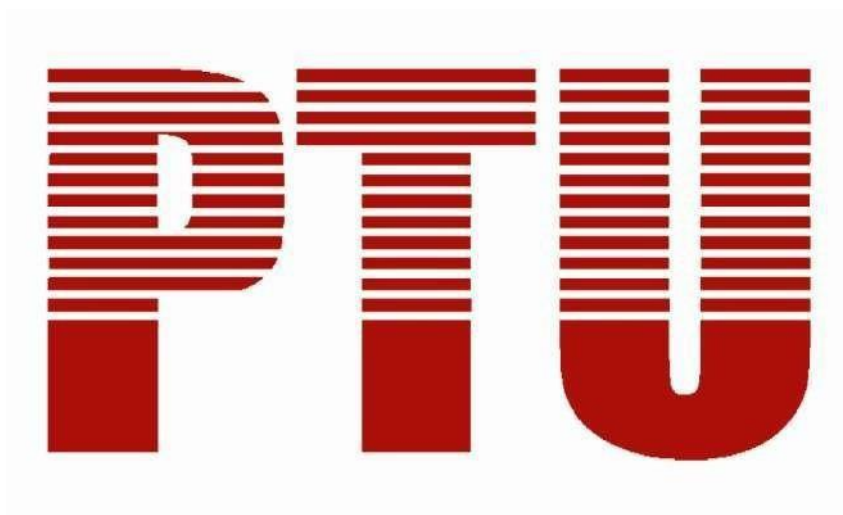


Scheme & Syllabus of Bachelor of Vocational Studies (B. Voc.) Hardware & Networking Batch 2025



By
Department of Academics
IKG Punjab Technical University

Semester1st

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

Semester2nd

CourseCode	CourseTitle	Load Allocation			Marks Distribution		Total	Credits
		L	T	P	Internal	External		
BVHN201-18	Database Management Systems	3	1	0	40	60	100	4
BVHN202-18	Programmingin Java	3	1	0	40	60	100	4
BVHN203-18	ProjectWork-1	0	0	8	60	40	100	4
BVHN204-18	Database Management SystemsLaboratory	0	0	3	30	20	50	1.5
BVHN205-18	Programming in Java Laboratory	0	0	3	30	20	50	1.5
EMC-101-25	Entrepre neurship Setup and Launch	0	0	4	30	20	50	2
On-JobTraining/QualificationPack*								

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BVHN206-18	AndroidApps Developer	OnJobTraining(OJT)in Collaboration with MoU industry	200	200	15
Total					30

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Semester3rd

CourseCode	CourseTitle	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVHN301-18	Datawarehousingand Mining	3	0	40	60	100	3
BVHN302-18	ProblemSolvingUsingC	3	0	40	60	100	3
BVHN303-18	Human Values & ProfessionalEthics	3	0	40	60	100	3
BVHN304-18	Managementinformation System	3	0	40	60	100	3
BVHN305-18	ProblemSolvingusingC Laboratory	0	3	30	20	50	1.5
BVHN306-18	Workshop on Desktop PublishingLaboratory	0	3	30	20	50	1.5
EMC-102-25	Entrepreneurship (Marketing Basics)	0	4	30	20	50	2
On-JobTraining							
BVHN307-18	ProjectWork-II				200	200	17
Total							32

Semester4th

CourseCode	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVHN401-18	InformationSecurity	3	0	40	60	100	3
BVHN402-18	SoftwareEngineering	3	0	40	60	100	3
BVHN403-18	Object Oriented ProgrammingusingC++	3	0	40	60	100	3
BVHN404-18	ComputerSystem Architecture	3	0	40	60	100	3
BVHN405-18	Computer System ArchitectureLaboratory	0	3	30	20	50	1.5
BVHN406-18	Object Oriented ProgrammingusingC++ Laboratory	0	3	30	20	50	1.5
On-JobTraining/QualificationPack*							
BVHN407-18	Networking Specialist	OnJobTraining(OJT)in Collaboration with MoU industry			200	200	15
	Total						30

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Semester5th

CourseCode	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Int	Ext		
BVHN501-18	Programmingin Python	3	0	40	60	100	3
BVHN502-18	E-Commerce	3	0	40	60	100	3
BVHN503-18	Microprocessorand Microcontroller.	3	0	40	60	100	3
BVHN504-18	CyberSecurity	3	0	40	60	100	3
BVHN505-18	Programmingin Python Laboratory	0	3	30	20	50	1.5
BVHN506-18	Microprocessorand Microcontroller Laboratory	0	3	30	20	50	1.5
On-JobTraining/QualificationPack*							
BVHN507-18	OnJobTraining(OJT)inCollaborationwith MoU industry				200	200	15
	Total						30

Semester6th

CourseCode	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Int	Ext		
BVHN601-18	WebDesigning	3	0	40	60	100	3
BVHN602-18	EnvironmentScience	3	0	40	60	100	3
BVHN603-18	OperatingSystem	3	0	40	60	100	3
BVHN604-18	ComputerPeripheralsand Interfaces	3	0	40	60	100	3
BVHN605-18	WebDesigning Laboratory	0	3	30	20	50	1.5
BVHN606-18	OperatingSystem Laboratory	0	3	30	20	50	1.5
On-JobTraining/QualificationPack*							
BVHN607-18	OnJobTraining(OJT)inCollaborationwith MoU industry				200	200	15
	Total						30

***Thequalificationpacksmayvaryfrominstituteto institute.**

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN101-18**

CourseName: **PCHardware**

Program: B.Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester: I	Contacthours:33
Theory/Laboratory:Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax. marks:60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1: Assemble/setup and upgrade personal computer systems: computer system modules/ components and its operations, need of hardware and software for computer to work, different hardware components within a computer and connected to a computer as peripheral devices, type of computer bus structures, different processors used for personal computers and note book computers	9
Unit 2: Perform installation, configuration, and upgrading of microcomputer: Hardware and software requirement, Assemble/setup microcomputer systems, accessory boards,typesofmotherboards,selectionofrightmotherboard,Installation &replacementof motherboard,troubleshootingproblemwith memory.	8
Unit 3: Install/connect associated peripherals: Working of printers and scanners, Installation of printers and scanners, sharing a printer over a local area network, troubleshooting printer and scanner problems, troubleshooting hard driveproblems.	8
Unit 4: Diagnoseandtroubleshootingofmicrocomputersystemshardware&softwareand other peripheral equipment: Approaches to solve a PC problem, troubleshooting a failed boot before the OS is loaded, different approaches to installing and supporting I/O device, managing faulty components.	8

SuggestedReadings

1. PCHardware:TheCompleteReference,McGraw-Hills
2. TheIndispensablePCHardwareBook(4thEdition)Hans-PeterMessmer
3. PCHardware:ABeginner'sGuidebyRonGilster

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN102-18**

CourseName:**Computer Networking**

Program: B.Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester:I	Contacthours:33
Theory/Laboratory:Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax.marks: 60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1 : Data Communications Concepts: Digital and analog transmissions-Modem, parallelandserial,synchronousandasynchronous,Modesofcommunication: Simplex, half duplex, full duplex, Concept of multiplexing, De-multiplexing. Types of Networks: LAN, MAN, WAN NetworkTopologies:Bus,Star,Ring,Mesh,Tree,Hybrid CommunicationChannels:Wiredtransmissions:Telephonelines,leasedlines, switch line, coaxial cables-base band, broadband, optical fiber transmission.	9
Unit 2 : TransmissionMedia:GuidedMedia(TwistedPairCable,CoaxialCable,Fiber Optics Cable), Unguided Media (Radio Waves, Microwaves, Infrared) Communication Devices (Switches, Hub, Routers, gateway etc) IntroductiontoSwitching:CircuitSwitchNetworks,DatagramSwitchNetworks Network Models.	8
Unit 3 : IntroductiontoOSIModel–PhysicalLayer,DataLinkLayer,NetworkLayer, Transport Layer, Session Layer, Presentation Layer TCP/IP(LayerArchitecture)DataLinkLayer,InternetLayer,TransportLayer, Application Layer	8
Unit 4 : MACsublayer:802.4TokenBus,IEEE802.5TokenRing Concept of Internetworking.	8

SuggestedReadings

1. ComputerNetworks, Tanenbaum,Andrew, FifthEdition,PHI
2. DataCommunicationandNetworking, Behrouz A.Forouzan,FourthEdition
3. ComputerToday,S.K.Basandra,FirstEdition,Galgotia
4. DataCommunicationSystem,Black,Ulysse,ThirdEdition,PHI
5. DataandComputerCommunications,Stalling,NinthEdition,PHI

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN103-18**

CourseName : **Communication Skills**

Program: B.Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester:I	Contacthours:33
Theory/Laboratory:Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax.marks: 60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit1-1(Introduction) - Theoryof Communication, - Typesandmodesof Communication	9
Unit-2(Languageof Communication) - VerbalandNon-verbal (SpokenandWritten) - Personal,SocialandBusiness - BarriersandStrategies - Intra-personal,Inter-personalandGroupcommunication	8
Unit-3(Readingand Understanding) - CloseReading - Comprehension - SummaryParaphrasing - AnalysisandInterpretation - Translation(fromHindi/PunjabitoEnglishandvice-versa - Literary/KnowledgeTexts	8
Unit-4(WritingSkills) - Documenting - Report Writing - Makingnotes - Letterwriting	8

RecommendedReadings:

1. Fluencyin English-Part II, Oxford UniversityPress, 2006.
2. BusinessEnglish,Pearson,2008.
3. PracticalEnglishUsage.MichaelSwan. OUP.1995.
4. CommunicationSkills.SanjayKumarand PushpLata.Oxford UniversityPress. 2011.
5. ExercisesinSpoken English

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN104-18**

CourseName: **BasicIT Skill**

Program: B.Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester:I	Contacthours:33
Theory/Laboratory:Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax.marks: 60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit1: HumanComputerInterface. ConceptsofHardwareandSoftware;Dataand 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
Unit2: ConceptofComputing&PCSoftware–I Concept of Computing. Types of Languages: Machine, assembly and High level Language; Operating system as user interface, utility programs. Wordprocessing:Editing features,formatting features,saving,printing,table handling, page settings, spell-checking, macros, mail-merge, equation editors.	8
Unit3: PCSoftware–II 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
Unit4: TheImpactofComputingandtheInterneton Society. ElectronicPaymentSystem:SecureElectronicTransaction,TypesofPaymentSystem: DigitalCash,ElectronicCheque,SmartCard,Credit/DebitCardE-Money,Immediate Payment System (IMPS).	8

Text Books:

1. IntroductiontoInformationTechnology,ITLEducationSolutionslimited,PearsonEducation
2. ComputerFundamentals,A.Goel,2010,PearsonEducation.
3. FundamentalsofComputers,P.K.Sinha&P.Sinha,2007,BPBPublishers.
4. ITTools,R.K.Jain,KhannaPublishingHouse
5. “IntroductiontoInformationTechnology”,SatishJain,AmbrishRai&ShashiSingh,PaperbackEdition, BPB Publications, 2014.

