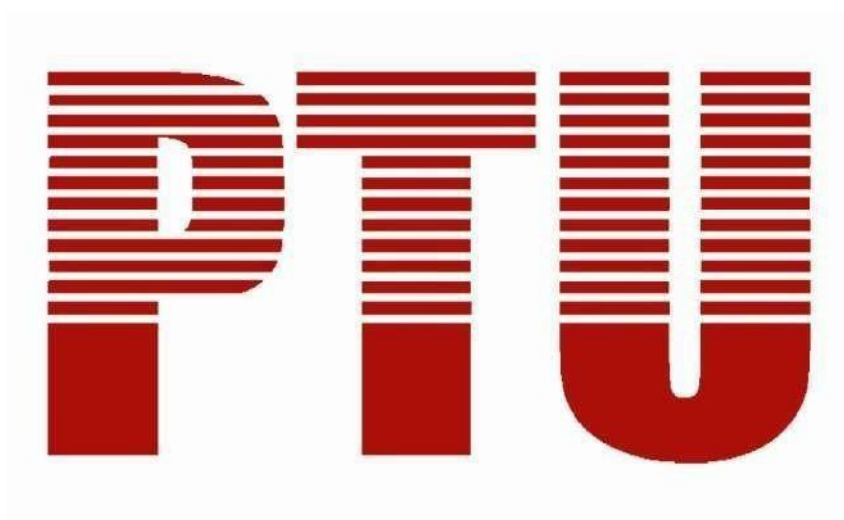


Scheme & Syllabus of
Bachelor of Vocational Studies
(B.Voc.)
Web Technology & Multimedia
Batch 2025



By Department of Academics
IKG Punjab Technical University

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

Semester 1st

CourseCode	CourseTitle	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 FundamentalsinC++	3	0	40	60	100	3
BVWM103-19	CommunicativeEnglish	3	0	40	60	100	3
BVWM104-19	BasicITSkills	3	0	40	60	100	3
BVWM105-19	Introductionto Internet&MS-Office Laboratory	0	3	30	20	50	1.5
BVWM106-19	Programming FundamentalsinC++ Laboratory	0	3	30	20	50	1.5
BVDW204-21	Mathematics	3	0	40	60	100	3
On-JobTraining/QualificationPack*							
BVWM107-19	TestEngineer (SSC/Q1301)	OnJobTraining(OJT)in CollaborationwithMoU Industry			200	200	15
Total		12	6	220	480	700	30

*Thequalificationpacksmayvaryfrominstituteto institute.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

Semester2nd

CourseCode	CourseTitle	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
EMC-101-25	Entrepreneurship Setup and Launch**	0	4	30	20	50	2
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.**

****The department of Higher Education and Languages, Government of Punjab endeavor to AI-powered entrepreneurship learning platform on the said course. The Institute /Campus shall appoint an assistant professor as faculty coordinator.**

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

Semester3rd

CourseCode	CourseTitle	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM301-19	GraphicDesign	3	0	40	60	100	3
BVWM302-19	RDBMSwithMS SQL Server	3	0	40	60	100	3
BVWM303-19	WebApplications	3	0	40	60	100	3
BVWM304-19	OperatingSystem	3	0	40	60	100	3
BVWM305-19	GraphicDesignLab	0	3	30	20	50	1.5
BVWM306-19	RDBMSwithMS SQL Laboratory	0	3	30	20	50	1.5
On-JobTraining/QualificationPack*							
BVWM107-19	MediaDeveloper (SSC/Q0504)	OnJobTraining(OJT)in CollaborationwithMoU Industry (NASSCOM)			200	200	15
Total		12	6	220	480	700	30

*Thequalificationpacksmayvaryfrominstituteto institute.

Semester4th

CourseCode	CourseTitle	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM401-19	ComputerGraphics	3	0	40	60	100	3
BVWM402-19	JavaScript–I	3	0	40	60	100	3
BVWM403-19	ComputerNetworks	3	0	40	60	100	3
BVWM204-19	SoftwareEngineering	3	0	40	60	100	3
BVWM405-19	ComputerGraphics Laboratory	0	3	30	20	50	1.5
BVWM406-19	JavaScript–I Laboratory	0	3	30	20	50	1.5
On-JobTraining/QualificationPack*							
BVWM207-19	SecurityAnalyst (SSC/Q0901)	OnJobTraining(OJT)in Collaboration with MoU Industry (NASSCOM)			200	200	15
Total		12	6	220	480	700	30

*Thequalificationpacksmayvaryfrominstituteto institute.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology&Multimedia),Batch-2025

Semester5th

CourseCode	CourseTitle	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM501-19	Multimedia	3	0	40	60	100	3
BVWM502-19	AndroidApplication Development	3	0	40	60	100	3
BVWM503-19	E-Commerce	3	0	40	60	100	3
BVWM504-19	ComputerNetworkSecurity	3	0	40	60	100	3
BVWM505-19	MultimediaLab	0	3	30	20	50	1.5
BVWM506-19	AndroidApplication Development Lab	0	3	30	20	50	1.5
On-JobTraining/QualificationPack*							
BVWM507-19	SoftwareEngineer (SSC/Q4601)	OnJobTraining(OJT) in Collaboration with MoU industry		200	200	200	15
Total		12	6	220	480	700	30

*Thequalificationpacksmayvaryfrominstituteto institute.

Semester6th

CourseCode	CourseTitle	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVWM601-19	AudioEditing	3	0	40	60	100	3
BVWM602-19	VideoEditing	3	0	40	60	100	3
BVWM603-19	CloudTechnology	3	0	40	60	100	3
BVWM604-19	ProgrammingusingPython	3	0	40	60	100	3
BVWM605-19	AudioandVideoEditing Lab	0	3	30	20	50	1.5
BVWM606-19	ProgrammingusingPython Lab	0	3	30	20	50	1.5
On-JobTraining/QualificationPack*							
BVWM607-19				200	200	200	15
Total		12	6	220	480	700	30

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology&Multimedia),Batch-2025

CourseCode: **BVWM102-19**

CourseName:**IntroductiontoInternet&MS-Office**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 1st	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	To develop an understanding & practical exposure to MS Office used as a 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 TCP/IP. 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 Charts, 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.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM1032-19**

CourseName:**ProgrammingFundamentalsinC++**

Program: B. Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 1st	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	To learn programming from real world examples.
CO2	To understand Object oriented approach for finding Solution to various problems with the help of C++ language.
CO3	To create computer based solution 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.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM1043-19**

CourseName: **CommunicativeEnglish**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 1st	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 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 communications 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/Punjab 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.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM104-19**

CourseName: **BasicITSkill**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 1st	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	Understandingtheconcept ofinputand outputdevicesof Computers.
CO2	Learn the functional units and classify types of computers, how they process informationandhowindividualcomputersinteractwithothercomputingsystems and devices.
CO3	Learnbasicwordprocessing,SpreadsheetandPresentationGraphicsSoftware skills.
CO4	StudytousetheInternetsafely,legally,andresponsibly.
CO5	TodevelopanunderstandingandpracticalexposuretodifferentITtoolsusedasan aid in business and ecommerce.

Detailedcontents	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: TypesofLanguages:Machine,assemblyandHighlevelLanguage;Operating system as user interface, utility programs. Wordprocessing:Editingfeatures,formattingfeatures,saving,printing,table handling,pagesettings,spell-checking,macros,mail-merge,equationeditors.	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: TheImpactofComputingandthe InternetonSociety. 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

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B.Voc.(WebTechnology& Multimedia),Batch-2025

TextBooks:

1. IntroductiontoInformationTechnology,ITLEducationSolutionslimited,Pearson Education.
2. ComputerFundamentals,A.Goel,2010,PearsonEducation.
3. FundamentalsofComputers, P.K.Sinha& P.Sinha, 2007,BPBPublishers.

ReferenceBooks:

1. IntroductiontoComputersby PeterNorton.
2. ComputersTodaybyD. H.Sanders,McGrawHill.
3. ComputersbyLarrylong&Nancylong,12th edition,PrenticeHall.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM105-19**

CourseName:**IntroductiontoInternet&MS-Office Laboratory**

Program: B.Voc	L:0 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits:1.5
Semester: 1st	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 50	

Course Outcomes:

CO#	Course outcomes
CO1	FamiliarizingwithOpenOffice(Wordprocessing,Spreadsheetsand Presentation).
CO2	Toacquireknowledgeoneditor,spreadsheetand presentationsoftware.
CO3	Thestudentswillbeabletoperformdocumentationandaccounting operations.
CO4	Studentscanlearnhowto performpresentationskills.

