recommended Hardware & Software:
Intel Core i-3 / i-5 / i-7 processor with a speed of minimum 2 GHz, RAM 2 GB or higher, HDD 200 GB or higher, LED / LCD screen and NetBeans IDE / Eclipse IDE.

Text Books:
1. Programming with Java A Primer, 5th Edition, E. Balagurusamy, TMH.
2. Java Programming for Core and Advanced Learners, Sagayaraja, Denis, Karthik, Gajalakshmi, Universities Press.
3. Java Fundamentals, A Comprehensive Introduction, H. Schildt, D. Skrien, TMH.

Reference Books:
1. Java, The complete Reference, H. Schildt, 7th Edition, TMH.
2. Data Analytics using R, Seema Acharya, TMH.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM206-19**

Course Name: **Web Programming with PHP-I.**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **2nd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course Outcomes
CO1	Able to understand how server-side programming works on the web
CO2	PHP Basic syntax for variable types and calculations
CO3	Creating conditional structures & Storing data in arrays
CO4	Able to use PHP built-in functions and creating custom functions
CO5	Able to understand POST and GET in form submission
CO6	Able to receive and process form submission data

Detailed contents	Contact hours
Unit-I: Introduction to PHP: Basic Syntax, Integrating PHP with HTML, Defining variable and constant, PHP Data type. Operators & Expressions: Arithmetic, Assignment, Comparison, Logical Operators, Concatenation, Bitwise, Error Suppression, Increment & Decrement operators, Ternary operator. Working with Flow Control through Control Statement: If statement, If–else statement, If–else ladder statement, If–else statement, Switch statement. Working with Flow Control through Loop Statement: For, While, Do–while statement, For & For each statement, Nesting of Loops statement.	10
Unit-II: PHP Functions: Defining functions, Using built–in functions, Defining User functions, Returning a value from a function, Using variables in functions, Passing values to a function, Nesting of Functions, Anonymous Functions, Recursion, Passing parameter(Call By Value & Call By Reference) & return value, Trends of PHP Functions(Missing Parameter, Formal parameter declaration), Importing content of one page into another. Handling HTML form with PHP: Capturing Form Data, Dealing with Multi–value filed, Generating File uploaded form, Redirecting a form after submission.	8
Unit-III: Using Arrays in PHP: Anatomy of Arrays, Creating index based and Associative Arrays, Storing Data in Arrays, Accessing array Element, Looping with Index based Arrays, Converting Strings to & from Arrays, Splitting & Joining Arrays. Using Strings in PHP: Introduction to string, creating & working with String, Creating string, Viewing string, Modifying string, String Function & their working.	8
Unit-IV: The core Logics & Techniques: Introduction HTML Form Elements and Fields, Understanding Functions, Important PHP Functions, What are the Scope of variables, String and Math functions in PHP, Usage of Include and require statements, Accessing PHP, HTTP Data, Query Strings and Hyperlinks, Describing Pre–Defined Variables – Super Global Arrays.	6

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Text Books:

1. Programming PHP by Rasmus Lerdorf and Levin Tatroe, O'Reilly Publications.
2. Sams Teach Yourself PHP, MySQL and Apache All in One by Julie C. Meloni.

Reference Books:

1. PHP and MySQL Web Development: A Beginner's Guide by Martty Mathew.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM301-19**
Course Name: **Graphic Design**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **3rd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Analyze, synthesize, and utilize **design** processes and strategy from concept to delivery to creatively solve communication problems.
CO2	Create communication solutions that address audiences and contexts, by recognizing the human factors that determine **design** decisions.
CO3	Demonstrate critical thinking and problem-solving skills for project planning, design, and creation.

Detailed contents	**Contact hours**
Unit 1: Design Process and Practices: 1. Role of Design in Society a) Functions of Design b) Implications and Impact of Graphic Design c) Role of Graphic Designer d) Contemporary Graphic Design in India 2. Graphic Design Processes a) Methodology of Graphic Design	10
Unit 2: Principles and Elements of Design: 1. Sketching and Drawing a) Introduction to Drawing: an aid in visual representation b) Types of drawing • Drawing from memory and imagination • Drawing from observation • Drawing from Dimensional information c) Virtues of drawing 2. Colour a) Colours theories b) Colour wheel c) Colour Harmonies or Colour Schemes d) Colour Symbolism 3. Fundamentals Visual Composition a) Introduction b) Principles and Elements of Composition 4. Typography a) Classification b) Anatomy of Font c) Features of a Font d) Text Formatting e) Multilingual Typography 5. Principles of Layout Design	10

a) Theme and content b) Types of Layout c) Colours in Layout d) Copy and Type e) Design for Publication	
Unit 3: Media and Design: 1. Digital Imaging and Printing a) Types of Digital Images b) Digital image Editing c) Digital Printing 2.. Advertising Design b)) What is Media Planning 3. Campaign Design a) Kinds of Campaign b) Planning a Campaign c) Research & Data Collection d) Creative Aspects e) Developing a Concept f) Departments of an Advertising Agency 4. Integrated Methods of Advertising a) Kinds of Events b) Public Relations c) Media d) Visual Communication and its Impact 5. Graphic Design for Interactive Media a) Basic Concepts b) Types of Websites c) The Website Development and Management Process d) Graphic Design Approach e) Designing Navigation	13

Text Books:

4. The non designer's design book by Robin Willams.
5. Logo Modernism by Jens Muller, TASCHEN Publication.

Reference Books:

4. Steal like an Artist: 10 things nobody told you about being creative by Austin Kleon.
5. Grid Systems in Graphic Design by Josef Muller-Brockmann.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM302-19**
Course Name: **RDBMS with MS SQL Server**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **3rd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To learn SQL basics that applies to MS SQL as well as to any major Relational Database Management System (RDBMS).
CO2	To understand the basics of using SQL Server on the Web.
CO3	To create enhance problem solving, analytical and implementation abilities of students.
CO4	To familiarize students with how SQL works, what it is and how to practically apply it to everyday work.