ReferenceBooks:

1. “IntroductiontoComputers”, PeterNorton
2. ComputersToday,D.H.Sanders,McGrawHill.
3. “Computers”,Larrylong&NancyLong,Twelfthedition,PrenticeHall.
4. ProblemSolvingCasesinMicrosoftExcel,JosephBrady&EllenFMonk,ThomsonLearning

EBooks/Onlinelearningmaterial

1. www.sakshat.ac.in
2. <https://swayam.gov.in/course/4067-computer-fundamentals>

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN105-18**

CourseName:**PCHardware Laboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware &Networking	Credits:1.5
Semester:I	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:30	Durationofendsemesterexam(ESE):--
Externalmax.marks: 20	Electivestatus:core
Totalmarks:50	

Task1:	Assemblingand DeAssemblingof Computer System
Task2:	LoadingandconfigurationprocedureofMicrosoftClientO/SWinXP/Win7and Windows 8
Task3:	Installationofutilitytools (Softwareand Drivers)
Task4:	Firewallconfiguration,Antivirus/Internetsecurityloadingandconfiguration procedure
Task5:	Installationandconfigurationof,I/Odevices–Printers,Webcams,Scanners, Digital Camera , USB Wifi , USB BT, USB Storages , Projectors
Task6:	MultipleOS loadingandtrouble shooting

RecommendedHardware:

ScrapCPUs,ScrapPCCabinet,SMPSandotherbasiccomponents,ScrapMotherboardand Different Types of Processors, Scrap RAM, Desktop PC without loading OS, Scrap UPS, Laptop.

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN106-18**

CourseName:**ComputerNetworkingLaboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware &Networking	Credits:1.5
Semester:I	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:30	Durationofendsemester exam (ESE):--
Externalmax.marks: 20	Electivestatus:core
Totalmarks:50	

Task1:	PreparingComputer Network Cable usingConnectors and Networkingtools
Task2:	LAN&WANConnectivityusing Hub, Switch andRouter
Task3:	InstallationofWindowsandServer
Task4:	SharingPeripheral Devices.
Task5:	ConfigurationofNetworkConnectivity
Task6:	Troubleshootingof ComputerHardwareand Network

RecommendedHardware:

SimpleNetworkComponents,NetworkingComponentslikeSwitch,Router,Hub,NIC, PC/Laptop, Router, Connectivity Network lab

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.

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CourseCode:**BVHN107-18**

CO2	Explainedifferenttermsused inbasic mathematics.
CO3	Describevariousoperationsandformulas usedtosolvemathematicalproblems.

DetailedContents	Contacthours
Unit-I SetIntroduction, Objectives, Representation of Sets (Roster Method, Set Builder Method), Types of Sets (Null Set, Singleton Set, Finite Set, Infinite Set, Equal Set, Equivalent Set, Disjoint Set, Subset, Proper Subset, Power Set, Universal Set) and Operation with Sets (Union of Set, Intersection of Set, Difference of Set, Symmetric Difference of Set) Universal Sets, Complement of a Set.	9
Unit-II Logic Statement, Connectives, Basic Logic Operations (Conjunction, Disjunction, Negation) Logical Equivalence/Equivalent Statements, Tautologies and Contradictions.	8
Unit-III Matrices Introduction, Types of Matrix (Row Matrix, Column Matrix, Rectangular Matrix, Square Matrix, Diagonal Matrix, Scalar Matrix, Unit Matrix, Null Matrix, Comparable Matrix, Equal Matrix), Scalar Multiplication, Negative of Matrix, Addition of Matrix, Difference of two Matrix, Multiplication of Matrices, Transpose of a Matrix.	11
Unit-IV Progressions Introduction, Arithmetic Progression, Sum of Finite number of quantities in A.P, Arithmetic Means, Geometric Progression, Geometric Mean.	11

TextBooks:

1. Discrete Mathematics and Its Applications by Kenneth H. Rosen, McGraw Hill, 6th Edition.
2. College Mathematics, Schaum's Series, TMH.

ReferenceBooks:

1. Elementary Mathematics, Dr. R.D Sharma.
2. Comprehensive Mathematics, Parmanand Gupta.
3. Elements of Mathematics, M.L Bhargava.

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode: **BVHN201-18**

CourseName:**DATABASEMANAGEMENTSYSTEMS**

Program:B.Voc	L:3 T:1 P:0
Branch:Hardware &Networking	Credits:4
Semester:2 nd	Contacthours:44
Theory/Laboratory: Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax. marks:60	
Totalmarks:100	

Course Outcomes:

CO#	Course outcomes
CO1	Understandthebasicconceptsof DBMS.
CO2	Formulate,usingSQL,solutions toabroad range ofqueryand data update problems.
CO3	Demonstrateanunderstanding ofnormalizationtheoryandappliesuchknowledgeto thenormalization ofadatabase.
CO4	Understandthe conceptof TransactionandQueryprocessingin DBMS.

DetailedContents	Contact hours
Unit-I Introduction of DBMS, Data Modeling for a Database, Three level Architectureof DBMS, Components of a DBMS. Introduction to Data Models, Hierarchical, Network and Relational Model, Comparison of Network, Hierarchical and Relational Model, Entity Relationship Model.	11
Unit-II Relational Database, Relational Algebra and Calculus, SQL Fundamentals, DDL, DML,DCL,PL/SQLConcepts,Cursors,StoredProcedures,StoredFunctions, DatabaseTriggers.	11
Unit-III Introduction to Normalization, First, Second, Third Normal Forms, Dependency Preservation, Boyce-Codd Normal Form, Multi-valued Dependencies and Fourth NormalForm,JoinDependenciesandFifthNormalForm,Domain-keynormal form(DKNF).	11
Unit-IV Database Recovery, Concurrency Management, Database Security, Integrity and Control. Structure of a Distributed Database, Design of Distributed Databases.	11

Text Books:

1. "AnIntroductiontoDatabaseSystem",BipinC.Desai,GalgotiaPublicationsPvtLtd-New Delhi, Revised Edition, (2012).
2. "AnIntroductiontoDatabaseSystems",C.J.Date,A.Kannan,S.Swamynathan,8th Edition, Pearson Education, (2006).

ReferenceBooks:

1. "SQL, PL/SQLThe Programming Language of Oracle", Ivan Bayross, BPBPublications, 4th Revised Edition (2009)
2. "DatabaseSystemConcepts",AbrahamSilberschatz,HenryF.Korth,S.Sudharshan, Tata McGraw Hill, 6th Edition, (2013).
3. DatabaseManagementSystems,RaghuRamakrishnan,McGraw-Hill,ThirdEdition,2014.

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CourseCode: **BVHN201-18**

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode: **BVHN202-18**

CourseName: **Programmingin Java**

Program:B.Voc	L:3 T:1 P:0
Branch:Hardware&Networking	Credits:4
Semester:2 nd	Contacthours:44
Theory/Laboratory: Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax.marks:60	
Totalmarks:100	

Course Outcomes:

CO#	Course outcomes
CO1	FamiliarizationwiththeconceptofObjectOrientedconceptsbyimplementingJava Programming.
CO2	Learntheconceptsofclasses&objectswiththefeaturesofreusabilityandimplementationof thesamewithvariouscontrolstructurestosolvearealworldproblems.
CO3	Understandanddesignbuiltinanduserdefinedfunctions/methods,interfacesandpackages etc.
CO4	Abletohandlevarioustypesofdatausingarrays&stringsandhandlingofexceptions occurred in programs.
CO5	UtilizemultithreadingandappletfeaturesofJavaforefficientandeffectiveprogramming.
CO6	Createandhandlefilesin Java.

DetailedContents	Contact hours
Unit-I Java Programming Fundamentals: Introduction to Java, Stage for Java, Origin,ChallengesofJava,JavaFeatures,JavaProgramDevelopment,Object Oriented Programming. JavaEssentials: ElementsofJavaProgram,JavaAPI, Variables and Literals, Primitive Data Types, The String class, Variables, Constants, Operators, Scope of Variables & Blocks, Types of Comment in Java.	11
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.	11

Unit-III Arrays and Strings: Introduction to array, Processing Array Contents, Passing array as argument, Returning array from methods, Array of objects, 2D arrays, Array with three or more dimensions. String class, string concatenation, Comparing strings, Substring, Difference between String and String Buffer class, String Tokenizer class. Interface and Packages: Basics of interface, Multiple Interfaces, Multiple Inheritance Using Interface, Multilevel Interface, Packages, Create and Access Packages, Static Import and Package Class, Access Specifiers. Exception Handling: Introduction, Try and Catch Blocks, Multiple Catch, Nested Try, Finally, Throw Statement, Built-In Exceptions.	11
Unit-IV Multithreading: Introduction, Threads in Java, Thread Creation, Lifecycle of Thread, Joining a Thread, Thread Scheduler, Thread Priority, Thread Synchronization. Applets: Introduction, Applet Class, Applet Life Cycle, Graphics in Applet, Event-Handling. File and I/O Streams: File Class, Streams, Byte Streams, Filtered Byte Streams, Random Access File Class, Character Streams.	11

Text Books:

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

Reference Books:

1. Java, The complete Reference, H. Schildt, 7th Edition, TMH.

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN203-18**

CourseName:**Project- 1**

Program: B.Voc	L:0 T:0 P:8
Branch:Hardware &Networking	Credits:4
Semester:2 nd	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:60	Durationofendsemester exam (ESE):--
Externalmax. marks:40	Electivestatus:core/ elective
Totalmarks:100	

StartingofMajorProjectnamedasMinorProject(FeasibilityStudy,RequirementAnalysisand Design)

ToolsforMinor Projects

Frontend	Java
Backend	SqlServerorOracleorMS Access

InMinorProjects2normalapplicationsandonedatabaserelatedapplicationismust

Note:Thebreakupof marksfortheExternalpracticalwillbeasunder

Viva Voce	15marks
SystemDevelopment	25 marks

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN204-18**

CourseName:**Database Management Systems Laboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware &Networking	Credits:1.5
Semester:2 nd	
Theory/Laboratory:Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:30	Durationofendsemester exam (ESE):--
Externalmax. marks:20	Electivestatus:core/elective
Totalmarks:50	