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 insert 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 slides 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 2GHz, RAM 2GB 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, IT Education Solutions limited, Pearson Education.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM1066-19**

CourseName: **ProgrammingFundamentalsinC++Laboratory**

Program: B.Voc	L: 0 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits: 1.5
Semester: 1st	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 50	

Course Outcomes:

CO#	Course outcomes
CO1	Tolearnprogrammingfromrealworldexamples.
CO2	TounderstandObjectorientedapproachforfindingSolutionstovariousproblems with the help of C++ language.
CO3	Tocreatecomputerbasedsolutionstovariousreal-worldproblemsusing C++.
CO4	Tolearnvariousconceptsofobjectoriented approachtowardsproblemsolving.

Task 1 :	Writeaprogramtoentermarkof6differentsubjectsandfindoutthetotalmark (Using cin and cout statement).
Task 2 :	Writeafunctionusingreferencevariables asargumentsto swapthevalues of pair of integers.
Task 3 :	Writeafunctiontofindlargest ofthreenumbers.
Task 4 :	Writeaprogram tofind thefactorialof a number.
Task 5 :	Defineaclasstorepresentabankaccountwhichincludeshefollowingmembers as Data members: a) Nameofthedepositor b) Account Number c) Withdrawalamount d) Balanceamountin theaccountMemberFunctions: e) Toassigninitialvalues:i.Todepositanamount,ii.Towithdrawanamount after checking the balance & iii. To display name and balance.
Task 6 :	Writeaprogram forsingle inheritance.
Task 7 :	Writeaprogram foruse of constructor and destructors.
Task 8 :	Writeaprogram forMultiple inheritances.
Task 9 :	Writeaprogram forMultilevel inheritance
Task 10 :	Writeaprogramforfilehandling.

RecommendedHardware&Software:

IntelCorei-3/i-5/i-7processorwithaspeedofminimum2GHz,RAM2GBorhigher, HDD 200 GB or higher, LED / LCD screen and Borland C++ / Turbo C++

TextBooks:

1. TheC++ProgrammingLanguage,BjarnaStroustrup,ThirdEdition,AddisonWesley Publishing Company.
2. ObjectOrientedProgrammingUsingC++,Salaria,R.S,FourthEdition,KhannaBook Publishing.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVDW204-19**

CourseName: **Mathematics**

Program: B.Voc.	L:3 T: 0 P: 0
Branch: Data&WebAnalytics	Credits: 3
Semester: 1st	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

CourseOutcomes:

CO#	Courseoutcomes
CO1	Representdatausingvariousmathematicalnotions.
CO2	Explainedifferenttermsused inbasic mathematics.
CO3	Describevariousoperationsandformulas usedtosolvemathematicalproblems.

DetailedContents	Contacthours
Unit-I SetIntroduction,Objectives,RepresentationofSets(RosterMethod,SetBuilderMethod),TypesofSets(NullSet,SingletonSet,FiniteSet,InfiniteSet,Equal Set, Equivalent Set, Disjoint Set, Subset, Proper Subset, Power Set,UniversalSet)andOperationwithSets(UnionofSet,IntersectionofSet, Difference of Set, Symmetric Difference of Set) Universal Sets, Complementof aSet.	9
Unit-II LogicStatement,Connectives,BasicLogicOperations(Conjunction,Disjunction, Negation)LogicalEquivalence/EquivalentStatements,Tautologiesand Contradictions.	8
Unit-III MatricesIntroduction,TypesofMatrix(RowMatrix,ColumnMatrix,Rectangular Matrix,SquareMatrix,DiagonalMatrix,ScalarMatrix,UnitMatrix,NullMatrix,C omparableMatrix,EqualMatrix),ScalarMultiplication, NegativeofMatrix,AdditionofMatrix,DifferenceoftwoMatrix,Multiplicationof Matrices, Transpose of aMatrix.	11
Unit-IV Progressions Introduction, Arithmetic Progression, Sum of Finite number ofquantitiesinA.P,ArithmeticMeans,GeometricProgression,GeometricMean.	11

TextBooks:

1. DiscreteMathematicsandIts ApplicationsbyKennethH. Rosen,McGrawHill, 6thEdition.
2. CollegeMathematics,Schaum'sSeries,TMH.

ReferenceBooks:

1. ElementaryMathematics,Dr.RDSharma.
2. ComprehensiveMathematics,Parmanand Gupta.
3. ElementsofMathematics,MLBhargava.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM201-19**

CourseName:**DatabaseManagementSystems**

Program: B. Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 2nd	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Courseoutcomes
CO1	UnderstandthebasicconceptsofDBMS.
CO2	Formulate,usingSQL,solutionstoabroadrangeofqueryanddataupdate problems.
CO3	Demonstrateanunderstandingofnormalizationtheoryandappliesuchknowledgeto the normalization of a database.
CO4	Understandthe conceptofTransactionandQuery processinginDBMS.

DetailedContents	Contact hours
Unit-I: Introduction of DBMS, Data Modeling for a Database, Three level ArchitectureofDBMS,ComponentsofaDBMS.IntroductiontoData 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 IntroductiontoNormalization,First,Second,ThirdNormalForms,Dependency Preservation, Boyce-Codd Normal Form, Multi-valued DependenciesandFourthNormalForm,JoinDependenciesandFifthNormal 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

TextBooks:

1. AnIntroductiontoDatabaseSystembyBipinC.Desai,GalgotiaPublicationsPvtLtd- New Delhi, Revised Edition, (2012).
2. AnIntroductiontoDatabaseSystemsbyC.J.Date,A.Kannan&S.Swamynathan,8th Edition, Pearson Education, (2006).

ReferenceBooks:

1. SQL,PL/SQLTheProgrammingLanguageofOracle”,IvanBayross,BPBPublishations, 4th Revised Edition (2009).
2. DatabaseSystemConceptsbyAbrahamSilberschatz,HenryF.Korth&S.Sudharshan, Tata McGraw Hill, 6th Edition, (2013).
3. DatabaseManagementSystems,RaghuRamakrishnan,McGraw-Hill,3rd Edition,2014.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM202-19**

CourseName: **Programmingin Java**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 2nd	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	FamiliarizationwiththeconceptofObjectOrientedconceptsbyimplementingJava Programming.
CO2	Leartheconceptsofclasses&objectswiththefeaturesofreusabilityand implementationofthesamewithvariouscontrolstructurestosolvearealworld problems.
CO3	Understandanddesignbuiltinanduserdefinedfunctions/methods,interfacesand packages etc.
CO4	Abletohandlevarioustypesofdatausingarrays&stringsandhandlingofexceptions occurred in programs.
CO5	UtilizemultithreadingandappletfeaturesofJavaforefficientandeffective 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,DifferencebetweenStringandStringBufferclass,StringTokenizerclass. InterfaceandPackages:Basicsofinterface,MultipleInterfaces,MultipleInheritance 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

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Unit-IV: Multithreading:Introduction,ThreadsinJava,ThreadCreation,LifecycleofThread,Joining a Thread, Thread Scheduler, Thread Priority, Thread Synchronization. Applets:Introduction,AppletClass,AppletLifeCycle,GraphicsinApplet,Event-Handling. FileandI/OStreams:FileClass,Streams,ByteStreams,FilteredByteStreams, Random Access File Class, Character Streams.	8
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TextBooks:

1. ProgrammingwithJavaA Primer,5th Edition byE.Balagurusamy, TMH.
2. JavaProgrammingforCoreandAdvancedLearnersbySagayaraja,Denis,Karthik& Gajalakshmi, Universities Press.

ReferenceBooks:

1. JavaFundamentals,AComprehensive Introduction,H.Schildt,D.Skrien, TMH.
2. Java,ThecompleteReference, H.Schildt,7th Edition, TMH.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM203-19**

CourseName:**WebTechnologies**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 2nd	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	Understandthebasicsof Internetand WebServices.
CO2	DescribeanddifferentiateProgrammingLanguageandMarkup Language.
CO3	Connectvariouswebpagesandwebsites together.
CO4	Captureuser inputfrom theremoteusers.
CO5	Learn connectivityconceptsofFrontEndandBack 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, DrawingLines),TextStyles(Bold,Italic,Underline),OtherTextEffects Centering(Text&Images),Spacing(IndentingText),HTMLColorCoding.	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 Cellspacing 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:IntroductiontoFrames:The tag,The tag,TargetingNamedFrames. 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

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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

TextBooks:

1. InternetforEveryone:AlexisLeon,1stEdition,LeonTechworld,Publication,2009.
2. GreenlawR;Heppe,“FundamentalsofInternetandWWW”,2ndEdition,TataMcGraw- Hill, 2007.