Detailed contents	Contact hours
Unit 1: Essential Database Concepts Introduction to data, field, record, file, database, database management system. Structure of database system, Advantage and disadvantage, levels of database system, Relational model, hierarchical model, network model, comparison of these models, E–R diagram, different keys used in a relational system.	9
Unit 2: Introduction to SQL Server • What is SQL Server • Basic Features • Components and Tools • Starting and Stopping SQL Server Instances / Services SQL–DDL, DML, DCL, Join methods & sub query, Union Intersection, Minus, Tre Walking, Built in Functions, Views, Security amongst users, Sequences, Indexing.	8
Unit 3: PL/SQL Introduction to PL/SQL, Cursors– Implicit & Explicit, Procedures, Functions & Packages Database Trigers.	8
Unit 4: Backup and Restore • Taking database Backup • Restoring database using backup. • Attaching and Detaching of database.	8

Text Books:

1. Elmarsi Ramez and Navathe Shamkant B., "Fundamentals of Database Systems", Pearson Publication, 2007
2. Bayross Ivan, "SQL, PL/SQL The Programming Language of Oracle", BPB Publication.

Reference Books:

1. Korth H.F. & Silverschatz A., "Database Concepts", Tata McGraw Hill, 2010.
2. Date C.J , "Database Systems", Prentice Hall of India, 2004

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM303-19**
Course Name: **Web Applications**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **3rd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To provide students with conceptual and practical knowledge, and skills required to develop web applications.
CO2	To identify candidate tools and technologies for developing web applications.
CO3	To plan, develop, debug, and implement interactive client-side and server-side web applications.
CO4	To make students familiar with graphic design principles that relate to web design and learn how to implement theories into practice.

Detailed contents	Contact hours
Unit 1: Movie Editing Tools: • Familiarization of interface components. • Importing pictures. • Importing Audio and Video Files. • Splitting and Joining Movie Clips. • Adding Titles and publishing.	9
Unit 2: Customizing and Embedding Multimedia components in Web Pages: • Compatible Multimedia files formats for Web Pages. • Embedding Audio file. • Embedding Video file. • Embedding Flash file.	8
Unit 3: Web Scripting – Java Script: • Java Script review. • Functions – user defined. • String Object. • Math Object. • Array Object. • Events. • Case Studies.	8
Unit 4: Work Integrating Learning IT – WA - II: • Advanced Features of Web Design. • Code view, Add-ins / Snippets and Page Transitions. • Dynamic Web templates. • SEO - Search Engine Optimization. • Forms - Advanced. • Publishing web pages or websites-I.	8

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Text Books:

1. Building Web Apps with WordPress: WordPress as an Application Framework by Brian Messenlehner , Jason Coleman.
2. Fundamentals of Web Development by Randy Connolly and Ricardo Hoar, Pearson.
3. Web Application Security: A Beginners Guide by Sullivan, B.

Reference Books:

1. Web Programming Building Internet Applications by Chris Bates, Wiley India.
2. Learning Web App Development: Build Quickly with Proven JavaScript Techniques by Semmy Purewal.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM304-19**

Course Name: **Operating System**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **3rd**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To make students familiar with the fundamental concepts of operating systems
CO2	To provide students with sufficient understanding of operating system design.
CO3	To make student understand the basic components of a computer operating system, and the interactions among the various components.
CO4	To develop an understanding of policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.

Detailed contents	Contact hours
Unit 1: Introduction: Application programs and system programs; functions of an operating system; classification of operating systems-Multi-user, multiprogramming, multiprocessing, time sharing, multi-threaded. Subsystems – Top Layer, Middle Layer, Bottom Layer, Bootstrap, Protection and security. **Processes and Threads:** Program vs. Process; Process context, address space, identification, transition, state & management. Thread management-benefits, synchronization issues; applications of threads.	9
Unit 2: CPU Management: Objectives, Pre-emptive vs. Non-pre-emptive, context switching, scheduling schemes; multi-processor scheduling, thread scheduling. **Inter-process Communications:** Introduction, message passing model, shared memory model. Pipe, FIFO and Socket.	8
Unit 3: Memory Management: Introduction, address binding, relocation, loading, linking, memory sharing and protection; Paging and segmentation; Virtual memory: basic concepts of demand paging, performance, page replacement. Thrashing. **I/O Device Management:** I/O devices and controllers, device drivers; disk storage, scheduling and management.	8
Unit 4: File Management: Basic concepts, file operations, access methods, directory structures & management, remote file systems; file protection. **Protection & Security:** Need, environments: software, hardware, unauthorized use, denial of services, access control and authentication. Application Security, attacks, virus & anti-virus, firewall.	8

Text Books:

4. Operating System Principles by Abraham Silberschatz and Peter Baer Galvin.
5. Operating Systems by Sibsankar Haldar published by Pearson Education.

Reference Books:

1. Operating system by Milan Milenkovic, Second Edition
2. Operating system by Stalling, W., Sixth Edition, Published by Prentice Hall (India).

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM3055-19**

Course Name: **Graphic Design Laboratory**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology and Multimedia**	Credits: **1.5**
Semester: **3rd**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course outcomes
CO1	To familiarize with basic concepts used in graphic design.
CO2	To acquire knowledge on visual communication and the aesthetic expression of concepts and ideas using various graphic elements and tools.
CO3	The student will be able to Understand tools and technology, including their roles in the creation, reproduction, and distribution of visual messages.