Course Outcomes:

CO#	Courseoutcomes
CO1	Abletounderstandvarious queriesandtheirexecution
CO2	Populateandquerya databaseusingSQLDML/DDI commands.
CO3	Declareandenforceintegrityconstraintsonadatabase
CO4	ProgrammingPL/SQLincludingstored procedures,stored functions,cursors, packages
CO5	Ableto design new databaseand modifyexisting onesfornew applications andreason about theeiciencyof the result

Instructions:

1.	UsedofCREATE,ALTER,RENAMEandDROPstatementinthedatabasetables (relations)
2.	UsedofINSERTINTO,DELETEandUPDATEstatementinthedatabasetables (relations)
3.	Useofsimpleselect statement.
4.	Useofselect queryontworelations
5.	Useof nestingof queries.
6.	Useofaggregate functions.
7.	Useofsubstring comparison.
8.	Useoforderbystatement.
9.	ConsiderthefollowingschemaforaLibrary Database: BOOK (<i>Book_id, Title, Publisher_Name, Pub_Year</i>) BOOK_AUTHORS (<i>Book_id, Author_Name</i>) PUBLISHER (<i>Name, Address, Phone</i>) BOOK_COPIES(<i>Book_id,Branch_id,No-of_Copies</i>) BOOK_LENDING(<i>Book_id,Branch_id,Card_No,Date_Out,Due_Date</i>) LIBRARY_BRANCH (<i>Branch_id, Branch_Name, Address</i>) Write SQLqueriesto 1. Retrievedetailsofallbooksinthelibrary_id,title,nameofpublisher,authors, number of copies in each branch, etc. 2. Gettheparticularsofborrowerswhohaveborrowedmorethan3booksbetween Jan 2018 to Jun 2018 3. DeleteabookinBOOKtable.Updateethecontentsofothertablestoreflectthis data

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	manipulation operation. 4. Partition the BOOK table based on year of publication. Demonstrate it working with a simple query. 5. Create a view of all books and its number of copies that are recurrently available in the Library.
10.	Consider the following schema for Order Database: SALESMAN(<i>Salesman_id</i> , <i>Name</i> , <i>City</i> , <i>Commission</i>) CUSTOMER (<i>Customer_id</i> , <i>Cust_Name</i> , <i>City</i> , <i>Grade</i> , <i>Salesman_id</i>) ORDERS(<i>Ord_No</i> , <i>Purchase_Amt</i> , <i>Ord_Date</i> , <i>Customer_id</i> , <i>Salesman_id</i>) Write SQL queries to 1. Count the customers with grades above Amritsar's average. 2. Find the name and numbers of all salesmen who had more than one customer. 3. List all salesmen and indicate those who have and don't have customers in their cities (Use UNION operation.) 4. Create a view that finds the salesman who has the customer with the highest order of a day. 5. Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also be deleted.
11.	Write a PL/SQL code to add two numbers and display the result. Read the numbers during run time.
12.	Write a PL/SQL code to find sum of first 10 natural numbers using while and for loop.
13.	Write a program to create a trigger which will convert the name of a student to upper case before inserting or updating the name column of student table.
14.	Write a PL/SQL block to count the number of rows affected by an update statement using SQL%ROWCOUNT
15.	Write a PL/SQL block to increase the salary of all doctors by 1000.
16.	Write a PL/SQL code to multiply two numbers using procedure inside the block.
17.	Write a PL/SQL code to calculate factorial of a given number using function.
18.	Create a package that contains function and procedure.
19.	Design a database for Student Management System for your college using E-R model and Normalization.
20.	Design and Develop Conceptual Data Model (E-R Diagram) for Library Management System with all the necessary entities, attributes, constraints and relationships. Design and build Relational Data Model for application specifying all possible constraints.

Reference Books:

1. "SQL, PL/SQL The Programming Language of Oracle", 4th Revised Edition, Ivan Bayross (2009).
2. "Oracle PL/SQL Programming", 5th Edition, Steven Feuerstein and Bill Pribyl (2009).

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN205-18**

CourseName:**Programmingin JavaLaboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware &Networking	Credits:1.5
Semester:2 nd	Contact hours:
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:30	Durationofendsemester exam (ESE):--
Externalmax. marks:20	Electivestatus:core/ elective
Totalmarks:50	

CourseOutcomes:Willnurturetheprogrammingskillsofthestudents.Studentswillbeable to develop interest in designing projects/software.

CO#	Course Outcomes
CO1	ImplementCoreJava concepts.
CO2	Solvecomputationalproblems usingvarious operatorsofJava.
CO3	Designsolutions to complexbyhandlingexceptions that mayoccurin theprograms.
CO4	Solvecomplexandlarge problemsusingtheconceptofmultithreading.
CO5	Implementinterfacesanddesign packages.

Instructions:AllprogramsaretobedevelopedinJavaprogramming language.

1.	Writeaprogram to performfollowingoperationson twonumbers input bythe user: 1)Addition2)subtraction3)multiplication4)division
2.	WriteaJavaprogram toprintresult ofthefollowingoperations. 1. -15+58* 45 2. (35+8)%6 3. 24+-5*3 / 7 4. 15 +18 / 3 * 2-9 % 3
3.	WriteaJavaprogramto computeareaof: 1)Circle2)rectangle3)triangle4) square
4.	Writeaprogramto converttemperaturefromFahrenheit toCelsiusdegreeusing Java.
5.	WriteaprogramthroughJavathatreads anumber ininches, convertsitto meters.
6.	Writeaprogramto convert minutesintoanumberofyearsand days.
7.	WriteaJavaprogramthat printscurrent timein GMT.
8.	DesignaprograminJavatosolvequadratic equations usingif,if else
9.	WriteaJavaprogramto determine greatestnumberofthreenumbers.
10.	Writeprogramthatgetsanumberfromtheuserandgeneratesanintegerbetween1 and7 subsequentlyshould displaythe nameof theweekdayas perthatnumber.
11.	ConstructaJavaprogramto findthenumberof days ina month.
12.	Writeaprogram tosum valuesofan SingleDimensional array.
13.	Design& executeaprogram inJavato sortanumeric arrayandastringarray.
14.	Calculatetheaveragevalueof arrayelements through JavaProgram.
15.	WriteaJavaprogramto test ifan arraycontainsaspecificvalue.

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16.	Findtheindex of an arrayelementbywriting aprogram in Java.
17.	WriteaJavaprogramto removeaspecific element from an array.
18.	Design aprogram to copyanarraybyiteratingthe array.
19.	WriteaJavaprogram toinsert an element(on aspecific position) into Multidimensional array.
20.	Writeaprogramto perform followingoperationson strings: 1) Comparetwostrings. 2) Count stringlength. 3) Convertuppercasetolowercase&vice versa. 4) Concatenatetwo strings. 5) Print asubstring.
21.	DevelopedProgram&designamethodtofind thesmallest numberamongthree numbers.
22.	Computethe averageof threenumbers through aJavaProgram.
23.	WriteaProgram&design amethod tocount all vowelsin astring.
24.	WriteaJavamethod to count all words in astring.
25.	Writeamethod in Javaprogram to count all words in a string.
26.	WriteaJavaprogram tohandlefollowing exceptions: 1) DividebyZero Exception. 2) ArrayIndexOut OfBbound Exception.
27.	Torepresenttheconceptof <i>Multithreading</i> writea Javaprogram.
28.	Torepresenttheconceptofalltypes ofinheritancesupportedbyJava,design a program.
29.	Writeaprogramtoimplement <i>MultipleInheritance</i> using interface.
30.	ConstructaprogramtodesignapackageinJava.
31.	Towrite andread aplaintext file, writeaJavaprogram.
32.	WriteaJavaprogram toappend texttoan existingfile.
33.	DesignaprograminJava to getalistofall file/directorynames fromthegiven.
34.	Develop a Javaprogramto check if a file or directoryspecifiedbypathname exists ornot.
35.	WriteaJavaprogramtocheckif afileordirectoryhasreadandwritepermission.

Text Books:

1. ProgrammingwithJavaA Primer,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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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
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

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4	Choose a path and generate a basic business idea	Students write down a clear offer (what, for whom, why) and one way to reach their customer
5	Take first real action: message, post, pitch, or sell	Students reach out to or serve 1 real potential customer and record what happened
6	Reflect on first attempt and share with peers	Students share their result, a challenge faced, and one idea to improve next time
7	Improve and try again: aim for first ₹100	Students apply a change, try again, and aim to make their first ₹100 or get meaningful response
8	Learn how to identify and understand your target customer	Students talk to 2 potential customers or observe them and list 3 insights about their needs
9	Learn how to serve your target audience better	Students improve one part of their offer (product, delivery, messaging, or interaction) based on customer feedback or need
10	Explore core entrepreneurial values (resilience, honesty, effort)	Students reflect on 1 value they're building and show it in a business task or peer story
11	Focus on earning and staying consistent	Students complete a second earning task and track their consistency (e.g., same product or message for 3 days)
12	Reflect on earnings, grit, and how to keep going	Students record total earnings, one resilience moment, and one support system or habit they'll continue with

Weekly Component:

Component	Duration	Description
Learning Module	~1.5hrs	- Introduces key concepts in a simple and engaging way - Includes examples, and 1–2 interactive discussions or quizzes
Action Lab	~2hrs	- Hands-on task on the weekly concept - Includes step-by-step guidance, templates, and worksheets - Ends with a submission (e.g., video, reflection, or proof of action)
Resources	Self-paced	- Supplementary videos, short readings, real-life stories, 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.

SimpleSlide/VisualAidTip:

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,anyonewithaphoneandaninternetconnectioncanstartabusiness:moneyhelps,butmindset and initiative matter more at the start.

Youjust need:

1. Aproblemto solve
2. Asimpleskillorproduct
3. Thecouragetostartsmall

ExamplesCarousel(Swipeablecards)

1. **Pooja(India)**–Sells handmaderakhisonInstagram,learneddesigningonYouTube.
Problemshesaw:Expensiveorgenericrakhisinthemarket;nopersonal touch.
2. **Luis(Mexico)**–Repairsusedphonesinhisgarage,nowhasloyal customers.
Problemshesaw:Manypeoplecouldn'taffordnewphonesordidn'ttrustlocalrepair shops.
3. **Sana(Kolkata)**–Startedtiffindeliveryfromherhomekitchen,nowearns₹500/day.
Problemshesaw:Officeworkersstruggledtofindaffordable,homemade meals.
4. **Sal Khan (USA)** – Started Khan Academy with YouTube lessons to help his cousin.
Problemshesaw:His cousinneededhelpwithmath,butgoodlearningresourceswere hard to access.