ReferenceBooks:

1. RajKamal,“Internet& WebTechnologies”,edition TataMcGraw-HillEducation.2009.
2. ChrisPayne,“Aspin21Days”, 2ndEdition,SamsPublishing,2003PDCA.
3. ABeginner'sGuideto Html.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM204-19**

CourseName:**DatabaseManagementSystemsLaboratory**

Program: B.Voc	L: 0 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits: 1.5
Semester: 2nd	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 50	

Course Outcomes:

CO#	Course outcomes
CO1	Abletounderstandvariousqueriesandtheirexecution
CO2	Populateand query adatabaseusing SQLDML/DDDL commands.
CO3	Declareandenforceintegrityconstraintsona database
CO4	ProgrammingPL/SQLincludingstoredprocedures,storedfunctions,cursors,packages
CO5	Abletodesignnewdatabaseandmodifyexistingonesfornewapplicationsandreason about the efficiency of the result

Task 1:	UsedofCREATE,ALTER,RENAME,DROP,INSERTINTO,DELETE andUPDATE statementinthedatabase tables(relations)
Task 2:	Useofsimpleselectstatement,selectqueryontworelations,nestingofqueries, aggregate functions, substring comparison & order by statement
Task 3:	WriteaPL/SQLcodetoaddtwonumbersanddisplaytheresult.Readthenumbers during run time.
Task 4:	WriteaPL/SQLcodetofind sum of first10 natural numbers usingwhileand for loop.
Task 5:	Writeaprogramtocreateatriggerwhichwillconvertthenameofastudenttoupper case before inserting or updating the name column of student table.
Task 6:	WriteaPL/SQLblock toincreasethe salary ofalldoctorsby 1000.
Task 7:	WriteaPL/SQLcodetomultiply twonumbersusing procedureinsidetheblock.
Task 8:	DesigndatabaseforStudentManagementSystemforyourcollegeusingE-Rmodeland Normalization.
Task 9:	DesignandDevelopConceptualDataModel(E-RDiagram)forLibrary Management Systemwithallthenecessaryentities,attributes,constraintsandrelationships.Design and build Relational Data Model for application specifying all possible constraints.

RecommendedHardware&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.

TextBooks:

1. SQL,PL/SQLProgrammingLanguageofOracleby4th RevisedEdition,IvanBayross.
2. OraclePL/SQLProgrammingby5th Edition,StevenFeuersteinandBillPribyl.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM205-19**

CourseName: **Programming in Java Laboratory**

Program: B.Voc	L: 0 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits: 1.5
Semester: 2nd	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 50	

Course Outcomes:

CO#	Course Outcomes
CO1	ImplementCoreJava concepts.
CO2	SolvecomputationalproblemsusingvariousoperatorsofJava.
CO3	Designsolutionsto complexbyhandling exceptionsthatmayoccurintheprograms.
CO4	Solvecomplexandlargeproblemsusingtheconceptofmultithreading.
CO5	Implementinterfacesand design packages.

Task 1:	Writeaprogramtoperformfollowingoperationsontwonumbersinputbythe user: Addition 2) subtraction 3) multiplication 4) division
Task 2:	WriteaJavaprogram to printresult ofthefollowingoperations. 1.-15 +58* 45 2.(35+8)%6 3.24 +-5*3/ 7 4.15 +18 / 3 * 2 -9 %3
Task 3:	WriteaJavaprogram tocomputeareaof: Circle, rectangle,triangle&square.
Task 4:	WriteaJavaprogramtoconverttemperaturefromFahrenheittoCelsiusdegree.
Task 5:	Writeaprogram throughJavathatreads anumber in inches,converts itto meters.
Task 6:	Writeaprogramto convertminutes into anumberofyears and days.
Task 7:	WriteaJavaprogram thatprints currenttimein GMT.
Task 8:	Designaprogram inJava tosolve quadratic equations usingif,if else
Task 9:	WriteaJavaprogram to determinegreatest number ofthreenumbers.
Task 10:	Writeaprogramto sum valuesofanSingleDimensional array.
Task 11:	Calculatetheaveragevalueofarray elementsthrough JavaProgram.
Task 12:	WriteaJavaprogramto testifan arraycontains aspecificvalue.
Task 13:	WriteaJavaprogram to removeaspecificelementfrom an array.
Task 14:	Designaprogram tocopy anarrayby iteratingthearray.
Task 15:	WriteaJavaprogramtoinsertanelement(onaspecificposition)into Multidimensional array.
Task 16:	Writeaprogram toperformfollowing operationson strings: Comparetwostrings,Countstringlength,Convertuppercasetolowercase& vice versa, Concatenate two strings & Print a substring.
Task 17:	Computethe averageof threenumbers through aJavaProgram.
Task 18:	WriteaProgram& designa methodto countall vowelsin astring.
Task 19:	WriteaJavamethod to count all words in astring.
Task 20:	Writeamethod in Javaprogram to count all words in astring.
Task 21:	TorepresenttheconceptofalltypesofinheritancesupportedbyJava,designa program.
Task 22:	WriteaprogramtoimplementMultipleInheritanceusing interface.
Task 23:	Constructaprogramtodesignapackagein Java.
Task 24:	Towriteand readplain text file,writeaJavaprogram.

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Task 25:	WriteaJavaprogramto append textto an existing file.
Task 26:	DesignaprograminJava togetalistofallfile/directorynames fromthegiven.
Task 27:	WriteaJavaprogram tocheckif afileordirectoryhas readandwritepermission.
Task 28:	WriteaJavaprogram tocheckif afileordirectoryhas readandwritepermission.

RecommendedHardware&Software:

IntelCorei-3/i-5/i-7processorwithaspeedofminimum2GHz, RAM2GBorhigher, HDD 200 GB or higher, LED / LCD screen and NetBeans IDE / Eclipse IDE.

TextBooks:

1. ProgrammingwithJavaAPrimer,5th Edition,E.Balagurusamy, TMH.
2. JavaProgrammingforCoreandAdvancedLearners,Sagayaraja,Denis,Karthik, Gajalakshmi, Universities Press.
3. JavaFundamentals,AComprehensive Introduction,H.Schildt,D.Skrien,TMH.

ReferenceBooks:

1. Java,ThecompleteReference, H.Schildt,7th Edition, TMH.
2. DataAnalyticsusingR,SeemaAcharya,TMH.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM206-19**

CourseName:**WebProgrammingwith PHP-I.**

Program: B.Voc.	L:3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits:3
Semester: 2nd	Contacthours:33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course Outcomes
CO1	Ableto understandhowserver-sideprogramming workson theweb
CO2	PHPBasicsyntax forvariabletypesand calculations
CO3	Creatingconditionalstructures&Storingdatainarrays
CO4	Ableto usePHPbuilt-infunctions andcreating custom functions
CO5	AbletounderstandPOSTandGETinform submission
CO6	Abletoreceive andprocess formsubmission data

Detailedcontents	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,LogicalOperators, 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,Returningavaluefromafunction,Usingvariablesinfuctions,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. HandlingHTMLformwithPHP:CapturingFormData,DealingwithMulti–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 Indexbased Arrays, Converting Strings to & from Arrays, Splitting & JoiningArrays. 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

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TextBooks:

1. ProgrammingPHPbyRasmusLerdorfand Levin Tatroe,O'ReillyPublications.
2. SamsTeach YourselfPHP,MySQLand Apache Allin OnebyJulieC.Meloni.

ReferenceBooks:

- 1.PHPand MySQLWebDevelopment:A Beginner'sGuidebyMartty Mathew.

Couse Code: EMC-101-25

CourseName: **Entrepreneurship Setup and Launch**

Introduction:

This semester lays the foundation for the learner to understand what entrepreneurship is, beyond just starting a business. It introduces key ideas like problem-solving, value creation, and self-awareness. The learner will begin exploring basic business concepts while discovering their own interests and strengths.

Learners Objective:

1. Understand the core concepts of entrepreneurship through relatable, real-life examples.
2. Begin to see themselves as problem-solvers and creators.
3. Learn about business paths and choose one to try based on interest or local fit.
4. Launch a micro-hustle (online or offline) to earn their first income.
5. Build confidence and self-belief by doing.

Outcome: By the end of this semester, learners will start a simple business activity, earn their first income, and build belief in their ability to do business.