Task 1:	(i) Functions of Design. (ii) Graphic Design Process.
Task 2:	(iii) Types of Drawing. (iv) Colour and its Theories. (v) Elements of Composition. (vi) Types of Layout and a Complete Design for Publication.
Task 3:	(i) Types of Digital Images, Editing and Printing. (ii) Advertisement Design Planning. (iii) Means of Campaign Designing. (iv) Types of Visual Communication and Design a Poster/Hoarding/Book-cover, etc. Layout of a Website Home - Page on a Chosen Field. (Institution/organization/sports/art/event etc.)

Recommended Hardware & Software:

Intel Core i7-i9, AMD Radeon Pro 5300M with 4-8GB of GDDR6 memory, Intel UHD Graphics 630, 16-inch 3072x1920 IPS display, 512GB-8TB SSD, 16-64GB RAM, Affinity Designer, Adobe Illustrator CC and CorelDRAW Graphics Suite

Test Books:

3. Affinity Photo Users Guide. Learn 10 Techniques (Kindle Edition) .
4. Adobe Illustrator: A Complete Course and Compendium of Features by Jason Hoppe.
5. CorelDRAW X6 – Official Guide by Gary David Bouton.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM306-19**
Course Name: **RDBMS with MS SQL Laboratory**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology and Multimedia**	Credits: **1.5**
Semester: **3rd**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course outcomes
CO1	To build database using Data Definition Language Statements Perform basic CRUD operations using Data Manipulation Language statements like Insert, Update and Delete Write and call Stored Procedures and Functions stored in database.
CO2	To Create and manage database triggers, cursors and Index.
CO3	To enable students to manage database solutions and various operations on databases

Task 1 :	Write a program in MS SQL to retrieve, update, insert and delete data.
Task 2 :	Write a program for sorting and filtering data.
Task 3 :	Write a program demonstrating advance filtering.
Task 4 :	Write a program to implement summarizing and grouping data.
Task 5 :	Write a program demonstrating the use of queries.
Task 6 :	Write a program demonstrating joining and managing views.
Task 7 :	Write a program implementing views.
Task 8 :	Write a program using stored procedures.
Task 9 :	Write a program demonstrating cursors.
Task 10 :	Write a program demonstrating the implantation of transaction.

Recommended Hardware & Software:
Intel Core i-3 / i-5 / i-7 processor with a speed of minimum 2 GHz, RAM 2 GB or higher, HDD 200 GB or higher, LED / LCD screen and Oracle/ Microsoft SQL Server/ MySQL/ Microsoft Access.

Text Books:

3. SQL, PL/SQL Programming Language of Oracle by 4th Revised Edition, Ivan Bayross.
4. Oracle PL/SQL Programming by 5th Edition, Steven Feuerstein and Bill Pribyl.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM401-19**
Course Name: **Computer Graphics**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **4th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To understand and interpret the mathematical foundation of the concepts of computer graphics.
CO2	To understand and identify a typical graphics pipeline and apply graphics programming techniques to design and create computer graphics.
CO3	To make students describe the fundamentals of animation, parametric curves and surfaces, and spotlighting.

Detailed Contents	Contact hours
Unit-I: Introduction to Active and Passive Graphics, Applications of Computer Graphics. Input devices: light pens, Graphic tablets, Joysticks, Trackball, Data Glove, Digitizers, Image scanner, Graphs and Types of Graphs. Video Display Devices-- Refresh Cathode Ray Tube, Raster Scan displays, Random Scan displays, Architecture of Raster and Random Scan Monitors, Color CRT-monitors and Color generating techniques (Shadow Mask, Beam Penetration) , Direct View Storage Tube, Flat-Panel Displays; 3-D Viewing Devices, Raster Scan Systems, Random Scan Systems, Graphics monitors and workstations, Color Models (RGB and CMY), Lookup Table.	9
Unit-II: Process and need of Scan Conversion, Scan conversion algorithms for Line, Circle and Ellipse, effect of scan conversion, Bresenham's algorithms for line and circle along with their derivations, Midpoint Circle Algorithm, Area filling techniques, flood fill techniques, character generation.	8
Unit-III: 2-Dimensional Graphics: Cartesian and need of Homogeneous co-ordinate system, Geometric transformations (Translation, Scaling, Rotation, Reflection, Shearing), Two-dimensional viewing transformation and clipping (line, polygon and text), Cohen Sutherland, Sutherland Hodgeman and Liang Barsky algorithm for clipping.	8
Unit-IV: Introduction to 3-dimensional Graphics: Geometric Transformations (Translation, Scaling, Rotation, Reflection, Shearing), Mathematics of Projections (parallel & perspective). Introduction to 3-D viewing transformations and clipping.	8

Text Books:

3. D. Hearn and M.P. Baker, "Computer Graphics", PHI New Delhi.
4. J.D. Foley, A.V. Dam, "Introduction to Computer Graphics", Addison Wesley Pb.

Reference Books:

1. R.A. Plastock and G. Kalley, "Computer Graphics", McGraw Hill.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM4022-19**
Course Name: **JavaScript - I**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **4th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To know variable naming rules and **JavaScript** data types.
CO2	To identify expressions and operators, Know flow control.
CO3	To demonstrate objects and arrays usage.
CO4	To define functions and methods, constructors and inheritance.
CO5	To demonstrate usage of pattern matching with regular expressions.