MCQ

Q:Whichofthesecanbe aformofentrepreneurship?

- A. Makingreelssonskincaretipsandsellinghomemadefacepacks 
- B. Buyingnewclothesfrommalls
- C. Studyingengineering
- D. Playinggameswithoutsharingorstreaming

Feedback:

1. *Correct!Sharingusefultips+sellingaproduct=solvinganeed!*
2. *Tryagain!Entrepreneurshipisaboutcreating valueandhelping others.*

ReflectionPrompt

1. Ifyouhadtoearn₹100thisweek,whatwouldyou do?

Component 2:Action Lab (~2 hours) Task

Find&Learnfrom2EntrepreneursNearYou

Steps(Checklist):

1. Lookaroundyourneighborhoodoronline:find2peoplewhoearnthroughtheirownwork
2. Askorobserve:
 - a) Whatdotheydo?
 - b) Howdothey 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?

Key Concepts:

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-Life Examples:

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 (PapernParcels) – 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**intheresourcestoorganizyourideas.

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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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN301-18**

CourseName:**Data warehousing and Mining**

Program: B.Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester: III	Contacthours:33
Theory/Laboratory:Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax.marks: 60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1: Introduction to Data Warehousing, The need for data warehousing, Operational & Informational Data Stores, Data Warehouse Characteristics, Data Warehouse role & Structure, The cost of warehousing data. Introduction to OLAP &OLTP, Difference between OLAP &OLTP. OLAP Operations	9
Unit 2: Building a Data Warehouse, Design/Technical/Implementation Considerations,and Data Pre- processing Overview. Data Summarization, Data Cleaning, Data Transformation, Concept Hierarchy, Structure. Patterns & Models, Artificial Intelligence (Overview). Multidimensional Data Model, Schemas for Multidimensional Data (Star Schema, Snowflake Schema, Fact Constellation), Data Warehouse Architecture, Data Warehouse Design OLAP Three-tier Architecture.	8
Unit 3: Association Rule Mining, Market Basket Analysis, Apriori Algorithm, Mining Multi level Association Rules, Introduction to Classification, Classification by decision Tree, Attribute Selection Measure.	8
Unit 4: Introduction to Prediction techniques, Accuracy of a Classifier, Cross-Validation, Bootstrap,Boosting,Bagging, IntroductiontoClustering,ClassificationofVarious Clustering Algorithms, Data Visualization.	8

SuggestedReadings

1. DataWarehousing,DataMining,andOLAP,AlexBerson,FirstEdition,TataMcGrawHill
2. DataMiningConcepts&Techniques, JiaweiHan&MichelineKamber,SecondEdition, Morgan Kaufmann Publishers
3. ModernDataWarehousing,Mining&VisualizationCoreConcepts,GeorgeMMarakas,First Edition, Pearson Education
4. DataWarehousing,Architecture&Implementation,Hawkin,PrenticeHall
5. Data Mining: Modeling Data for Marketing, Risk and Customer Relationship Mgmt, Rud, Olivia, Paperback Edition.
6. DataMiningTechniques,Berry,Michael,ThirdEdition
7. DataMining,DataWarehousingandOLAP,Sharma,Gajendra,Second Edition
8. DataMiningwithCaseStudies,GuptaGK,SecondEdition
9. PrinciplesofDataMining,Hand,David.

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN302-18**

CourseName: **ProblemSolvingusingC**

Program:B. Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester: III	Contacthours:33
Theory/Laboratory: Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax. marks:60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1: Logic Development: Flowcharts and algorithms. 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, Library functions.	8
Unit2: Control Statements: While, Do-while and For statements, Nested loops, If- else, Switch, Break – Continue statements.	8
Unit3: Functions: defining Function, accessing functions, passing argumentsto function, specifying argument data types, function prototypes Arrays: Defining, processing arrays, passing arraysto a function, multi- dimensional arrays.	8
Unit4: Structures&Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, unions. Pointers: Introduction to Pointers	9

Text Books:

1. Programming in ANSIC, E. Balagurusami, Fourth Edition, Tata McGraw Hill.
2. Programming in C, Third Edition, Stephen G Kochan, Pearson.
3. The C Programming Language, Kernighan & Richie, Second Edition, PHI Publication.

Reference Books:

1. Object Oriented Programming, Lafore R, Third Edition, Galgotia Publications
2. Let us C, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.
3. Programming in C, Byron S. Gottfried, Second Edition, McGraw Hills.
4. Problem Solving and Programming in C, R. S. Salaria, Second Edition
5. Programming in C, Atul Kahate.

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B.Voc.(HardwareandNetworking),Batch-2018

CourseCode: **BVHN 303-18**

CourseName:**HumanValues&Professional Ethics**

Program:Hardwareand Networking	L:3 T:0 P: 0
Branch:B.Voc	Credits:3
Semester:III	Contact hours:33
Theory/Laboratory:Theory	Electivestatus:core
Internalmax.marks: 40	
Externalmax.marks:60	
Totalmarks:100	

Detailed contents	Contact hours
Unit1-1 CourseIntroduction-Need,BasicGuidelines,ContentandProcessfor Value Education 1. Understandingtheneed,basicguidelines,contentandprocessforValueEducation 2. Self–Exploration–whatisit?itscontentandprocess;‘NaturalAcceptance’and Experiential Validation as the mechanism for self exploration 3. ContinuousHappinessandProsperity-AlookatbasicHuman Aspirations 4. Rightunderstanding,RelationshipandPhysicalFacilities -thebasicrequirementsfor fulfillment of aspirations of every human being with their correct priority 5. UnderstandingHappinessandProsperitycorrectly -Acriticalappraisalofthecurrent scenario 6. Methodtofulfilltheabovehumanaspirations:understandingandlivinginharmonyat various leves	9
Unit-2 UnderstandingHarmonyintheHumanBeing-HarmonyinMyself! 1. Understandinghumanbeingasaco -existenceofthesentient‘I’andthematerial ‘Body’ 2. UnderstandingtheneedsofSelf(‘I’)and‘Body’-SukhandSavidha 3. UnderstandingtheBodyasaninstrumentof‘I’(Ibeingthedoer,seerandenjoyer) 4. Understandingthecharacteristicsandactivitiesof‘I’andharmonyin‘I’ 5. UnderstandingtheharmonyofIwiththeBody:SanyamandSwasthya;correctappraisal of Physical needs, meaning of Prosperity in detail 6. ProgramstoensureSanyamandSwasthya-PracticeExercisesandCaseStudieswillbe taken up in Practice Sessions.	8
Unit-3 UnderstandingHarmonyintheFamilyandSociety-HarmonyinHuman-Human Relationship 1. UnderstandingharmonyintheFamily-thebasicunitofhumaninteraction 2. Understanding values in human - human relationship; meaning of Nyaya and program foritsfulfillmenttoensureUbhay -tripti;Trust(Vishwas) andRespect(Samman) asthe foundational values of relationship. 3. UnderstandingthmeaningofVishwas;Differencebetweenintentionandcompetence 4. UnderstandingthmeaningofSamman,Differencebetweenrespectanddifferentiation; the other salient values in relationship. 5. Understandingtheharmonyinthesociety(societybeinganextensionoffamily): Samadhan, Samridhi, Abhay, Sah - astitva as comprehensive Human Goals 6. Visualizing a universal harmonious order in society - Undivided Society (Akhand Samaj),UniversalOrder(SarvabhaumVyawastha) -fromfamilytoworldfamily!- PracticeExercisesandCaseStudieswillbetakenupinPractice Sessions.	8

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Unit-4 UnderstandingHarmonyintheNatureandExistence-WholeexistenceasCo-existence 1. Understandingtheharmonyinthe Nature 2. Interconnectednessandmutualfulfillmentamongthefourordersofnature recyclability and self - regulation in nature 3. UnderstandingExistenceasCo-existence(Sah-astitva)ofmutuallyinteractingunits in all - pervasive space 4. Holisticperceptionofharmonyatalllevelsofexistence-PracticeExercisesandCase Studies will be taken up in Practice Sessions.	8
ImplicationsoftheaboveHolisticUnderstandingofHarmonyonProfessionalEthics 1. Naturalacceptanceofhumanvalues. 2. DefinitivenessofEthicalHumanConduct 3. BasisforHumanisticEducation,HumanisticConstitutionandHumanisticUniversal Order 4. Competenceinprofessionalethics: a) Abilitytoutilizetheprofessionalcompetenceforaugmentinguniversalhuman order, b) Abilitytoidentifythescopeandcharacteristics ofpeople-friendlyandeco-friendly production systems, c) Abilitytoidentifyanddevelopappropriatetechnologiesandmanagementpatterns for above production systems. 5. Casestudiesoftypicalholistictechnologies,managementmodelsandproduction systems 6. StrategyfortransitionfromthepresentstatetoUniversalHumanOrder: a) Atthelevelofindividual:associallyandecologicallyresponsibleengineers, technologists and managers b) Atthelevelofsociety:asmutuallyenrichinginstitutionsandorganizations	

TextBook

1. RRGaur,RSangal,GPBagaria,2009,AFoundationCourseinValueEducation.

ReferenceBooks

1. IvanIllich,1974,Energy&Equity,TheTrinityPress,Worcester,andHarperCollins,USA.
2. E.F.Schumacher,1973,SmallisBeautiful:astudyofeconomicsasifpeoplemattered,Blond& Briggs, Britain.
3. ANagraj,1998,JeevanVidyaekParichay,DivyaPathSansthan, Amarkantak.
4. SussanGeorge,1976,HowtheOtherHalfDies,PenguinPress.Reprinted1986,1991.
5. PLDhar,RRGaur,1990,ScienceandHumanism,CommonwealthPublishers.
6. A.N.Tripathy,2003,HumanValues,NewAgeInternationalPublishers.
7. SubhasPalekar,2000,HowtopracticeNaturalFarming,Pracheen (Vaidik)KrishiTantraShodh, Amravati.
8. DonellaH.Meadows,DennisL.Meadows,JorgenRanders,WilliamW.BehrensIII,1972,Limits to Growth – Club of Rome’s report, Universe Books.
9. EGSeebauer&RobertL.Berry,2000,FundamentalsofEthicsforScientists&Engineers,Oxford University Press
10. MGovindrajran,SNatrajan&V.S.SenthilKumar,EngineeringEthics(includingHuman Values), Eastern Economy Edition, Prentice Hall of India Ltd.
11. BPBanerjee,2005,FoundationsofEthicsandManagement, Excel Books.
12. BLBajpai,2004,IndianEthosandModernManagement,NewRoyalBookCo.,Lucknow. Reprinted 2008.