Guiding Principles/Approach:

This syllabus is built on principles of **experiential learning, growth mindset development, and identity-first learning**. Drawing from learning science and behavior design, the course shifts students from passive learning to *active doing*, where they try out small business activities in real contexts. The design helps students not just learn entrepreneurship but begin to see themselves as entrepreneurs. Emphasis is placed on *small wins, peer collaboration, and locally relevant opportunities* to ensure learning feels achievable and connected to their realities. The curriculum focuses on conceptual understanding without heavy theory, combining *practical action, reflection, and collaboration*. *By making progress visible and success feel possible, it plants the seeds of self-reliance, initiative, and long-term motivation.*

SemesterSyllabus:

Format:12weeks,4hours/week|2credits

RevenueTarget:₹10,000

Week	Learning Goal	MeasurableOutcome
1	Understandwhatentrepreneurship isand who can be an entrepreneur	Studentsdefineentrepreneurshipintheir ownwordsandlist 2entrepreneursfrom theirlocalareaor community

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2	Connectpersonalidentity to entrepreneurship(strengths, interests, struggles)	Studentscreatea“value map”showinghow askill/interest/problemfromtheirlifecould become a business opportunity
3	Learn about 5 business paths: contentcreation,drop-shipping, cloudkitchen/foodbusiness,gig economyand localservices	Students explore 1–2 examples from each domainandshareonethey’re mostcurious to try and why
4	Chooseapathandgenerateabasic business idea	Studentswritedownaclearoffer(what,for whom, why) and one way to reach their customer
5	Takefirst realaction:message, post,pitch,orsell	Studentsreachouttoorserve1realpotential customerandrecordwhat happened
6	Reflectonfirstattempt andshare with peers	Studentssharetheirresult,achallenge faced, andoneideatoimprovenext time
7	Improveandtryagain:aimforfirst ₹100	Studentsapplyachange,tryagain,and aim tomaketheirfirst₹100orgetmeaningful response
8	Learn how to identify and understandyourtargetcustomer	Students talk to 2 potential customers or observethemandlist3insightsabouttheir needs
9	Learnhowtoserveyourtarget audience better	Students improve one part of their offer (product, delivery, messaging, or interaction)basedoncustomerfeedbackor need
10	Explorecoreentrepreneurial values(resilience,honesty, effort)	Studentsreflecton1valuethey’re building andshowitinabusinessstaskorpeerstory
11	Focusonearningandstaying consistent	Studentscompleteasecondearningtaskand tracktheirconsistency(e.g.,sameproductor messagefor3 days)
12	Reflectonearnings,grit,andhow to keep going	Studentsrecordtotalearnings,oneresilience moment, and one support system or habit they’llcontinuewith

WeeklyComponent:

Component	Duration	Description
Learning Module	~1.5hrs	- Introduceskeyconceptsinasimpleandengagingway - Includes,examples,and1–2interactivediscussionsor quizzes
ActionLab	~2hrs	- Hands-ontaskontheweeklyconcept - Includesstep-by-stepguidance,templates,and worksheets - Endswithasubmission(e.g.,video,reflection,orproofof action)

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Resources	Self-paced	-Supplementaryvideos,shortreadings,real-lifestories,and tools to deepen understanding at their own pace
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EvaluationCriteria

Evaluation Component	Description	Weightage
WeeklyTask Completion	Timelysubmissionofweeklytasksincluding reflections,activities,quizzesetc.	40%
Target Completion	Performance-basedevaluationonhitting revenueor profittargets (e.g.,generating₹10,000revenue)	30%
FinalProject	Acomprehensiveprojectbasedonthe semester's theme	30%

Week1:WhatisEntrepreneurship?WhoCanBeanentrepreneur?

INTRODUCTION:CouldYouBeanentrepreneur?

When people hear “entrepreneur,” they often think it means having a company, investors, or an MBA. Some even believe it's only for toppers or those with high grades. But entrepreneurship is more about mindset than qualifications: it's about seeing a problem and doing something about it. Like someone who starts selling snacks because their school canteen is always shut, or a friend who fixes broken chargers for others. If you've ever spotted a need and thought, “I can solve this,” - you've already taken your first step.

Component1:LearningModule(~1.5hours)Unit1:

Whatis Entrepreneurship?

1. *Solving problems or creating value in exchange for money.*
2. Entrepreneurship is not just about starting a company: it's about initiative, resourcefulness, and value creation.
3. Different types of entrepreneurs: small shop owners, street vendors, YouTubers, local tailors, mechanics, and more.
4. Entrepreneurs build opportunities instead of waiting for them.

Simple Slide/Visual Aid Tip:

A circle that says "Problem", an arrow pointing to "Solution", then an arrow to "Earn". That's entrepreneurship.

<A video that visually shows how entrepreneurship starts with spotting a problem (e.g., long food lines), creating a solution (e.g., pre-order lunch service), and earning from it: illustrating the simple flow: Problem → Solution → Earn>

MCQ1

Q: What best describes entrepreneurship?

- A. Getting a job in a company
- B. Solving problems for others and earning from it 
- C. Studying business in college
- D. Buying expensive things

Feedback:

1. *Correct! Entrepreneurs solve problems or offer value and get paid for it.*
2. *Not quite! Entrepreneurship is about creating something useful, not just getting a job or studying.*

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Unit2:WhoCanBeanentrepreneur?

Entrepreneurshipstartswithspottingaproblem,findingasolution,andcreatingvalue.Today, anyone with a phone and an internet connection can start a business: money helps, but mind set and initiative matter more at the start.

You just need:

1. A problem to solve
2. A simple skill or product
3. The courage to start small

Examples Carousel (Swipeable cards)

1. **Pooja (India)**—Sell shand made rakhi on Instagram, learned designing on YouTube.
Problem she saw: Expensive or generic rakhi in the market; no personal touch.
2. **Luis (Mexico)**—Repairs used phones in his garage, now has loyal customers.
Problem he saw: Many people couldn't afford new phones or didn't trust local repair shops.
3. **Sana (Kolkata)**—Started tiffin delivery from her home kitchen, now earns ₹500/day.
Problem she saw: Office workers struggled to find affordable, homemade meals.
4. **Sal Khan (USA)**—Started Khan Academy with YouTube lessons to help his cousin.
Problem he saw: His cousin needed help with math, but good learning resources were hard to access.

MCQ

Q: Which of these can be a form of entrepreneurship?

- A. Making reels on skin care tips and selling homemade face packs 
- B. Buying new clothes from malls
- C. Studying engineering
- D. Playing games without sharing or streaming

Feedback:

1. Correct! Sharing useful tips + selling a product = solving a need!
2. Try again! Entrepreneurship is about creating value and helping others.

Reflection Prompt

1. If you had to earn ₹100 this week, what would you do?

Component 2: Action Lab (~2 hours)

Task

Find & Learn from 2 Entrepreneurs Near You

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Steps (Checklist):

1. Look around your neighborhood or online: find 2 people who earn through their own work
2. Ask or observe:
 - a) What do they do?
 - b) How do they earn?

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- c) Whatmakesthementrepreneurial?
3. Usethe**EntrepreneurTrackerTemplate**(availableintheresourcestab)

FinalDeliverable

Learnersubmits:

1. Ashortdefinitionofentrepreneurship(intheirwords)
2. 2entriesfromtheEntrepreneurTracker(name,whattheydo,what learner learned)

→Submittedinthesubmissionstab.

SupplementaryResources(Optional)

1. [DannyO'Neill-Gettingstarted|Entrepreneurship|KhanAcademy](#)
2. [TheBetterIndia–Storiesoflocalentrepreneurs](#)

Week2:CanIBeanentrepreneur?

INTRO–WhatMakesanentrepreneur?

You don't need a suit, a degree, or a lot of money to be an entrepreneur.

You need one thing: a mind set. Entrepreneurs notice problems around them: and do something about it. From the boy fixing bikes outside his house to the girl teaching dance on Instagram, they all started small. What matters most is not what you have: it's how you think and act.

Component1:LearningModule(~1.5hours

) Unit 1: What Makes an entrepreneur?

KeyConcepts:

1. **Entrepreneurs are driven by curiosity:** they ask questions, explore possibilities, and seek better ways to do things.
2. **They take initiative:** they act, experiment, and create using limited resources with creativity and courage
3. **They learn by doing:** embracing mistakes as stepping stones to progress.
4. **They take full ownership:** one day they're the marketer, the delivery person, and the customer support, all in one.
5. **They are resilient:** they persist through challenges, adapt to change, and keep moving forward with purpose.