Detailed Contents	Contact hours
Unit-I: JAVASCRIPT BASICS: Introduction to JAVASCRIPT, Client-Side JavaScript, Comments in JavaScript, Structure of JavaScript, JavaScript Data types, JavaScript Variables, JavaScript Reserved Words, JavaScript Operators.	9
Unit-II: JavaScript control Structures: If Statement, If...else Statement, If...else if... Statement, Loop Control, While Loop, Do...while Loop, For Loop, For-in Loop, Switch-Case. **Functions:** Function Definition, Calling a Function, Function Parameters, The return Statement , Nested Functions, Function () Constructor, Function Literals.	8
Unit-III: Events: Introduction to an event, On click event type, On submit event type, On mouse over and on mouse out, Html 5 standard events. **Page Redirect:** What is Page Redirection?, JavaScript Page Refresh, Auto Refresh, How Page Re-direction Works?	8
Unit-IV: Dialog Box: Alert Dialog Box, Confirmation Dialog Box, Prompt Dialog Box. **Void Keyword Page Printing:** How to Print a Page?	8

Text Books:

3. The ABCs of JavaScript by Lee Purcell, Mary Jane Mara ,BPB Publications.
4. Mastering JavaScript and jscript by James Jaworski , BPB Publications.

Reference Books:

3. JavaScript and JQuery: Interactive Front-End Web Development, by Jon Duckett.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM403-19**
Course Name: **Computer Networks**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **4th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To make student familiar with the different Network Models.
CO2	To make student understand different network technologies and their application.
CO3	To keep update with different advanced network technologies that can be used to connect different networks.
CO4	To make students familiar with various hardware and software that can help run a smooth network

Detailed Contents	Contact hours
Unit-I: Data communications concepts: Digital and analog transmissions-Modem, parallel and serial transmission, synchronous and asynchronous communication. Modes of communication: Simplex, half duplex, full duplex. **Types of Networks:** LAN, MAN, WAN **Network Topologies:** Bus, Star, Ring, Mesh, Tree, Hybrid **Communication Channels: Wired transmissions:** Telephone lines, leased lines, switch line, coaxial cables-base band, broadband, optical fiber transmission. **Communication Switching Techniques**: Circuit Switching, Message Switching, Packet Switching.	9
Unit-II: Network Reference Models: OSI Reference Model, TCP/IP Reference Model, Comparison of OSI and TCP/IP Reference Models. Transmission impairments – Attenuation, Distortion, Noise. Multiplexing – Frequency division, Time division, Wavelength division. **Data Link Layer Design Issues**: Services provided to the Network Layer, Framing, Error Control (error detection and correction code), Flow Control, Data Link Layer in the Internet (SLIP, PPP).	8
Unit-III: MAC sub layer: CSMA/CD/CA, IEEE standards (IEEE802.3 Ethernet, Gigabit Ethernet, IEEE 802.4 Token Bus, IEEE 802.5 Token Ring)**.** **Network Layer:** Design Issues, Routing Algorithms: Optimality Principle, Shortest Path Routing, Congestion Control Policies, Leaky bucket and token bucket algorithm, Concept of Internetworking.	8
Unit-IV: Transport Layer: Design issues, Elements of transport protocols – Addressing, Connection establishment and release, Flow control and buffering, Introduction to TCP/UDP protocols. **Session, Presentation and Application Layers**: Session Layer – Design issues, remote procedure call. Presentation Layer – Design issues, Data compression techniques, Cryptography. Application Layer – Distributed application (client/server, peer to peer, cloud etc.), World Wide Web (WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP), HTTP as an application layer protocol.	8

Text Books:

3. Computer Networks by Tanenbaum, Andrew, PHI.
4. Data Communication and Networking, Behrouz A. Forouzan.
5. Computer Today, S.K. Basandra, First Edition, Galgotia.

Reference Books:

4. Data Communication System, Black, Ulysse, PHI.
5. Data and Computer Communications, Stalling, PHI.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM404-19**
Course Name: **Software Engineering**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology and Multimedia**	Credits: **3**
Semester: **4th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	To make students aware about the engineering approach to analysis, design and built the Software
CO2	To make students understand the phases and activities involved in the conventional software life cycle models
CO3	To analyze problems, and identify and define the computing requirements appropriate to its solution.
CO4	To apply design and development principles in the construction of software systems of varying complexity
CO5	To apply current techniques, skills, and tools necessary for computing practice.

Detailed Contents	Contact hours
Unit-I: The Nature of Software, Need of Software Engineering, Prescriptive Process Models, Specialized Process Models, The Unified Process.	9
Unit-II: Role of a system analyst, SRS, Properties of a good SRS document, functional and non-functional requirements, Decision tree and Decision table, Formal Requirements Specification, Software Cost Estimation.	8
Unit-III: Software design and its activities, Preliminary and detailed design activities, Characteristics of a good software design, Features of a design document, Cohesion and Coupling, Structured Analysis, Function Oriented Design, Object-Oriented Design.	8
Unit-IV: Testing Fundamentals, Unit Testing, Integration Testing, Validation Testing, System Testing, Maintenance and Reengineering, Measures, Metrics, and Indicators, Software Measurement, Metrics for Requirements Model, Metrics for Design Model, Metrics for Testing, Metrics for Maintenance.	8

Text Books:

1. Software Engineering–A Practitioner's Approach, Roger S.Pressman, McGrawHill.
2. An Integrated Approach to Software Engineering, Pankaj Jalota, Narosa Pb.House.

Reference Books:

1. Software Engineering, Ian Sommerville, Ninth Edition, Addison-Wesley, 2011

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM4055-19**
Course Name: **Computer Graphics Laboratory**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology and Multimedia**	Credits: **1.5**
Semester: **4th**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course Outcomes
CO1	To implement various algorithms to scan, convert the basic geometrical primitives, transformations, area fillings and clippings
CO2	To describe the importance of viewing and projections.
CO3	To define the fundamentals of animation, virtual reality and latest technologies.
CO4	To make students capable of using OpenGL to create interactive computer graphics and make them understand a typical graphics pipeline.