RelevantCDs,Movies, Documentaries&Other Literature:

1. ValueEducationwebsite,<http://uhv.ac.in>
2. StoryofStuff,<http://www.storyofstuff.com>
3. AlGore,AnInconvenientTruth,ParamountClassics,USA
4. CharlieChaplin,ModernTimes,UnitedArtists,USA
5. IITDelhi,ModernTechnology–theUntoldStory

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN304-18**

CourseName: **Managementinformation System**

Program: B.Voc	L:3 T: 0 P: 0
Branch:Hardware &Networking	Credits:3
Semester:III	Contacthours:33
Theory/Laboratory: Theory	Electivestatus:core/elective
Internalmax.marks:40	
Externalmax. marks:60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1: Introduction to Systems and Basic Systems Concepts, Elements (Components) of System, Characteristics of System, Types of Systems, System Approach. Information Systems: Definition& Characteristics, Types of Information, Role of Information in Decision-Making, Levels of Management IntroductiontodifferentkindsofInformationSystems:ESS,EIS,DSS,MIS, KWS,TPS, OASand EDP.	9
Unit 2: An overview of Management Information System: Definition & Characteristics, Components of MIS, Frame Work for Understanding MIS: Robert Anthony'sHierarchyofManagementActivity,StructuredVsUnstructured Decisions,FormalVs. InformalSystems,PitfallsinMISDevelopment.	8
Unit 3: Simon's Model of Decision Making. DSS: Concept, Characteristics and Components, Gorry & Scott Morton Grid, Introduction to GDSS. Developing InformationSystems:Analysis&DesignofInformationSystems:Implementation & Evaluation.	8
Unit4: FunctionalMIS:AStudyofMarketing,Personnel,Financialand Production MIS.	8

Suggested Books:

1. ManagementInformationSystems,Goyal,D.P.,ThirdEdition,Macmillan.
2. ManagementInformationSystems,Oz,Effy,ThomsonPressIndianEdition.
3. "ManagementInformationSystems",Kanter,J.,ThirdEdition,PHI.
4. "ManagementInformationSystems",Davis,GordanB.&Olson,M.H,SecondEdition
5. "Information Systems for Modern Management", Murdick, RobertG., &Ross, JoelE., & Claggett, James R., Third Edition, PHI.
6. "Analysis,Design&ImplementationofInformationSystem",Lucas,FourthEdition
7. ManagementInformationSystems,LaudonK.C.,EleventhEdition,Pearson

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN305-18**

CourseName: **ProblemSolvingusingC Laboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware &Networking	Credits:1.5
Semester:III	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks: 30	Durationofendsemester exam (ESE):--
Externalmax. marks: 20	Electivestatus:core/ elective
Totalmarks: 50	

Instructions:Developallprograms inCprogramming language.

1	WRITE A PROGRAM to display your name. Write another program to print message with inputted name.
2	WRITE A PROGRAM to add two numbers.
3	WRITE A PROGRAM to find the square of a given number.
4	WRITE A PROGRAM to calculate the average of three real numbers.
5	WRITE A PROGRAM to create a table.
6	WRITE A PROGRAM to print even or odd number.
7	WRITE A PROGRAM to Compute Quotient and Remainder
8	WRITE A PROGRAM to accept the values of two variables.
9	WRITE A PROGRAM to find the simple interest, inputs are amount, period in years and rate of interest.
10	WRITE A PROGRAM to use increment/decrement operators.
11	WRITE A PROGRAM to find area of a circle.
12	WRITE A PROGRAM to find volume of a cube using side as input from user
13	WRITE A PROGRAM to swap numbers.

Reference Books:

1. Object Oriented Programming, Lafore R, Third Edition, Galgotia Publications
2. Letus C, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.
3. Programming in C, Byron S. Gottfried, Second Edition, McGraw Hills.
4. Problem Solving and Programming in C, R. S. Salaria, Second Edition
5. Programming in C, Atul Kahate.

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN305-18**

CourseName: **Workshop on Desktop Publishing Laboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware&Networking	Credits:1.5
Semester:III	
Theory/Laboratory: Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:30	Durationofendsemester exam (ESE):--
Externalmax. marks:20	Electivestatus:core/ elective
Totalmarks:50	

Instructions:Instructorcanincrease/decreasethe experimentsaspertherequirement.

Assignments:

1	Design andprintaTitle Pageofa Magazine/Book.
2	Preparemultiple designsfora Flexbyusingdifferent Tools.
3	PrepareNSS Certificates forappreciationusinglogosofUniversity,College&NSS unit.
4	Prepare5differentDesigningof Business Cards.
5	PrepareEnvelops displayingfull address of the companybyinserting graphical symbol/logosofcompany.
6	Design andPrint Invoicesforthree companies.
7	PrepareandprintNewsLetter Layoutsforanyfiveactivitiesofyourcollege/ university.
8	PrepareInvitationCards forculturalmeetheldinyour college
9	Design andprintBrochurestoadvertisea“BloodDonationCamp”inyour college.
10	DesignLogosofyour college,University&Govt.ofPunjab alsodisplaytheselogos onblackbackgroundaswatermark.
11	Design,PrintandPublish5motivationsPlaycards.
12	Design&Print assignmentbookof minimum20PagesananyTopic.
13	Design&Printanyfive mostimportantactivitiesof yourcollegeina collage.
14	Design&PrintQuestionPaperofanySubject.
15	Assembleallthe latestnews cuttingofyour activitiesona10X 8sizeflex.

ReferenceBooks:

1. DTPCourse,byShirishChavan published byRapidex.
2. DTPCourseKitbyVikasGuptapublished by Comdex.
3. CorelDraw9 byDavidKarlinpublished byTechmedia.
4. AdobeIllustrator CCbyBrian WoodpublishedbyAdobePress.
5. PageMaker in EasySteps-Scott Basham.

SoftwareTools:

1. AdobeIllustrator14.
2. CorelDrawGraphicsSuit.
3. GNUimagemanipulation program.
4. InkScape.
5. PhotoScape Setup.
6. PM701.

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B.Voc. (Hardware and Networking)

EMC-102-25	Entrepreneurship (Marketing Basics)	0L:0T:4P	2 Credits
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Introduction

This semester helps learners understand marketing as a practical life skill - not just "advertising." It teaches them how to communicate value, attract the right customers, and grow something small into something sustainable. Learners explore the basics of customer psychology, messaging, content creation, and simple sales strategies. Through hands-on activities, they will practice real marketing techniques for their micro-hustle or a simulated business idea, learning how to get attention, build trust, and generate sales.

Learner's Objectives

1. Understand the core concepts of marketing using simple, relatable real-world examples.
2. Learn how customers think, choose, and buy - and how businesses influence decisions ethically.
3. Identify and define a target customer clearly instead of "selling to everyone."
4. Create clear messaging: what they sell, who it helps, and why it matters.
5. Use basic marketing channels (offline + online) to attract customers.
6. Run a simple marketing campaign and measure what worked.
7. Build confidence in selling, promoting, and talking about their product/service.

Outcome: By the end of this semester, learners will be able to market a product/service using basic strategies, attract real customers, and improve their results through feedback and experimentation.

Guiding Principles / Approach

This syllabus is built on action-based learning, clarity-first communication, and customer-first thinking. Learners don't just study marketing—they practice it in real situations through small experiments and repeated improvement. The course is designed to feel approachable and practical: learners create simple content, test messaging, talk to real people, and observe what influences decisions.

Instead of heavy theory, students build marketing skills through doing: customer discovery, storytelling, channel experiments, and reflection. The curriculum emphasizes confidence-building, ethical marketing, and communication as a leadership skill. By helping learners see results quickly (even small wins like one customer or one inquiry), the program builds motivation, creativity, and real-world business readiness.

Semester 2 Curriculum & Milestones

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

Recap Milestone: Recap and Introduction

Description: Revise what you learned in Semester 1 and plan what you will do in Semester 2

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
Recap	Recap and Introduction	Revise what you learned in semester 1 and plan what you will do in		Revise first 12 milestones of Semester 1	• Watch a video on 'Semester 1 summary' • Download 12 summary cards of Semester 1 milestones • Write 3 key learnings of Semester 1 • Write 3 things you will improve in semester 2 • Attempt Semester 1 Recap Quiz

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Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
		semester 2	2	Set your goals for Semester 2	• Learn how to 4X your revenue in Semester 02 using Marketing • Read how famous brands use marketing to increase revenue • Set your marketing goals • Attempt Semester 2 Readiness Quiz

Milestone 13: Marketing Fundamentals

Description: Marketing Fundamentals milestone focuses on helping students understand the basics of marketing and how they can use marketing to scale their businesses and generate revenue.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
13	Learn Marketing Fundamentals to scale your business	Learn how you can use multiple types of marketing to scale your business and grow revenue	1	Understand what is marketing	• Watch a video on marketing fundamentals
					• Read examples of famous marketing campaigns in India
					• Explain what you learned about marketing
					• Attempt task 01 quiz
			2	Learn different types of digital marketing	• Watch a video on what is digital marketing
					• Read a document on types of digital marketing
					• Write what kind of digital marketing works best for your business and why
					• Attempt task 02 quiz
			3	Write 3 marketing ideas for your business	• Read a document on how businesses like yours are using marketing to generate revenue
					• Write 3 marketing ideas to scale your business
					• Validate your ideas with 3-5 people
					• Shortlist the best idea and explain how it will generate revenue
					• Share your experience of doing this milestone
					• Attempt task 03 quiz

Milestone 14: WhatsApp Community Marketing

Description: WhatsApp Community Marketing milestone focuses on helping students learn how to build a WhatsApp community for their users and use it to generate trust, engagement, and sales.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
14	Build and activate your WhatsApp community	Build a WhatsApp community for your users and use it to	1	Create your WhatsApp community	• Watch a video on why you should build a WhatsApp Community
					• Read a document on how to create a WhatsApp community
					• Enter the name of your community

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		generate trust, engagement, and sales			• Upload your WhatsApp community link
					• Attempt task 01 quiz
			2	Invite people to join your WhatsApp community	• Read a few sample invite and welcome messages
					• Draft an invite message to invite 50 people to join your community
					• Draft a welcome message for your community members
					• Upload a screenshot of your welcome message
					• Attempt task 02 quiz
			3	Engage your community users and start building trust	• Learn 'how to engage people in your community'
					• Read top 10 community engagement ideas for your business
					• Write 5 types of content to post weekly in your community
					• Create and upload your weekly calendar
					• Attempt task 03 quiz
			4	Get 3 sales from your WhatsApp Community	• Learn how to do soft-selling on community
					• Create a community-only offer
					• Learn how to convert interested people into paid customers
					• Write a simple plan to generate 3 sales per month from the community
					• Share your experience of doing this milestone
					• Attempt task 04 quiz