Real-LifeExamples:

1. Nithin & Nikhil Kamath (Zerodha) – Started India's largest stock brokerage without formal degrees or external funding, just deep curiosity about stock markets and a desire to simplify investing.
2. *Qualities: Took initiative early and stayed persistent through challenges.*
3. Prajakta Koli (Mostly Sane) – Started by making comedy sketches about everyday Indian life: family, school, relationships: and became one of India's top digital creators.
4. *Qualities: Stayed consistent, adapted over time, and built strong audience trust.*
5. Tilak Mehta (PaperN Parcels) – As a teenager, launched a courier startup using Mumbai's dabbawala network for delivery.
6. *Qualities: Thought creatively and acted with confidence at a young age.*

Unit2:StartSmall:BuildIdeasfromWhatYouKnow

In the last unit, you learned that entrepreneurs don't just have ideas; they act, solve problems, and use what they have.

But the big question now is:

“What can I offer?”

That's where the Value Map comes in. It helps you take your first step toward thinking and acting like an entrepreneur: in your own way.

What is a Value Map?

A Value Map connects three simple things:

A. What people around you need

→ *Look around: is there something people often struggle with or something that could be better?*

B. What you enjoy or are willing to try

→ *You don't need to be an expert. Start with small things you like doing: talking to people, fixing, organizing, helping, designing, or learning something new.*

→ *Even if you're just curious about something, that's enough to begin.*

C. What solution you can create

→ *Use what you enjoy or are learning to try solving a real need around you: even in a small way*

Visuals:

3 overlapping circles:

1. “People Need”
2. “I Can”
3. “My Offer”

Examples:

1. People Need → Affordable meals

I Can → Cook + have access to home kitchen My Offer → ₹40 tiffin service

2. People Need → Study tips in Punjabi I Can → Speak clearly + love teaching

My Offer → 3-minute video tipson Instagram

MCQ

Q: What's the first step to being an entrepreneur?

- A. Waiting for the perfect idea
- B. Solving a problem with your skills 
- C. Buying a shop
- D. Studying for years

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Feedback:

1. *Correct!Entrepreneursstartbysolvingsmallproblemsusing whattheyalreadyhave.*
2. *Tryagain!It'snotaboutwaiting:it'sabout starting.*

ReflectionPrompt

1. Ifsomeonegaveyou ₹500 andaskedyouto earnfromit, whatwould you do?

Component2:ActionLab(~2 hours)

Task:CreateYourPersonalValueMapSteps(checklistin app):

1. Thinkof2–3problemspeoplefacearoundyou(hunger,phonerepair,boredom,etc.)
2. Listyourownskills,interests,orresources.
3. Matcheachproblemwithsomethingyoucouldoffer.
4. Usethe**ValueMapTemplate**intheresourcestoorganizeyourideas.

FinalDeliverable(SubmittedinApp):

1. Yourcompleted**ValueMap**(in3columns:Need,Skill,Offer)
2. Highlight**1idea**you'dliketoexploreforyourfuturehustle

SupplementaryResources(Optional)

1. "StartwithWhy"bySimonSinek
2. [10CharacteristicsofSuccessful Entrepreneurs|Business:Explained](#)

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CourseCode: **BVWM301-19**

CourseName: **Graphic Design**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits: 3
Semester: 3rd	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Courseoutcomes
CO1	Analyze,synthesize,andutilized design processesandstrategyfromconceptto delivery to creatively solve communication problems.
CO2	Createcommunicationsolutionsthataddressaudiencesandcontexts,byrecognizing the human factors that determine design decisions.
CO3	Demonstratecriticalthinkingandproblem-solvingskillsforprojectplanning,design, and creation.

Detailedcontents	Contact hours
Unit1:Design ProcessandPractices: 1. RoleofDesigninSociety a) FunctionsofDesign b) ImplicationsandImpactofGraphicDesign c) RoleofGraphicDesigner d) ContemporaryGraphicDesigninIndia 2. GraphicDesignProcesses a) MethodologyofGraphicDesign	10
Unit2:Principles andElements of Design: 1. SketchingandDrawing a) IntroductiontoDrawing:anaidinvisualrepresentation b) Typesofdrawing • Drawingfrommemoryandimagination • Drawingfromobservation • DrawingfromDimensionalinformation c) Virtuesofdrawing 2. Colour a) Colourstheories b) Colourwheel c) ColourHarmoniesorColourSchemes d) ColourSymbolism 3. FundamentalsVisualComposition a) Introduction b) PrinciplesandElementsofComposition 4. Typography a) Classification b) Anatomyof Font c) Featuresofa Font d) TextFormatting e) MultilingualTypography 5. PrinciplesofLayoutDesign	10

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a) Themeandcontent b) TypesofLayout c) ColoursinLayout d) CopyandType e) DesignforPublication	
Unit3:Media andDesign: 1. DigitalImagingandPrinting a) TypesofDigitalImages b) DigitalimageEditing c) DigitalPrinting 2.. Advertising Design - b)) WhatisMediaPlanning 3. CampaignDesign a) KindsofCampaign b) PlanningaCampaign c) Research&DataCollection d) CreativeAspects e) DevelopingaConcept f) DepartmentsofanAdvertising Agency 4. IntegratedMethods ofAdvertising a) KindsofEvents b) PublicRelations c) Media d) VisualCommunicationanditsImpact 5. GraphicDesignforInteractiveMedia a) BasicConcepts b) TypesofWebsites c) TheWebsite DevelopmentandManagementProcess d) GraphicDesignApproach e) Designing Navigation	13

TextBooks:

- 4. Thenon designer'sdesign book by RobinWillams.
- 5. LogoModernismbyJensMuller,TASCHEN Publication.

ReferenceBooks:

- 4. SteallikeanArtist:10thingsnobodytoldyouabout beingcreativebyAustin Kleon.
- 5. GridSystemsinGraphicDesignbyJosefMuller-Brockmann.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM302-19**

CourseName:**RDBMSwithMSSQL Server**

Program: B. Voc.	L:3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits:3
Semester: 3rd	Contacthours:33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	TolearnSQLbasicsthatappliestoMSSQLaswellastoanymajorRelational Database Management System (RDBMS).
CO2	Tounderstandthe basicsofusing SQLServer ontheWeb.
CO3	Tocreateenhanceproblemsolving,analyticalandimplementationabilitiesof students.
CO4	TofamiliarizestudentswithhowSQLworks,whatitisandhowtopracticallyapply it to everyday work.

Detailedcontents	Contact hours
Unit1:EssentialDatabaseConcepts Introduction to data, field, record,file, database, databasemanagement system. Structureofdatabasesystem,Advantageanddisadvantage,levelsofdatabase system,Relationalmodel,hierarchicalmodel,networkmodel,comparisonof these models, E–R diagram, different keys used in a relational system.	9
Unit2:Introduction toSQL Server • WhatisSQLServer • BasicFeatures • ComponentsandTools • StartingandStoppingSQLServer Instances/Services SQL–DDL,DML,DCL,Joinmethods&subquery,UnionIntersection,Minus, Tre Walking, Built in Functions, Views, Security amongst users, Sequences, Indexing.	8
Unit 3: PL/SQL IntroductiontoPL/SQL,Cursors–Implicit&Explicit,Procedures,Functions& Packages Database Triggers.	8
Unit4:Backupand Restore • TakingdatabaseBackup • Restoringdatabaseusingbackup. • AttachingandDetachingofdatabase.	8

TextBooks:

1. ElmarsiramezandNavatheShamkantB.,“FundamentalsofDatabaseSystems”,Pearson Publication,2007
2. BayrossIvan,“SQL,PL/SQLTheProgrammingLanguageofOracle”,BPBPublication.

ReferenceBooks:

1. KorthH.F.&SilverschatzA.,“DatabaseConcepts”,TataMcGrawHill,2010.
2. DateC.J,“DatabaseSystems”,PrenticeHallof India,2004

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM303-19**

CourseName:**WebApplications**

Program: B. Voc.	L: 3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits: 3
Semester: 3rd	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	Toprovidestudentswithconceptualandpracticalknowledge,andskillsrequiredto develop web applications.
CO2	Toidentifycandidate toolsand technologiesfordevelopingweb applications.
CO3	Toplan,develop,debug,andimplementinteractiveclient-sideandserver-sideweb applications.
CO4	Tomakestudentsfamiliarwithgraphicdesignprinciplesthatrelatetowebdesign and learn how to implement theories into practice.