Task 1:	Write a program to Implement the Algorithms using C/C++.
Task 2:	Write a program to demonstrate the use of basic primitive functions to show some animations.
Task 3:	Write a program to demonstrate the use of basic functions of graphic available in C++ like circle, put pixel, rectangle, arc, ellipse, flood fill, set color etc.
Task 4:	Line Drawing Algorithm like Direct method, DDA and Bresenham's line algorithms.
Task 5:	Draw a circle using polynomial, trigonometry method and Bresenham's Algorithm.
Task 6:	Draw an ellipse using Bresenham's Algorithm.
Task 7:	To move a character along circle.
Task 8:	To show 2D Clipping and Windowing.

Recommended Hardware & Software:
Intel Core i7-i9, AMD Radeon Pro 5300M with 4-8GB of GDDR6 memory, Intel UHD Graphics 630, 16-inch 3072x1920 IPS display, 512GB-8TB SSD, 16-64GB RAM, C++, Adobe Photoshop (Raster Graphics) and Adobe Illustrator (Vector Graphics).

Text Books:

1. Schaum Outline Computer Graphics by Xiang, McGraw Hill.
2. Computer Graphics using open GL by Donald D hearn, Pearson Education.

Reference Books:

3. Computer Graphics Principles And Practice by John F Hughes, Pearson India.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM406**6-**19**
Course Name: **JavaScript – I Laboratory.**

Program: **B.Voc**	L: 0 T: 0 P: **3**
Branch: **Web Technology and Multimedia**	Credits: **1.5**
Semester: **4th**	
Theory/Laboratory : **Laboratory**	Percentage of numerical/design problems:-
Internal max. marks: **30**	Duration of end semester exam (ESE):-
External max. marks: **20**	Status (Elective/Core): **Core**
Total marks: **50**	

Course Outcomes:

CO#	Course Outcomes
CO1	To be able to create effective scripts using **JavaScript** and jQuery to enhance the end user experience.
CO2	To demonstrate knowledge of introductory programming concepts.
CO3	To test, debug and deploy web pages containing JavaScript and jQuery.

Task 1:	Create a simple multiplication table asking the user the number of rows and columns he wants.
Task 2:	Create a sample form program that collects the first name, last name, email, user id, password and confirms password from the user.
Task 3:	POPUP Message using Event.
Task 4:	Programs demonstrating the use of JavaScript variables, conditional statements, loops and functions.
Task 5:	Write a program using the for loop and while to displays all the even numbers below 50.
Task 6:	Write a simple function to display an alert message and try invoking this function with an event such as a click on button. The syntax for creating a button and invoking a function is: <button onClick=”function_name(params)”>Click </buttom>

Recommended Hardware & Software:
Intel Core i-3 / i-5 / i-7 processor with a speed of minimum 2 GHz, RAM 4 GB or higher, HDD 200 GB or higher, LED / LCD screen and text, IDE, Node.

Text Books:

3. JavaScript and JQuery: Interactive Front-End Web Development, by Jon Duckett.
4. JavaScript: The Definitive Guide, by David Flanagan.

Reference Books:

1. Learn JavaScript VISUALLY, by Ivelin Demirov.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: BVWM501-19
Course Name: Multimedia

Program: B. Voc.	**L**: 3 **T**: 0 **P**: 0
Branch: Web Technology & Multimedia	**Credits:** 3
Semester: 5th	**Contact hours:** 33
Theory/Practical: Theory	**Elective status:** Core
Internal max. marks: 40	**External max. marks:** 60
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Explain various text representations.
CO2	Discuss the different formats for representing sound, video and images.
CO3	Explain various animation types.

Detailed contents	Contact hours
Unit 1: Introduction to Multimedia, Needs and Areas of use, Identifying Multimedia Elements - Text, Images, Sound, Animation and Video, Making Simple Multimedia with any PowerPoint tool. 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. **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.	9
Unit 2: 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.	8

Unit 3: **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 (open source).	8
Unit 4: **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. Authoring tools for Multimedia – Introduction to various types of multimedia authoring tools, CD/DVD based and web based tools, features and limitations, creating multimedia package using all components.	8

TextBooks:

1. D. Hearn and M.P. Baker, “Computer Graphics”, PHI/Pearson Education.
2. Zhigand Xiang, Roy Plastock, “Computer Graphics”, Tata Mc-Graw Hill.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: BVWM502-19
Course Name: Android Application Development

Program: B. Voc.	**L**: 3 **T**: 0 **P**: 0
Branch: Web Technology & Multimedia	**Credits:** 3
Semester: 5th	**Contact hours:** 33
Theory/Practical: Theory	**Elective status:** Core
Internal max. marks: 40	**External max. marks:** 60
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Install tools required for android application development
CO2	Identify the role of various components used in GUI of android apps
CO3	Explain the implementation of various APIs from google for android application development

Detailed contents	Contact hours
Unit 1: Android Introduction, Smartphones future, Preparing the Environment, Installing the SDK, Creating Android Emulator, Installing and Using Eclipse, Installing Android Development Tools, Different Android versions. 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 **Designing User Interface Using Views** – Basic Views- TextView, Button, ImageButton, CheckBox,ToggleButton, RadioButton etc., ProgressBar View and AutoCompleteTextView, TimePicker and DatePicker View, ListView, IMageView, ImageSwitcher and GridView, DigitalClock & AnalogClock Views Notification and Toast, Parameters , on Intents, Pending intents, Status bar notifications Toast notifications	9

Unit 2: 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	8
Unit 3: 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	8
Unit 4: **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.	8

TextBooks:

1. Rick Rogers, John Lombardo, Meike Blake, “Android application development”, Ist Edition, O’Reilly, 2010
2. Lauren Darcey and Shane Conder,“Android Wireless Application Development”, 2nd ed. Pearson Education, 2011
3. Wei-Meng Lee , Beginning Android 4 development ,2012 by John Wiley & Sons

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I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: BVWM503-19
Course Name: E-Commerce

Program: B. Voc.	**L**: 3 **T**: 0 **P**: 0
Branch: Web Technology & Multimedia	**Credits:** 3
Semester: 5th	**Contact hours:** 33
Theory/Practical: Theory	**Elective status:** Core
Internal max. marks: 40	**External max. marks:** 60
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Discuss the emergence of E-Commerce
CO2	Explain the payment mode over internet
CO3	List various applications of E-Commerce.