Milestone 15: Generating Content for Marketing using AI

Description: AI-led Content creation and marketing milestone focuses on helping students learn how to use AI tools to generate creative ideas and create professional videos, posters, and blogs.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
15	Use AI to generate content for marketing	Learn how to use AI tools to generate creative ideas and create professional videos, posters, and blogs	1	Learn what is content marketing	• Watch a video on 'what is content marketing' which content works for brand awareness or revenue generation
					• Write 3 types of content you believe your customers like
					• Attempt task 01 quiz
			2	Generate content ideas to attract customers	• Learn how to use AI to generate content marketing ideas for your business
					• Generate 10 small content ideas to attract your customers
					• Discuss the ideas with your users and take feedback
					• Shortlist top 3 content ideas to attract customers

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					• Attempt task 02 quiz
			3	Create your first brand video using AI	• Watch a video on 'How to use AI tools to create simple short videos' • Read this guide on how to ask AI to write a video script • Generate 5 ideas for your AI videos and write them here • Upload your AI generated video link • Attempt task 03 quiz
			4	Create a brand poster using AI	• Learn how to create a poster using AI • Write a prompt for the poster will you create using AI • Upload the AI poster you have created • Post this poster in your WhatsApp community • Attempt task 04 quiz
			5	Write a blog using AI	• Learn how to use prompt engineering to write content for your business • Read list of topics on which you can write a blog • Write the topic on which you will write a short blog • Write the first version of your blog • Share your blog with your friends and faculty • Share your experience of doing this milestone • Attempt task 05 quiz

Milestone 16: Social Media Marketing

Description: Social Media Marketing milestone focuses on helping students learn what social media marketing is and how to create a social media weekly plan that engages users and improves brand visibility.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
16	Plan your social media marketing strategy	Learn what is social media marketing and how can you execute it to scale your business	1	Learn what is social media marketing	• Watch a video on 'Introduction to Social media marketing'
					• Learn different types of social media marketing
					• Read a document on how to use social media marketing to generate revenue
					• Write your understanding of social media marketing
					• Write one social media marketing idea for your business
					• Attempt Task 01 Quiz
			2	Research your competitors	• Learn how to research your competitors
					• Find your competitors
					• Write top 3 things your competitors are posting
					• Find one unique gap that you can capture
					• Attempt task 02 quiz
			3	Finalize your content pillars	• Watch a video on 'what are content pillars'
					• Read examples of 'content pillars'
					• Write 5 content pillars for your social media strategy
					• Attempt task 03 quiz
			4	Create your weekly social	• Watch a video on 'how to create a weekly social media plan'

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				media plan	• Look at examples of 'social media calendar' • Create and upload your weekly calendar • Upload the link of your Instagram Channel • Share your experience of doing this milestone • Attempt task 04 quiz

Milestone 17: Trust-led Marketing

Description: Trust-led Marketing milestone focuses on helping students build trust through social media proofs, testimonials, or basic engagement and later converting them into leads and sales.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
17	Generate leads and turn them into sales	Use testimonials, conversations, and daily posts to generate leads and close sales.	1	Use social proof to build trust	• Identify 2 happy customers
					• Create a testimonial post with CTA
					• Post testimonial on social media
					• Post testimonial on the community
					• Attempt task 01 quiz
			2	Make people share their problems	• Learn how to ask open-ended questions
					• List 5 customer problems
					• Post these problems in community and social media
					• Evaluate top 2 problems customers face
					• Encourage people to share their problems
					• Attempt task 02 quiz
			3	Help your users with 3-5 days content sprint and generate leads	• Brainstorm or use AI to create a solution document for each problem
					• Post solution to 1 problem on a daily basis
					• DM people to check if your solution is helping them
					• Write how many leads did you generate
			4	Convert leads into sales	• Attempt task 03 quiz
					• Learn how to convert leads into sales
					• Soft sell your offering in community and social media
					• DM people how can your product help them better
					• Follow up after 24 to 48 hours
					• Write how many leads you converted into sales
					• Share your experience of doing this milestone
					• Attempt task 04 quiz

Milestone 18: Viral/Trend Marketing

Description: Viral Marketing milestone focuses on helping students learn how to launch viral campaigns for their businesses using the latest trends and make their brand go viral without spending any money.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
18	Make your brand go viral	Design viral marketing campaigns to reach 5X	1	Learn viral marketing	• Understand what is virality and how it works
					• Read about top 10 viral marketing campaigns in India
					• Write 3 reasons why people share content

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		users without spending any money			• Attempt task 01 quiz
			2	Design 2 viral campaigns for your business	• Learn 5 types of common viral marketing strategies • Read 10 viral marketing ideas for your business • Design 2 viral campaigns for your business • Take feedback from people and finalize one campaign • Set your campaign targets • Attempt task 02 quiz
			3	Launch one viral campaign to increase customer reach	• Create your campaign launch video or poster • Create your campaign launch message • Launch your campaign on your social media platform • Launch your campaign in your WhatsApp community • Attempt task 03 quiz
			4	Promote your campaign to make it viral	• Share your campaign in other groups and forums • Measure your campaign performance • Learn how to improve your campaign • Analyze your campaign and record final metrics • Enter the summary of your campaign • Share your experience of doing this milestone • Attempt task 04 quiz

Milestone 19: BTL/Offline Marketing

Description: BTL/Offline Marketing milestone focuses on helping users learn about BTL (below the line) or offline marketing and use it to reach out to local customers and generate revenue.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
19	Drive revenue through offline/BTL marketing	Use offline activities to reach local customers and generate sales	1	Understand offline or BTL marketing	• Watch a video on what is BTL marketing
					• Read about famous BTL marketing campaigns
					• Write how you can use BTL marketing for your business
					• Attempt task 01 quiz
			2	Pick your offline marketing idea	• Learn about common offline tactics for your business
					• Write 1 offline marketing idea you can execute
					• Design your brand poster for offline marketing
					• Create your offline marketing offer or pitch
					• Practice your pitch with friends and take feedback
					• Attempt task 02 quiz
			3	Execute offline marketing in local market	• Identify people or locations in local for offline marketing
					• Pitch to at least 10 real customers
					• Collect contact details for WhatsApp Community invite

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					• Close at least one sale
					• Write your offline marketing metrics
					• Share your experience of doing this milestone
					• Attempt task 03 quiz

Milestone 20: Collaboration and Affiliate Marketing

Description: Collaboration and Affiliate Marketing milestone focuses on helping users learn about affiliate marketing and how to collaborate with individuals/businesses to reach more customers and generate revenue.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
20	Grow through collaboration and affiliation marketing	Use partners and affiliates to reach new audiences and generate sales	1	Understand affiliate marketing and collaboration	• Watch a video on what is affiliate marketing
					• Read about top collaboration or affiliate marketing campaigns
					• Learn 10 common types of collaboration or affiliate marketing for your business
					• Pick 3 types that can work for your business
					• Attempt task 01 quiz
			2	Design your affiliation model	• Learn how to start an affiliation program
					• Decide your commission structure
					• Write a pitch for partnership
					• Attempt task 02 quiz
			3	Finalize one person or business for collaboration	• Learn how to find a right partner for collaboration
					• Create a list of 5 to 10 people or businesses for collaboration
					• Send your partnership pitch to potential partners
					• Write the name of one final partner
					• Attempt task 03 quiz
			4	Execute the collaboration	• Explain how will the partner market your brand
					• Post the link or screenshot of successful collaboration
					• Respond to new leads within 24 hours
					• Close at least one sale
					• Attempt task 04 quiz
			5	Measure your collaboration	• Write number of leads generated
					• Write number of sales closed and revenue generated
					• Write what worked and how to improve collaboration
					• Share your experience of doing this milestone
					• Attempt task 05 quiz

Milestone 21: Advertising Marketing (Meta)

Description: Advertising Marketing milestone focuses on helping users learn how to post a paid ad on Meta (Instagram and Facebook) promoting their business and reach to more users or generate revenue.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
21	Run your	Learn how	1	Setup your Meta	• Watch a video on why to run ads on Meta
					• Learn different types of ads

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	first ad on Instagram	to boost posts or run simple video ads to reach new viewers	2	Business Suite	• Read the guide on Meta Ad account setup • Setup your Meta Ad account • Attempt task 01 quiz
				Design your first paid ad	• Watch samples of good ad designs for your business • Finalize your ad objective • Upload the final draft of your ad with final copy and creatives • Attempt task 02 quiz
			3	Define your target audience and budget	• Watch a video on 'how to target the right people for ad' • Define your target audience • Learn how to decide the right budget for your ad • Decide your final budget • Attempt task 03 quiz
			4	Launch your ad	• Learn how to create and launch your ad • Create your ad and review ad preview • Upload the screenshot of launched ad • Attempt task 04 quiz
			5	Manage incoming leads from ad	• Draft a message for incoming leads • Send draft message to leads within 24 hours • Pitch your offer to leads and follow up • Close at least one sale • Attempt task 05 quiz
			6	Measure your ad performance	• Learn metrics to measure ad performance • Write money spent and leads or impressions • Mention CPL or CPM • Write revenue generated and number of sales closed • Write what worked and how to improve ads in future • Share your experience of doing this milestone • Attempt task 06 quiz

Milestone 22: Psychological Marketing

Description: Psychological Marketing milestone focuses on helping users identify psychological triggers like urgency, pricing, and offers, and use them to increase conversions and revenue.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
22	Use Psychological Triggers to Increase Sales	Learn how to use urgency, pricing, and offers to increase conversions and revenue	1	Understand the psychological triggers	• Learn why people buy products • Share a story of one product you purchased because of a trigger • Identify buying triggers for your business • Attempt task 01 quiz
			2	Execute FOMO or urgency marketing	• Learn how to create a FOMO or urgency marketing campaign • Write how will you create FOMO or urgency for your customers • Create one FOMO/urgency marketing campaign • Launch your campaign on social media and community • Attempt task 02 quiz
			3	Execute one offer or discount marketing	• Learn how to create offer or discounting marketing campaigns • Write how will you create an offer/discount campaign

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B.Voc. (Hardware and Networking)

				campaign	• Create one offer/discount campaign for your customers • Launch your campaign on social media and community • Share your experience of doing this milestone • Attempt task 03 quiz
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Milestone 23: Data-Driven Marketing

Description: Data-Driven Marketing milestone focuses on helping users analyze the data of the last 10 milestones and run specific campaigns or ideas that resulted in lead generation or revenue.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
23	Use Data-Driven Marketing to Grow Faster	Analyze data of the last 10 milestones to identify top campaigns or ideas and decide what to continue, improve, or stop.	1	Analyze your marketing data	• Learn how businesses make decisions using data
					• List 3 things that worked well and why
					• List 3 things that didn't work well and why
					• Attempt task 01 quiz
			2	Re-execute top performing campaign	• Re-execute top 1-2 campaigns for 1 week
					• Write how it helped generate leads or revenue
					• Attempt task 02 quiz
			3	Improve one low performing campaign and relaunch it	• Pick one low performing campaign and write how to improve it
					• Improve the campaign and relaunch it
					• Measure its performance and see if it was better
					• Share your experience of doing this milestone
					• Attempt task 03 quiz

Milestone 24: Closure and Next Step

Description: The final milestone focuses on helping users reflect on their learnings and also create an action plan for the next few months to continue to scale and grow their business.