Detailedcontents	Contact hours
Unit1:Movie Editing Tools: - Familiarizationofinterfacecomponents. - Importingpictures. - ImportingAudioandVideoFiles. - SplittingandJoiningMovieClips. - AddingTitlesandpublishing.	9
Unit2:CustomizingandEmbeddingMultimediacomponentsinWebPages: - CompatibleMultimediafilesformatsforWebPages. - EmbeddingAudiofile. - EmbeddingVideofile. - EmbeddingFlashfile.	8
Unit3:Web Scripting – Java Script: - JavaScriptreview. - Functions–userdefined. - String Object. - MathObject. - ArrayObject. - Events. - CaseStudies.	8
Unit4:Work Integrating LearningIT–WA-II: - AdvancedFeaturesofWebDesign. - Codeview,Add-ins/SnippetsandPageTransitions. - DynamicWebtemplates. - SEO-SearchEngineOptimization. - Forms-Advanced. - Publishingwebpagesorwebsites-I.	8

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

Text Books:

1. BuildingWebAppswithWordPress:WordPressasanApplicationFrameworkbyBrianMessenlehn er ,Jason Coleman.
2. Fundamentalsof WebDevelopmentbyRandyConnollyandRicardoHoar,Pearson.
3. WebApplicationSecurity:A BeginnersGuidebySullivan, B.

ReferenceBooks:

1. WebProgrammingBuildingInternetApplications byChrisBates,WileyIndia.
2. LearningWebAppDevelopment:BuildQuicklywithProvenJavaScriptTechniques by Semmy Purewal.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM304-19**

CourseName: **Operating System**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits: 3
Semester: 3rd	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 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
Unit1: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 S. S. Sankar Halder published by Pearson Education.

Reference Books:

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

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM3055-19**

CourseName:**GraphicDesignLaboratory**

Program: B.Voc	L: 0 T: 0 P: 3
Branch: WebTechnologyandMultimedia	Credits: 1.5
Semester: 3rd	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 50	

Course Outcomes:

CO#	Course outcomes
CO1	Tofamiliarizewithbasic conceptsusedingraphic design.
CO2	Toacquireknowledgeonvisualcommunicationandtheaestheticexpressionof concepts and ideas using various graphic elements and tools.
CO3	ThestudentwillbeabletoUnderstandtoolsandtechnology,includingtheirrolesin 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:

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

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM306-19**

CourseName:**RDBMSwithMSSQL Laboratory**

Program: B.Voc	L: 0 T: 0 P: 3
Branch: WebTechnologyandMultimedia	Credits: 1.5
Semester: 3rd	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 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 student to manage database solutions and various operations on databases

Task 1 :	Write a program in MSSQL 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 implementation 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.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM401-19**

CourseName:**Computer Graphics**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits: 3
Semester: 4th	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 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.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM4022-19**

CourseName: **JavaScript-I**

Program: B.Voc.	L:3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits:3
Semester: 4th	Contacthours:33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	Toknowvariablenaming rulesand JavaScript data types.
CO2	Toidentifyexpressionsandoperators,Knowflowcontrol.
CO3	Todemonstrateobjects andarraysusage.
CO4	Todefinefunctionsandmethods,constructorsand inheritance.
CO5	Todemonstrateusageofpatternmatchingwithregular expressions.

DetailedContents	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 jQuery by James Jaworski, BPB Publications.

Reference Books:

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

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM403-19**

CourseName:**Computer Networks**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits: 3
Semester: 4th	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	TomakestudentfamiliarwiththedifferentNetwork Models.
CO2	Tomakestudent understanddifferent networktechnologies andtheirapplication.
CO3	Tokeepupdatewithdifferentadvancednetworktechnologiesthatcanbeusedto connect different networks.
CO4	Tomakestudentsfamiliarwithvarioushardwareandsoftwarethatcanhelpuna smooth network

DetailedContents	Contact hours
Unit-I:Datacommunicationsconcepts: Digitalandanalogtransmissions-Modem, parallel and serial transmission,synchronous and asynchronouscommunication. Modes of communication: Simplex, half duplex, full duplex. Types of Networks: LAN, MAN, WAN NetworkTopologies: 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 SwitchingTechniques: 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,GigabitEthernet,IEEE802.4TokenBus,IEEE802.5TokenRing). 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,Connectionestablishmentandrelease,Flowcontrolandbuffering, 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,peertopeer,cloudetc.),WorldWideWeb(WWW), Domain Name System (DNS), E-mail, File Transfer Protocol (FTP), HTTP as an application layer protocol.	8

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

TextBooks:

3. ComputerNetworksby Tanenbaum,Andrew,PHI.
4. DataCommunicationandNetworking,Behrouz A.Forouzan.
5. ComputerToday,S.K.Basandra,FirstEdition,Galgotia.

ReferenceBooks:

4. DataCommunicationSystem,Black,Ulysse,PHI.
5. DataandComputerCommunications,Stalling,PHI.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM404-19**

CourseName:**Software Engineering**

Program: B. Voc.	L: 3 T: 0 P: 0
Branch: WebTechnologyandMultimedia	Credits: 3
Semester: 4th	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	Tomakestudents awareabout theengineering approachto analysis,design andbuilt the Software
CO2	Tomakestudentsunderstandthephasesandactivitiesinvolvedintheconventional software lifecyclemodels
CO3	Toanalyzeproblems,and identifyanddefinethecomputing requirements appropriatetoits solution.
CO4	Toapplydesignanddevelopment principlesintheconstructionofsoftware systemsofvarious complexity
CO5	Toapplycurrenttechniques,skills,andtoolsnecessaryforcomputingpractice.

DetailedContents	Contact hours
Unit-I: TheNatureofSoftware,NeedofSoftwareEngineering,PrescriptiveProcess Models, Specialized Process Models, The Unified Process.	9
Unit-II: Roleofasystemanalyst,SRS,PropertiesofagoodSRS document,functional and non-functional requirements, Decision tree and Decision table, Formal Requirements Specification, SoftwareCostEstimation.	8
Unit-III: Softwaredesignanditsactivities,Preliminaryanddetailed designactivities, 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,SoftwareMeasurement,MetricforRequirementsModel,Metric forDesignModel, MetricforTesting, Metricfor Maintenance.	8

TextBooks:

1. SoftwareEngineering–APractitioner’sApproach,RogerS.Pressman,McGrawHill.
2. AnIntegratedApproach toSoftwareEngineering, PankajJalota,NarosaPb.House.

ReferenceBooks:

1. SoftwareEngineering, IanSommerville,NinthEdition,Addison-Wesley,2011

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM4055-19**

CourseName: **ComputerGraphics Laboratory**

Program: B.Voc	L: 0 T: 0 P: 3
Branch: WebTechnologyandMultimedia	Credits: 1.5
Semester: 4th	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 50	

Course Outcomes:

CO#	Course Outcomes
CO1	Toimplementvariousalgorithmstoscan,convertthebasicgeometricalprimitives, transformations, area fillings and clippings
CO2	Todescribethe importanceof viewingand projections.
CO3	Todefinethefundamentals ofanimation,virtual realityandlatest technologies.
CO4	TomakestudentscapableofusingOpenGLtcreateinteractivecomputergraphics and make them understand a typical graphics pipeline.

Task 1:	WriteaprogramtoImplementtheAlgorithms usingC/C++.
Task 2:	Writeaprogramtodemonstratetheuseofbasicprimitivefunctionstoshow some animations.
Task 3:	Writeaprogramtodemonstratetheuseofbasicfunctionsofgraphicavailable in C++ like circle, put pixel, rectangle, arc, ellipse, flood fill, set coloretc.
Task 4:	LineDrawingAlgorithmlikeDirectmethod,DDAandBresenham'sline algorithms.
Task 5:	Drawacircleusingpolynomial,trigonometrymethodandBresenham's Algorithm.
Task 6:	DrawanellipseusingBresenham's Algorithm.
Task 7:	Tomoveeacharacteralong circle.
Task 8:	Toshow2DClipping andWindowing.

RecommendedHardware&Software:

Intel Core i7-i9, AMD Radeon Pro 5300M with 4-8GB of GDDR6 memory, Intel UHD Graphics630,16-inch3072x1920IPSdisplay,512GB-8TBSSD, 16-64GBRAM,C++, AdobePhotoshop(RasterGraphics)andAdobeIllustrator(Vector Graphics).

TextBooks:

1. SchaumOutlineComputerGraphicsbyXiang,McGrawHill.
2. ComputerGraphicsusingopenGLbyDonaldDhearn,PearsonEducation.

ReferenceBooks:

3. ComputerGraphicsPrinciplesAndPracticebyJohnFHughes,Pearson India.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM4066-19**

CourseName: **JavaScript– I Laboratory.**

Program: B.Voc	L: 0 T: 0 P: 3
Branch: WebTechnologyandMultimedia	Credits: 1.5
Semester: 4th	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:-
Internalmax.marks: 30	Durationofendsemester exam(ESE):-
Externalmax.marks: 20	Status(Elective/Core): Core
Totalmarks: 50	

Course Outcomes:

CO#	Course Outcomes
CO1	Tobeabletocreataeffectivescriptsusing JavaScript andjQuerytoenhancetheend user experience.
CO2	Todemonstrateknowledgeofintroductoryprogramming concepts.
CO3	Totest,debuganddeploywebpagescontainingJavaScriptandjQuery.