Detailed contents	Contact hours
Unit 1: Introduction E-Business: Origin and Need of E-Commerce, Factors affecting E -Commerce, Business dimension and technological dimension of E-Commerce, E-Commerce framework, Electronic Commerce Models, Value Chains in Electronic Commerce.	9
Unit 2: Network Infrastructure for E-Commerce, Global Information Distribution Network, Broad band Telecommunication (ATM, ISDN), Wi-Fi, Security issues over Wi-Fi, Mobile Commerce, Mobile Computing Application, Wireless Application Protocols, WAP Technology.	8
Unit 3: Overview of Electronics payments, The SET Protocol, Payment Gateway, Certificates Digital Token, Smart Cards, Credit Cards, Magnetic Strip Cards, E-Checks, Credit/ Debit card EPS, Mobile Payments, Online Banking, Home banking, Emerging financial Instruments, EDI Application in Business, E-commerce laws, Forms of Agreement, Government Policies and Agenda, E-Commerce Strategy in Business Models and Internet.	8

Unit 4: Applications in E-commerce: Retail and Wholesale, Online Marketing, Finance, Manufacturing, Online Booking, Online Publishing, Digital Advertising, Auctions.	8

TextBooks:

1. Ravi Kalakota and Andrew B Whinston, “Frontiers of Electronic Commerce”, Pearson Education,2013. 2. Greenstein and Feinman, “E-Commerce”, TMH,2001.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: BVWM504-19

Course Name: Computer Network Security

Program: B. Voc.	**L**: 3 **T**: 0 **P**: 0
Branch: Web Technology & Multimedia	**Credits:** 3
Semester: 5th	**Contact hours:** 33
Theory/Practical: Theory	**Elective status:** Core
Internal max. marks: 40	**External max. marks:** 60
Total marks: 100	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Discuss various issues in network security.
CO2	Explain the impact of viruses on computer systems.
C03	Explain various security measures to protect networks.

Detailed contents	Contact hours
Unit 1: Basic web security model- Browser content, Document object model (DOM). Web Application Security- SQL injection, Cross-site request forgery, Cross-site scripting, Attacks and Defenses, Generating and storing session tokens, Authenticating users, The SSL protocol.	9
Unit 2: Network Protocols and Vulnerabilities- Overview of basic networking infrastructure and network protocols, IP, TCP, Routing protocols, DNS. Network Defenses- Network defense tools, Secure protocols, Firewalls, VPNs, Tor, I2P, Intrusion Detection and filters, Host-Based IDS vs Network-Based IDS, Dealing with unwanted traffic: Denial of service attacks, Malicious Software.	8
Unit 3: Software Security- Malicious Web, Internet Security Issues, Types of Internet Security Issues, Computer viruses, Spyware, Key-Loggers, Secure Coding, Electronic and Information Warfare. Mobile platform security models.	8
Unit 4: Risk Management, Security Risk Assessment: Introduction, Information Security Risk Assessment: Case Studies, Risk Assessment in Practice.	8

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

TextBooks:

1. William Stallings, Network Security Essentials: Applications and Standards, Prentice Hall, 4th edition, 2010.

2. Michael T. Goodrich and Roberto Tamassia, Introduction to Computer Security, Addison Wesley, 2011.

3. William Stallings, Network Security Essentials: Applications and Standards, Prentice Hall, 4th edition, 2010.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: BVWM505-19
Course Name: Multimedia Lab

Program: B. Voc.	**L**: 0 **T**: 0 **P**: 3
Branch: Web Technology & Multimedia	**Credits:** 1.5
Semester: 5th	**Contact hours:** 3 hours per week
Theory/Practical: Practical	**Elective status:** Core
Internal max. marks: 30	**External max. marks:** 20
Total marks: 50	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Make presentations using PowerPoint
CO2	Edit sounds using open source sound editors.
CO3	Create video and animations using opensource

Instructions:

1.	Crate a simple Power Point Presentation.
2.	Add Images to Power Point Presentation.
3.	Add videos to Power Point Presentation.
4.	Add Narration and automatic timer to slide shows
5.	Add animations to Power Point presentations.
6.	Recording and editing sound using sound editors (open source).
7.	Create images using open source tools and apply various effects, Using Layers, Channels and Masks in images.
8.	Video Editing and Movie Making using open source tools.
9.	Creating animations using any open source tool.

TextBooks:

1. D. Hearn and M.P. Baker, “Computer Graphics”, PHI/Pearson Education.
2. Zhigand Xiang, Roy Plastock, “Computer Graphics”, Tata Mc-Graw Hill.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: BVWM506-19
Course Name: Android Application Development Laboratory

Program: B. Voc.	**L**: 0 **T**: 0 **P**: 3
Branch: Web Technology & Multimedia	**Credits:** 1.5
Semester: 5th	**Contact hours:** 3 hours per week
Theory/Practical: Practical	**Elective status:** Core
Internal max. marks: 30	**External max. marks:** 20
Total marks: 50	

Prerequisite: -NA-

Co requisite: -NA-

Additional material required in ESE: -NA-

Course Outcomes: After studying this course, students will be able to:

CO#	Course outcomes
CO1	Install tools needed to create mobile applications.
CO2	Write simple programs.
CO3	Create applications for real life mobile applications.