Milestone #	Milestone name	Milestone Description	Task #	Task Title	Activities
24	Plan your next growth phase	Document your 12 weeks of learning and create a 1 month plan to scale and grow your business	1	Review your progress	• List all the ideas you executed
					• Write which milestone helped you the most and how
					• Write which milestone helped you the least and why
					• Write your key learnings from this semester
					• Create a not-to-do list for your business
					• Attempt task 01 quiz
			2	Create your 1 month marketing plan	• Learn how to create a 1 month marketing plan
					• Set your marketing goal
					• Create and upload your 1 month plan to achieve this goal
					• Share your experience of doing this milestone
					• Attempt final semester quiz

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN 401-18**

CourseName: **InformationSecurity**

Program:B.Voc	L:3 T:0 P:0
Branch:Hardware& Networking	Credits:3
Semester:IV	Contacthours:33
Theory/Laboratory: Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax. marks:60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1 : Information Security Concepts : Information Security Overview: Background and Current Scenario, Principles of Security- Information Classification, Policy Framework, Role based Security in an organization, ComponentsofInformationSystems,BalancingInformationSecurityandAccess, Approaches to information Security Implementation, Security Systems DevelopmentLifeCycle.	9
Unit 2 : Security Threats and Vulnerabilities: Overview of Threats and Vulnerabilities-Intruders, Malicious Software, Viruses and related Threats, Desktop Security, Email security: PGP and S/MIME, Web Security: Web authentication,SSLandSET,DatabaseSecurity.Firewalls-Overview,Design principlesandTypes.	8
Unit 3 : SecurityManagement and Laws: Introduction to SecurityManagement, Access Control and Intrusion Detection, Overview of Identification and Authorization, Intrusion Detection Systems And Intrusion Prevention Systems, SecurityProceduresandGuidelines,BusinessEthicsandBestPractices,Security Assurance,SecurityLaws,IPR, InternationalSecurityStandards,SecurityAudit, SSE-CMM/COBIT etc.	8
Unit 4 : Cryptography: Concepts and Techniques, Symmetric and Asymmetric KeyCryptography,Steganography,SymmetricKeyCiphers-DES,AES(Structure andAnalysis).Asymmetric KeyCiphers-PrinciplesofPublicKeycryptosystems, RSAAlgorithmmanditsAnalysis.Digital Signatures.	8

SuggestedBooks:

- 1)IntroductiontoInformationSecurityandCyberLawsPaperback-bySuryaPrakashTripathi (Author),RitendraGoel(Author),PraveenKumarShukla(Author)
- 2)PrinciplesofInformationSecurity.Paperback-byWhitman(Author)
- 3)CryptographyandInformationSecurityPaperback–byPachghareV.K.(Author)

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN 402-18**

CourseName:**SoftwareEngineering**

Program:B.Voc	L:3 T:0 P:0
Branch:Hardware& Networking	Credits:3
Semester: IV	Contacthours:33
Theory/Laboratory: Theory	Electivestatus:core
Internalmax.marks:40	
Externalmax. marks:60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1 : Software:Characteristics,ComponentsApplications,SoftwareProcessModels:Waterfall,Spiral, Prototyping,FourthGenerationTechniques,ConceptsofProjectManagement,Role OfMetricsAnd Measurement.	9
Unit 2 : S/W Project Planning: Objectives, Decomposition Techniques: S/W Sizing, ProblemBasedEstimation,ProcessBasedEstimation,CostEstimationModels:COCOMO Model, The S/W Equation, System Analysis: Principles Of Structured Analysis, Requirement Analysis, DFD, Entity Relationship Diagram, Data Dictionary. S/W Design: Objectives, Principles, Concepts, And Design Methodologies: Data Design, Architecture Design,ProceduralDesign,Object –OrientedConcepts.	8
Unit3: TestingFundamentals:Objectives,Principles,Testability,TestCaseDesign: White Box & Black Box testing, Testing Strategies: Verification & Validation, Unit Testing, Integration Testing, Validation Testing, System Testing.	8
Unit4: Advanced topicsin Software Engineering: Reengineering:Reverse Engineering,Restructuring, ForwardEngineering. ComputerAidedSoftwareEngineering(CASE):TaxonomyofCASEtools.	8

SuggestedBooks:

1. RogerS.Pressman,“SoftwareEngineering–APractitioner’sApproach“,SixthEdition, McGraw Hill
2. R.E.Fairley,“SoftwareEngineeringConcepts”,Paperback Edition,McGrawHill.
3. Jalota,“AnIntegratedApproachtoSoftwareEngineering”,ThirdEdition,Narosa Publishing House

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN 403-18**

CourseName: **ObjectOrientedProgrammingusingC++**

Program: B.Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester:IV	Contacthours:33
Theory/Laboratory:Theory	Electivestatus:core
Internalmax.marks:60	
Externalmax. marks:40	
Totalmarks:100	

Detailedcontents	Contact hours
Unit1:Principlesofobjectorientedprogramming Introduction to OOP and its basic features, Basic components of a C++, Program and programstructure,CompilingandExecutingC++Program.DifferencebetweenProcedure Oriented Language(C) and Object Oriented Language	9
Unit2:Classes & ObjectsandConcept of Constructors Defining classes, Defining member functions, Declaration of objects to class, Access to member variables from objects, Different forms of member functions, Access specifiers (Private,public,protected),Arrayofobjects.Introductiontoconstructorsand destructors	8
Unit 3 : Inheritance IntroductiontoInheritance,Typesofinheritance:-Singleinheritance,Multiple inheritance,Multilevelinheritance,Hierarchicalinheritance,Hybrid inheritance	8
Unit4:FileHandling Introductionto file,OpeningandClosingFile,variousI/Ofunctionsusedinfile handling.	8

SuggestedBooks:

1. ObjectOrientedProgrammingwithC++,E.Balagurusami,FourthEdition,TataMc-GrawHill.
2. ObjectOrientedProgramminginTurboC++,RobertLafore,FourthEditionGalgotiaPublications.
3. TheC++ProgrammingLanguage,BjarnaStroustrup,ThirdEdition,AddisonWesleyPublishing Company.
4. ObjectOrientedProgrammingUsingC++,Salaria,R.S,FourthEdition,KhannaBookPublishing

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN 404-18**

CourseName: **ComputerSystemArchitecture**

Program: B.Voc	L:3 T:0 P:0
Branch:Hardware &Networking	Credits:3
Semester:IV	Contacthours:33
Theory/Laboratory: Laboratory	Electivestatus:core
Internalmax.marks:30	
Externalmax. marks:20	
Totalmarks:50	

Detailedcontents	Contact hours
Unit1 :LogicGates: AND, OR,NOT, NAND,NOR, XOR, XNOR,NAND&NOR as UniversalGates, LogicGatesApplications. Boolean Algebra: Introduction, Theorems, Simplification of Boolean Expression using BooleanAlgebra,SOP&POSForms,RealizationofBooleanExpressionusingGates,K- Maps, Simplification of Boolean Expression using K-Maps. .	9
Unit2:CombinationalLogicCircuits: HalfAdder&HalfSubtractor,FullAdder&Full Subtractor, Parallel Binary Adder, Binary Adder/Subtractor. CombinationalLogicCircuits: Multiplexers&Demultiplexers,Implementationof Boolean equations using Multiplexer and Demultiplexer, Encoders & Decoders.	8
Unit3:SequentialLogicCircuits: Latch,FlipFlops-R-SFlip-Flop,J-KFlip-Flop,Race Around Condition, Master-Slave JK Flip-Flop, D Flip-Flop, T Flip-Flop, Applications of Flip-Flops.	8
Unit 4 : Introduction to Computer Organization: Introduction to Computer and CPU (Computer Organization, Computer Design and Computer Architecture), Stored Program Concept- Von Neumann Architecture, RISC and CISC Architecture. Register Transfer and Micro operations- Introduction to Registers, Instruction Format, TypesofInstructions-MemoryReferenceInstructions,RegisterReferenceInstructionsand Input-Output Instructions. Common Bus System: Introduction to Common Bus System, Types of Buses (Data Bus, Control Bus, Address Bus), 16-bit Common Bus System--Data Movement among registers using Bus.	8

SuggestedBooks:

1. ComputerSystemArchitecture,M.M.Mano,ThirdEdition,PHI.
2. DigitalComputerElectronics,Malvino,SecondEdition,Mc-GrawHill.
3. ModernDigitalElectronics, R.P.Jain, FourthEdition, TMH.

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN 405-18**

CourseName: **ComputerSystemArchitectureLaboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware &Networking	Credits:1.5
Semester:IV	
Theory/Laboratory:Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:30	Durationofendsemester exam (ESE):--
Externalmax. marks:20	Electivestatus:core/ elective
Totalmarks:50	

Instructions: Sample exercises are given below and Instructor can increase or decrease the experiments as per the requirement.

1	To verify the Truth Table of Basic Logic Gates
2	To verify the Truth Table of Combinational Logic Gates
3	To verify the Truth Table of Universal Logic Gates
4	To verify the Truth Table of Half Adder Combinational Circuit
5	To verify the Truth Table of Full Adder Combinational Circuit
6	To verify the Truth Table of Half Subtractor Combinational Circuit
7	To verify the Truth Table of Full Subtractor Combinational Circuit
8	To verify the Truth Table of Multiplexer Combinational Circuit
9	To verify the Truth Table of DeMultiplexer Combinational Circuit
10	To verify the Truth Table of S-R Flip-Flop and J-K Flip-Flop
11	To verify the Truth Table of Asynchronous counter
12	To verify the Truth Table of Synchronous counter

Reference Books:

1. Computer Organization and Architecture, Stallings, Eighth Edition, PHI.
2. Modern Digital Electronics, R.P. Jain, Fourth Edition, TMH.
3. Digital Logic & Computer Design, D. Morris Mano, Second Edition, PHI.
4. Digital and Electronic Circuits, T.C. Bartee, McGraw Hill.