Task 1:	Createasimplemultiplicationtableaskingtheuserthenumberofrowsand columns he wants.
Task 2:	Createasampleformprogramthatcollectsthefirstname,lastname,email,user id, password and confirms password from the user.
Task 3:	POPUPMessageusing Event.
Task 4:	ProgramsdemonstratingtheuseofJavaScriptvariables,conditionalstatements, loops and functions.
Task 5:	Writeaprogramusingtheforloopandwhiletodisplaysalltheeven 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 </button>

RecommendedHardware&Software:

IntelCorei-3/i-5/i-7processorwithaspeedofminimum2GHz,RAM4GBorhigher,HDD200 GB or higher, LED / LCD screen and text, IDE, Node.

TextBooks:

- JavaScriptandjQuery: InteractiveFront-EndWebDevelopment,byJonDuckett.
- JavaScript:TheDefinitiveGuide,byDavidFlanagan.

ReferenceBooks:

- LearnJavaScriptVISUALLY,byIvelin Demirov.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:BVWM501-19 Course

Name: Multimedia

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 5 th	Contacthours: 33
Theory/Practical: Theory	Electivestatus: Core
Internalmax.marks: 40	Externalmax.marks: 60
Total marks: 100	

Prerequisite:-NA-

Corequisite:-NA-

Additionalmaterial requiredinESE:-NA-

CourseOutcomes:After studyingthis course,studentswill beable to:

CO#	Course outcomes
CO1	Explainvarious textrepresentations.
CO2	Discussthe different formatsforrepresentingsound, videoand images.
CO3	Explainvarious animationtypes.

Detailedcontents	Contact hours
Unit 1: IntroductiontoMultimedia,NeedsandAreasofuse,IdentifyingMultimedia 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 SynthesisCards,WavesTableCards,MIDIandMP3FilesandDevices,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,andBrightness,VariousAttributesofImagesSize, Color,DepthEtc,VariousImageFileFormatBMP,DIB,CIF,PIC,andTIF Format Their Features And Limitations, Image format conversion, various effects on images.	8

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Unit 3: VIDEO- Basic of Video, Analog and Digital Video Type of Video, DigitizationofAnalogVideo,VideoStandard –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 creatinganimation,characterandtextanimation,creatingssimpleanimation 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.HearnandM.P.Baker,“ComputerGraphics”,PHI/PearsonEducation.
 2. ZhigandXiang,RoyPlastock,“ComputerGraphics”,TataMc-GrawHill.
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I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:BVWM502-19

CourseName:Android ApplicationDevelopment

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 5 th	Contacthours: 33
Theory/Practical: Theory	Electivestatus: Core
Internalmax.marks: 40	Externalmax.marks: 60
Total marks: 100	

Prerequisite:-NA-

Corequisite:-NA-

AdditionalmaterialrequiredinESE:-NA-

CourseOutcomes:After studyingthis course, studentswill beable to:

CO#	Course outcomes
CO1	Installtoolsrequiredforandroidapplicationdevelopment
CO2	Identifytheroleof various components used in GUIof android apps
CO3	ExplaintheimplementationofvariousAPIsfromgoogleforandroidapplication development

Detailedcontents	Contact hours
Unit 1: Android Introduction, Smartphones future, Preparing the Environment, Installing the SDK, Creating Android Emulator, Installing and Using Eclipse,InstallingAndroidDevelopment Tools,Different Androidversions. 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, Applicationcontext,Intents,Activitylifecycle,Supportingmultiplescreen sizes DesigningUserInterfaceUsingViews–BasicViews-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

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Unit 2: Menus,Localization,Optionsmenu,ContextmenuDialogs-Alertdialog, Custom dialog, Dialog as Activity. OrientationandMovement-Pitch,rollandyaw,Naturaldevice orientation, Reference frame remapping SMS -Sending and Receiving WorkingwithMedia –Playingaudio andvideo,Recordingaudioand video	8
Unit 3: Location and Maps - Google maps, Using GPS to find current location Workingwithdatastorage-Sharedpreferences,Preferencesactivity,Files access, Using External storage, SQLite database Animation-Viewanimation,Drawableanimation 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 NetworkCommunication-WebServices,HTTPClient,XMLandJSON, Using e-mails. Services - Service lifecycle, Foreground service, Creating own services. PublishingandDistributingYourApp-Preparingforpublishing,Google Play requirements.	8

TextBooks:

1. RickRogers,JohnLombardo,MeikeBlake,“Androidapplicationdevelopment”, Ist Edition, O’Reilly, 2010
2. LaurenDarceyandShaneConder,“AndroidWirelessApplicationDevelopment”,2nded. PearsonEducation,2011
3. Wei-MengLee,Beginning Android4 development ,2012by JohnWiley &Sons

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:BVWM503-19 Course

Name: E-Commerce

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 5 th	Contacthours: 33
Theory/Practical: Theory	Electivestatus: Core
Internalmax.marks: 40	Externalmax.marks: 60
Total marks: 100	

Prerequisite:-NA-

Corequisite:-NA-

Additionalmaterial requiredinESE:-NA-

CourseOutcomes:After studyingthis course,studentswill beable to:

CO#	Course outcomes
CO1	Discusstheemergenceof E-Commerce
CO2	Explainthepaymentmodeover internet
CO3	ListvariousapplicationsofE-Commerce.

Detailedcontents	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

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

1.RaviKalakotaandAndrewBWhinston,“FrontiersofElectronicCommerce”,
Pearson Education,2013. 2. Greenstein and Feinman, “E-Commerce”,
TMH,2001.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:BVWM504-19

CourseName:ComputerNetwork Security

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 5 th	Contacthours: 33
Theory/Practical: Theory	Electivestatus: Core
Internalmax.marks: 40	Externalmax.marks: 60
Total marks: 100	

Prerequisite:-NA-

Corequisite:-NA-

AdditionalmaterialrequiredinESE:-NA-

CourseOutcomes:After studyingthis course,studentswill beable to:

CO#	Course outcomes
CO1	Discussvariousissuesinnetworksecurity.
CO2	Explaintheimpactof virusesoncomputer systems.
CO3	Explainvarioussecurity measurestoprotectnetworks.

Detailedcontents	Contact hours
Unit 1: Basicwebsecuritymodel-Browsercontent,Documentobjectmodel(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- Networkdefensetools, 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: RiskManagement,SecurityRiskAssessment:Introduction,InformationSecurity Risk Assessment: Case Studies, Risk Assessment in Practice.	8

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TextBooks:

1. WilliamStallings,NetworkSecurityEssentials:ApplicationsandStandards,PrenticeHall,4thedition, 2010.
 2. MichaelT.GoodrichandRobertoTamassia,IntroductiontoComputerSecurity,AddisonWesley,2011.
 3. WilliamStallings,NetworkSecurityEssentials:ApplicationsandStandards,PrenticeHall,4thedition, 2010.
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I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

Course Code: BVWM505-19

CourseName:MultimediaLab

Program: B. Voc.	L: 0 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits: 1.5
Semester: 5 th	Contacthours: 3hoursperweek
Theory/Practical: Practical	Electivestatus: Core
Internalmax.marks: 30	Externalmax.marks: 20
Total marks: 50	

Prerequisite:-NA-

Corequisite:-NA-

AdditionalmaterialrequiredinESE:-NA-

CourseOutcomes:After studyingthis course,studentswill beable to:

CO#	Course outcomes
CO1	Makepresentationsusing PowerPoint
CO2	Editounds usingopen sourcesound editors.
CO3	Createvideoandanimationsusingopensource

Instructions:

1.	Crateasimple Power Point Presentation.
2.	AddImages toPowerPointPresentation.
3.	Addvideosto PowerPoint Presentation.
4.	AddNarrationand automatictimer toslideshows
5.	AddanimationstoPowerPointpresentations.
6.	Recordingandeditingsoundusingsoundeditors(opensource).
7.	Createimagesusingopensourcetoolsandapplyvariousseffects,UsingLayers, Channels and Masks in images.
8.	VideoEditingandMovieMakingusingopensourcetools.
9.	Creatinganimationsusinganyopensource tool.