Instructions:

1.	Install android development tool (any)
2.	Write a simple Application which will print "Hello World!"
3.	Write a simple Application that uses UI Layout and Control.
4.	Write a simple Application that makes use of Style & Themes.
5.	Write a simple Application that uses Event Handling.
6.	Write a simple Application that uses Alarm, Notification.
7.	Make a location based app.
8.	Write a program that shows the use animation.
9.	Write a program that shows the use of Image Effects.
10.	Write a program that shows the use Image Switcher.
11.	Write a program to implement database connectivity.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM601-19**
Course Name: **Audio Editing**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **6th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Understand various audio formats.
CO2	Perform various editing on audio files.
CO3	Create synthesis of narration, dialog, music and sound effects in audio editing assignments.
CO4	Embed various effects in audio file.

Detailed contents	Contact hours
Unit 1: Manipulating audio: Auto trim/crop, mute, DC offset, resample, reverse, smooth/enhance, Fade in/out, insert silence, bit depth converter etc, understanding various digital audio formats like .WAV, .AIFF, .MP3, swf, WMA etc, understand audio plug-in, importing and exporting into multiple audio file formats like MP3, real audio, QuickTime formats, etc. Event tool: move, split, slip and trim multiple events, create fades, apply ASR (Attack/Sustain/Release).	9
Unit 2: Understanding script editor window, Spectrum analysis tools, scrub tool etc, statistics tool (Max, RMS, DC offset, zero crossings), sampler tool etc, Audio editing: workflow, real time editing, event based editing, waveform volume and pan envelopes, Edit, record, encode and master digital audio, editing audio by drag and drop options, cross fading audio tracks, balancing sound levels, creating smooth fades etc.	8
Unit 3: Understanding Multichannel audio recording, synchronize audio and video. Understanding regions and play lists, editing of fields, name markers, loops, and regions, Timing basis: absolute frames, measures and beats, Time and frames	8
Unit 4: Audio effects like: Equalizer, Volume, chorus, distortion, Delay/echo, pitch, bend/shift, reverb, vibrato, normalize etc Insert track markers, adding multiple tracks, adjusting track time, musical instrument file processing.	8

Text Books:

1. Premiere Pro for Windows – Antony Bolante – Techmedia
2. 9th Grade Textbook Reading Level. ISBN: 978-0415722070

Reference Books:

1. Rose, Jay. Producing Great Audio for Film and Video: Expert Tips from Preproduction to Final Mix. 4th ed. Florence: Focal, 2014. Print.
2. Understanding Audio, Thompson, D., USA:Berkley Press, 2005
3. Audio in Media,10th ed Alten, S USA: Thomson Wadsworth, 2014
4. Recording on a Budget: How to Make Great Audio Recordings Without Breaking the Bank, Edstrom, Brent New York: Oxford University Press 2011
5. The Recording Engineer's Handbook Owsinski, Bobby Cengage Learning PTR 2013

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM602-19**
Course Name: **Video Editing**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **6th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Understand various editing features of video files.
CO2	Apply various editing to visual content.
CO3	Add special effects to video content.

Detailed contents	Contact hours
Unit 1: Concept of non-linear editing, The basics of editing: Overview, Importing and Exporting: various audio, video and graphics in various formats, Edit, manipulate and arrange these elements in visual timeline, understand all Tools of toolbox for editing clips. Titling and superimposing. (Use any tool)	9
Unit 2: Panels: Tools panel, Project, Monitors: Source and program, Timeline, Audio meters	8
Unit 3: Misc. Tasks and functions: Titles, Transitions, speed and duration, Effects, Key frames, Types of edit, Opacity, trimming,	8
Unit 4: Adding Special effects like: Star trek transporter effect, Blur part of an image, Ghost effect, Highlight part of an image etc.	8

Text Books:

1. Ken Dancyger , Technique of film and video editing. Theory & Practice.
2. S.E Browne Video editing: A post production
3. Allen and Gomery Film history: Theory and practice.

Reference Books:

1. J.D.Andrews The major film theories.
2. Reisz and miller The techniques of film editing.
3. Roy, Thompson Grammer of edit
4. A.Rajadhyaksha Encylopaedia of indian cinema

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM603-19**
Course Name: **Cloud Technology**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **6th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

After undergoing this course, the students will be able to

CO#	Course outcomes
CO1	Understand the core concepts of the cloud computing paradigm
CO2	Understanding importance of virtualization along with their technologies
CO3	Analyze various cloud computing service and deployment models and apply them to solve problems on the cloud
CO4	Implementation of various security strategies for different cloud platform

Detailed contents	Contact hours
Unit 1: Introduction: Definition of cloud, characteristics of cloud, Comparing grid with utility computing, cloud computing and other computing systems.	9
Unit 2: Cloud computing concepts: Introduction to virtualization techniques, Characteristics of virtualization, Pros and Cons of virtualization Technology, Hypervisors, Types of hypervisors, Multitenancy, Elasticity and scalability.	8
Unit 3: Cloud service models: Cloud service models, Infrastructure as a service (IaaS), Platform as a service (PaaS) , Software as a service (SaaS), Comparison of cloud service delivery models, Cloud deployment models: Public clouds, Private clouds, Hybrid clouds, Community clouds, Migration paths for cloud, Selection criteria for cloud deployment.	8
Unit 4: Security in cloud computing: Understanding security risks, Principal security dangers to cloud computing, Internal security breaches, User account and service hijacking, measures to reduce cloud security breaches	8

Text Books:

1. Raj Kumar Buyya, James Broberg, Andrezei M.Goscinski, “Cloud Computing: Principles and Paradigms”,Wiley 2011
2. Anthony T. Velte, Toby J. Velte and Robert Elsenpeter, “Cloud Computing: A practical Approach”, McGraw Hill, 2010.
3. Barrie Sosinsky, “Cloud Computing Bible”, Wiley, 2011.
4. Judith Hurwitz, Robin Bllor, Marcia Kaufman, Fern Halper, “Cloud Computing for dummies”, 2009.