TextBooks:

1. D.HearnandM.P.Baker,“ComputerGraphics”,PHI/PearsonEducation.
 2. ZhigandXiang,RoyPlastock,“ComputerGraphics”,TataMc-GrawHill.
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I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:BVWM506-19

CourseName:AndroidApplicationDevelopmentLaboratory

Program: B.Voc.	L: 0 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits: 1.5
Semester: 5 th	Contacthours: 3hoursperweek
Theory/Practical: Practical	Electivestatus: Core
Internalmax.marks: 30	Externalmax.marks: 20
Total marks: 50	

Prerequisite:-NA-

Corequisite:-NA-

AdditionalmaterialrequiredinESE:-NA-

CourseOutcomes:After studyingthis course,studentswill beable to:

CO#	Course outcomes
CO1	Installtoolsneededtcreatemobile applications.
CO2	Writesimple programs.
CO3	Createapplicationsforreallifemobile applications.

Instructions:

1.	Installandroiddevelopmenttool(any)
2.	WriteasimpleApplication which willprint "Hello World!"
3.	Writeasimple Application thatuses UILayout andControl.
4.	Writeasimple Applicationthat makes useofStyle&Themes.
5.	WriteasimpleApplication thatuses Event Handling.
6.	WriteasimpleApplication thatuses Alarm, Notification.
7.	Makealocationbased app.
8.	Writeaprogram thatshows theuseanimation.
9.	Writeaprogramthat showstheuseofImageEffects.
10.	Writeaprogramthat showstheuse ImageSwitcher.
11.	Writeaprogramtoimplementdatabaseconnectivity.

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM601-19**

CourseName: **Audio Editing**

Program: B.Voc.	L:3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits:3
Semester: 6th	Contacthours:33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	Understandvariousaudioformats.
CO2	Performvariouseditingonaudiofiles.
CO3	Createsynthesisofnarration,dialog,musicandsoundeffectsinaudioeditingassignments.
CO4	Embedvariouseffectsinaudiofile.

Detailedcontents	Contact hours
Unit1: 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, understandaudio 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
Unit2: 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
Unit3: 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
Unit4: 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

TextBooks:

1. PremierePro forWindows– AntonyBolante– Techmedia
2. 9thGradeTextbookReadingLevel.ISBN:978-0415722070

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ReferenceBooks:

1. Rose,Jay.ProducingGreatAudioforFilm andVideo:ExpertTipsfrom Preproduction to Final Mix. 4th ed. Florence: Focal, 2014. Print.
 2. UnderstandingAudio,Thompson,D.,USA:BerkleyPress,2005
 3. AudioinMedia,10th edAlten, SUSA: ThomsonWadsworth, 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. TheRecordingEngineer'sHandbookOwsinski, BobbyCengageLearning PTR 2013
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I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode: **BVWM602-19**

CourseName: **VideoEditing**

Program: B.Voc.	L: 3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits: 3
Semester: 6th	Contacthours: 33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

CO#	Course outcomes
CO1	Understandvariouseditingfeaturesofvideofiles.
CO2	Applyvariouseditingtovisualcontent.
CO3	Addspecialeffectstovideocontent.

Detailedcontents	Contact hours
Unit1: 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
Unit2: Panels:Toolspanel, Project, Monitors:Sourceandprogram,Timeline,Audiometers	8
Unit3: Misc. Tasks and functions: Titles, Transitions, speed and duration, Effects, Key frames, Types of edit, Opacity, trimming,	8
Unit4: AddingSpecialeffectslike:Star trektransporter effect,Blurpartofanimage, Ghost effect, Highlight part of an image etc.	8

TextBooks:

1. KenDancyger, Techniqueoffilm andvideoediting. Theory&Practice.
2. S.EBrowneVideoediting: Apost production
3. AllenandGomery Filmhistory:Theoryandpractice.

ReferenceBooks:

1. J.D.AndrewsThemajorfilm theories.
2. ReiszandmillerThetechniquesoffilm editing.
3. Roy,ThompsonGrammerofedit
4. A.RajadhyakshaEncylopaediaofindiancinema

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM603-19**
 CourseName:**Cloud Technology**

Program: B.Voc.	L:3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits:3
Semester: 6th	Contacthours:33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 100	

Course Outcomes:

Afterundergoingthiscourse,thestudentwillbeableto

CO#	Course outcomes
CO1	Understandthecoreconceptsofthecloudcomputingparadigm
CO2	Understandingimportanceofvirtualizationalongwiththeirtechnologies
CO3	Analyzevariouscloudcomputingserviceanddeploymentmodelsandapplythemtosolve problems on the cloud
CO4	Implementationofvarioussecuritystrategiesfordifferentcloudplatform

Detailedcontents	Contact hours
Unit1: Introduction: Definition of cloud, characteristics of cloud, Comparing grid with utility computing, cloud computing and other computing systems.	9
Unit2: 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
Unit3: Cloudservicemodels:Cloudservicemodels,Infrastructureaservice(IaaS),Platform as a service (PaaS) , Software as a service(SaaS), Comparison of cloud servicedelivery models, Cloud deployment models: Public clouds, Private clouds, Hybrid clouds, Community clouds, Migration paths for cloud, Selection criteria for cloud deployment.	8
Unit4: Securityin cloudcomputing: Understandingsecurity risks,Principal securitydangersto cloud computing, Internal security breaches, User account and service hijacking, measures to reduce cloud security breaches	8

TextBooks:

1. RajKumarBuyya,JamesBroberg,AndrezeiM.Goscinski,“CloudComputing: Principles and Paradigms”, Wiley 2011
2. AnthonyT.Velte,TobyJ.VelteandRobertElsenpeter,“CloudComputing:A practical Approach”, McGraw Hill, 2010.
3. BarrieSosinsky,“CloudComputingBible”, Wiley, 2011.
4. JudithHurwitz,RobinBllor,MarciaKaufman,FernHalper,“CloudComputingfor dummies”, 2009.

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ReferenceBooks:

1. RajkumarBuyya,ChristianVecchiola,S.ThamaraiSelvi,“MasteringCloud Computing” TMH 2013.
2. GeorgeReese“CloudApplicationArchitectures”,FirstEdition,O“ReillyMedia 2009.
3. Dr.KumarSaurabh“CloudComputing”2ndEdition,WileyIndia2012.

I.K.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:BVWM604-19

CourseName: **ProgrammingusingPython**

Program: B.Voc.	L:3 T: 0 P: 0
Branch: WebTechnology&Multimedia	Credits:3
Semester: 6th	Contacthours:33
Theory/Laboratory: Theory	Status(Elective/Core): Core
Internalmax.marks: 40	Externalmax.marks: 60
Totalmarks: 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
Unit1: 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
Unit2: 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
Unit3: 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
Unit4: 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

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TextBooks:

1. **CorePythonProgramming**, WesleyJ.Chun, SecondEdition, Pearson.

ReferenceBooks:

1. LearningPythonbyMark Lutz, 5th Edition
2. PythonCookbook,byDavidBeazley,3rdEdition

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B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM605-19**

CourseName:**Audio andVideoEditing Lab**

Program: B.Voc.	L: 3 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits: 1.5
Semester: 6th	Contacthours: 33
Theory/Laboratory: Practical	Status(Elective/Core): Core
Internalmax.marks: 30	Externalmax.marks: 20
Totalmarks: 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.GujralPunjabTechnicalUniversityJalandhar
B.Voc.(WebTechnology& Multimedia),Batch-2025

CourseCode:**BVWM606-19**
CourseName:**Programming inPythonLab**

Program: B.Voc.	L:3 T: 0 P: 3
Branch: WebTechnology&Multimedia	Credits: 1.5
Semester: 6th	Contacthours: 33
Theory/Laboratory: Practical	Status(Elective/Core): Core
Internalmax.marks: 30	Externalmax.marks: 20
Totalmarks: 50	

DetailedListofTasks:

1. UseofDataTypes,IntegerArithmetic,Variables andAssignment
2. UseofPrint Function,Branchingprograms, Stringsand Input,Iteration
3. ImplementationofFunctionsandRecursion
4. ApplicationofGlobalvariables
5. ImplementationofTuples, Listand Dictionaries.
6. ImplementationofModules,FilesandDictionaries
7. ImplementationofArray andMatrices
8. ImplementationofExceptionHandling.
9. ApplicationsofClassesandObject-orientedProgramming
10. FileI/O,ReadingCSV andExcelFiles,ReadingTextFiles,WritingandSavinto Files.
11. TransferringoffilesusingFTP.
12. WorkingwithEmail.
13. ParsingofHTMLin Python.

LABOUTCOMES:Attheendofthecourse,thestudentsareableto:

1. Write,TestandDebugPython Programs
2. ImplementConditionalsandLoopsforPythonPrograms
3. UsefunctionsandrepresentCompounddatausingLists,Tuplesand Dictionaries
4. Readandwritedatafrom&tofilesinPythonanddevelopApplicationusing Pygame