Reference Books:

1. Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi, "Mastering Cloud Computing" TMH 2013.
2. George Reese "Cloud Application Architectures", First Edition, O"Reilly Media 2009.
3. Dr. Kumar Saurabh "Cloud Computing" 2nd Edition, Wiley India 2012.

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM604-19**
Course Name: **Programming using Python**

Program: **B. Voc.**	L: **3** T: 0 P: 0
Branch: **Web Technology & Multimedia**	Credits: **3**
Semester: **6th**	Contact hours: **33**
Theory/Laboratory: **Theory**	Status (Elective/Core): **Core**
Internal max. marks: **40**	External max. marks: **60**
Total marks: **100**	

Course Outcomes:

CO#	Course outcomes
CO1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
CO2	Demonstrate proficiency in handling Strings and File Systems.
CO3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
CO4	Interpret the concepts of Object-Oriented Programming as used in Python.
CO5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

Detailed contents	Contact hours
Unit 1: Introduction to Python language, Setting up the Python development environment, Basic syntax, interactive shell, editing, saving, and running a script, Concept of data types, Random number, Real numbers, immutable variables, Python console Input / Output using input and print statements. Arithmetic operators and expressions, Conditions, Comparison operators, Logical Operators, Is and In operators, Control statements: If , If- else ,Nested if-else, Break and Continue, Loops: For ,While ,Nested loops	9
Unit 2: Function and Methods, Defining a function ,Calling a function ,Types of functions ,Function Arguments , Global and local variables Modules: Importing modules: Math module ,Random module , Tuples ,Arrays and Matrices, Sets ,Lists, Accessing list ,Operations ,Working with lists , Dictionaries: Introduction ,Accessing values in dictionaries , Data Frames, Date and Time Value Manipulation , String Handling, Unicode strings, Strings Manipulation:-compare strings, concatenation of strings, Slicing strings in python, converting strings to numbers and vice versa.	8
Unit 3: Classes and Object-oriented Programming: Abstract Data Types and Classes, Inheritance, Encapsulation and information hiding. Exceptions and Assertions: Errors and Formatting, Handling exceptions, text files: reading/writing text and numbers from/to a file; creating and reading a formatted file (csv or tab-separated).	8
Unit 4: Using Python for internet services: Transferring files with FTP, Sending Email, Reading Email. Web Client Programming with Python: Using urllib, Parsing HTML, Screen Scraper, Web Crawler. Introduction to Django Framework.	8

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Text Books:

1. **Core Python Programming**, Wesley J. Chun, Second Edition, Pearson.

Reference Books:

1. Learning Python by Mark Lutz, 5th Edition
2. Python Cookbook, by David Beazley , 3rd Edition

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM605-19**
Course Name: **Audio and Video Editing Lab**

Program: **B. Voc.**	L: **3** T: 0 P: 3
Branch: **Web Technology & Multimedia**	Credits: **1.5**
Semester: **6th**	Contact hours: **33**
Theory/Laboratory: **Practical**	Status (Elective/Core): **Core**
Internal max. marks: **30**	External max. marks: **20**
Total marks: **50**	

Task:

Using Editing Software – editing basics and implementation of various techniques used in nonlinear editing. Mastering final edit line – audio levels, colour correction, audio mixing, mixed and un-mixed versions, importing and applying compatible graphics files. Understanding compression and its affects along with various methods. Adding various effects and editing on visual content.

Lab Outcomes:

1. The will be able to cater to the needs of growing Animation and Multimedia Industry.
2. Students are enabled to apply knowledge, techniques, skills of modern multimedia tools in different digital media disciplines like text, images, audio, video and animation (2D & 3D).

I.K. Gujral Punjab Technical University Jalandhar
B. Voc. (Web Technology & Multimedia), Batch-2019

Course Code: **BVWM606-19**
Course Name: **Programming in Python Lab**

Program: **B. Voc.**	L: **3** T: 0 P: 3
Branch: **Web Technology & Multimedia**	Credits: **1.5**
Semester: **6th**	Contact hours: **33**
Theory/Laboratory: **Practical**	Status (Elective/Core): **Core**
Internal max. marks: **30**	External max. marks: **20**
Total marks: **50**	

Detailed List of Tasks:

1. Use of Data Types, Integer Arithmetic, Variables and Assignment
2. Use of Print Function, Branching programs, Strings and Input, Iteration
3. Implementation of Functions and Recursion
4. Application of Global variables
5. Implementation of Tuples, List and Dictionaries.
6. Implementation of Modules, Files and Dictionaries
7. Implementation of Array and Matrices
8. Implementation of Exception Handling.
9. Applications of Classes and Object-oriented Programming
10. File I/O, Reading CSV and Excel Files, Reading Text Files, Writing and Saving to Files.
11. Transferring of files using FTP.
12. Working with Email.
13. Parsing of HTML in Python.

LAB OUTCOMES: At the end of the course, the students are able to:

1. Write, Test and Debug Python Programs
2. Implement Conditionals and Loops for Python Programs
3. Use functions and represent Compound data using Lists, Tuples and Dictionaries
4. Read and write data from & to files in Python and develop Application using Pygame