I K Gujral Punjab Technical University Jalandhar
B.Voc. (Hardware and Networking)

CourseCode: **BVHN 406-18**

CourseName: **ProblemSolvingusingC++ Laboratory**

Program: B.Voc	L:0 T:0 P:3
Branch:Hardware &Networking	Credits:1.5
Semester:III	
Theory/Laboratory:Laboratory	Percentageofnumerical/designproblems:--
Internalmax.marks:30	Durationofendsemester exam (ESE):--
Externalmax. marks:20	Electivestatus:core/elective
Totalmarks:50	

Instructions:Developallprograms inC++programming language.

1	Writeaprogramtoentermarkof6different subjectsandfindoutthetotalmark (Using cin and cout statement).
2	Writeafunctionusingreferencevariablesasargumentstoswapthevaluesofpair of integers.
3	Writeafunction tofindlargest ofthreenumbers.
4	Writeaprogram tofind thefactorialof a number.
5	Defineaclasstorepresentabankaccountwhichincludesthefollowingmembers as Data members: a) Nameofthe depositor b) AccountNumber c) Withdrawalamount d) BalanceamountintheaccountMemberFunctions: a) Toassigninitialvalues b)Todepositan amount c) Towithdraw anamount aftercheckingthe balance d) To displayname andbalance.
6	Writeaprogram forsingleinheritance.
7	Writeaprogramforuse ofconstructor and destructors.
8	Write aprogram forMultipleinheritance.
9	WriteaprogramforMultilevel inheritance
10	Writeaprogramforfilehandling.

ReferenceBooks:

1. ObjectOrientedProgrammingwithC++,E.Balagurusami,FourthEdition,TataMc-GrawHill.
2. ObjectOrientedProgramminginTurboC++,RobertLafore,FourthEditionGalgotiaPublications.
3. TheC++ProgrammingLanguage,BjarnaStroustrup,ThirdEdition,AddisonWesleyPublishingCompany.
4. ObjectOrientedProgrammingUsingC++,Salaria,R.S,FourthEdition,KhannaBookPublishing

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:BVHN501-18

CourseName:Programmingin Python

Program:B.Voc	L:3P:0
Branch:Hardware&Networking	Credits:3
Semester:5th	Contacthours:44hours
Theory/Practical:Theory	Percentageofnumerical/designproblems:40%
Internalmax.marks:40	Durationofendsemesterexam(ESE):3hrs
Externalmax.marks:60	Electivestatus: Core
Totalmarks:100	

Prerequisite:-NA-

Corequisite:-NA-

AdditionalmaterialrequiredinESE:-NA-

Course Outcomes: Students will be able to:

CO#	CourseOutcomes
CO1	FamiliarwithPythonenvironment,datatypes,operatorsusedinPython.
CO2	CompareandcontrastPythonwithotherprogramminglanguages.
CO3	Learntheuseofcontrolstructuresandnumerousnative datatypeswiththeir methods.
CO4	Designuserdefinedfunctions,modules,andpackagesandexceptionhandlingmethods.
CO5	CreateandhandlefilesinPythonandlearnObjectOrientedProgrammingConcepts

DetailedContents	Contact hours
Unit-I Introduction to Python Programming Language: Programming Language, History and Origin of Python Language, Features of Python, Limitations, Major Applications of Python,FirstPythonProgram,PythonInteractiveHelpFeature,Pythondifferencesfrom other languages. PythonDataTypes&Input/Output:Keywords,Identifiers,PythonStatement,Indentation, Documentation, Variables, Multiple Assignment, Understanding Data Type, Data Type Conversion, Python Input and Output Functions, Import command. OperatorsandExpressions:OperatorsinPython,Expressions,Precedence,Associativityof Operators, Non Associative Operators.	12
Unit-II Control Structures: Decision making statements, Python loops, Python control statements. PythonNativeDataTypes:Numbers,Lists,Tuples,Sets,Dictionary,Functions&Methodsof Dictionary, Strings (in detail with their methods and operations).	10
Unit-III PythonFunctions:Functions,AdvantagesofFunctions,Built-inFunctions,Userdefinedfunctions, Anonymous functions, Pass by value Vs. Pass by Reference, Recursion, Scope and Lifetime of Variables. PythonModules:Moduledefinition,Needofmodules,Creatingamodule,Importingmodule,Path Searching of a Module, Module Reloading, Standard Modules, Python Packages.	12
Unit-IV ExceptionHandling:Exceptions,Built-inexceptions,Exceptionhandling,Userdefinedexceptions in Python. FileManagementinPython:Operationsonfiles(opening,modes,attributes,encoding,closing), read() & write() methods, tell() & seek() methods, renaming & deleting files in Python. IntroductiontotheconceptofOOPSinPython.	10

TextBooks:

1. ProgramminginPython,PoojaSharma,BPBPublishations,2017.
2. CorePythonProgramming,R.NageswaraRao,2ndEdition,Dreamtech.

ReferenceBooks:

1. Python,ThecompleteReference,MartinC.Brown,McGrawHillEducation.
2. PythoninaNutshell,A.Martelli,A.Ravenscroft,S.Holden,OREILLY.

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:BVHN502-18

CourseName:E-Commerce

Program: B.Voc	L: 3 P: 0
Branch: Hardware&Networking	Credits: 3
Semester: 5 th	Contacthours: 40
Theory/Practical: Theory	Percentageofnumerical/designproblems:--
Internalmax.marks: 40	Durationofendsemesterexam(ESE):--
Externalmax.marks: 60	Electivestatus:core/elective
Totalmarks: 100	

Prerequisite:--

Corequisite:--

AdditionalmaterialrequiredinESE:--

CourseOutcomes:

CO#	Course outcomes
CO1	To understand of various applications and scope of e-commerce.
CO2	To know the working of various payment modes used in e-commerce today.
CO3	Understand how and why to use digital marketing for multiple goals within a larger marketing and/or media strategy.
CO4	Understand the major digital marketing channels-online advertising: Digital display, video, mobile, search engine,
CO5	Students will be able to explore the latest digital ad technologies

Detailed Contents	Contact hours
Unit-I E-Commerce : Need and Origin of E-Commerce, Factors affecting E -Commerce, E-Commerce framework Electronic Commerce Models, Value Chains in Electronic Commerce. Internet and E-Business Introduction to Internet and its application, Intranet and Extranets. World Wide Web, Internet Architectures, Internet Applications, Business Applications on Internet, E - Shopping, Electronic Data Interchange, Components of Electronic Data Interchange. Applications in E-commerce: E-commerce Applications in Manufacturing, Wholesale, Retail and Service Sector	10
Unit-II Online Payment Systems Mechanism of Making Payment Through Internet, Online Payment Mechanism, Electronic Payment Systems, Payment Gateways, Plastic Money, Debit Card, Credit Card, Laws Relating to Online Transactions.	10
Unit-III Digital Marketing: Understanding Digital Marketing Process, Digital marketing vs. Traditional marketing, Website Planning Process: Understanding Domain names & Domain extensions, Search Engine Optimization: Social media marketing, How social media marketing is different than others Forms of Internet marketing, Google analytics: Introduction to Google Analytics, how Google Analytics works, Google Ad Words & Online Display advertising	10
Unit-IV Email marketing Need, working and challenges faced in sending bulk emails, Types of email marketing- Opt-in & bulk emailing, Content marketing Affiliate marketing: Sources to Make Money Online, Blogging & freelancing to make money, Ad Sense, approval process and Ad Sense Administration. E Business Entrepreneurship.	10

Text Books

1. Whitley, David, "E-Commerce Strategy, Technologies and Applications", Tata McGraw Hill.
2. Gary P. and Perry, James T., "Electronic Commerce, Schneider", Thomson Learning.
3. Bajaj, Kamlesh K & Nag, Debjani, "E-Commerce: The Cutting Edge of Business", McGraw Hill
4. Laudon and Traver, "E-Commerce: Business, Technology & Society", Pearson Education

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:BVHN503-18

CourseName:MicroprocessorandMicrocontroller.

Program: B.Voc	L: 3 P: 0
Branch: Hardware&Networking	Credits: 3
Semester: 5 th	Contacthours: 40
Theory/Practical: Theory	Percentageofnumerical/designproblems:--
Internalmax.marks: 40	Durationofendsemesterexam(ESE):--
Externalmax.marks: 60	Electivestatus:core/elective
Totalmarks: 100	

Prerequisite:--

Corequisite:--

AdditionalmaterialrequiredinESE:--

Course Outcomes:

CO#	Courseoutcomes
CO1	Studentswillbeabletounderstandpindiagramandarchitectureofvarious microprocessors.
CO2	Studentswillbeabletounderstandthearchitectureofvariouscontrollersinacomputersystem.
CO3	Studentswillbeabletounderstandassemblylevelprograms.

DetailedContents	Contact hours
Unit-I IntroductiontoMicroprocessors ,HistoricalBackgroundofMicroprocessors,Applicationsof Microprocessors, Introduction to 8085, Architecture of 8085, Pin Diagram of 8085.	10
UNIT-II InstructionCycle,TimingDiagramsofMemoryRead/WriteOperations,I/Oreadandwriteoperations ,AddressingModes,IntroductiontoRISC&CISCProcessors.	10
Unit-III Introduction to Microcontroller, Architecture of Microcontroller, Features of Microcontroller, Advantages of Microcontroller, comparison between Microcontroller and Microprocessor. Applications of Microcontroller.	10
Unit-IV Introductionto8257DMAcontroller,Featuresof8257DMAcontroller,Internalarchitectureof8257, interfacing of 8257 with 8085, Pin diagram of 8257 DMA controller.	10

Text/ReferenceBooks:

1. MicroprocessorArchitecture,ProgrammingandApplicationswith8085,Ramesh.S. Gaonkar, Fourth Edition, Penram International Publishing
2. 8051MicrocontrollerandEmbeddedSystems,MuhammadAliMazidiJaniceGillispi Mazidi, Second Edition, PHI
3. FundamentalsofMicroprocessorsandMicrocomputers,B.Ram,FourthEdition,Dhanpat Rai Publications
4. TheIntelMicroprocessors8086/8088,80186/80188,80286,80386,80486,PentiumPro Architecture, Programming and Interfacing, B. Brey, Fifth Edition, Prentice Hall International

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:BVHN504-18

Course Name: CyberSecurity

Program: B. Voc	L:3 P: 0
Branch: Hardware&Networking	Credits:3
Semester: 5 th	Contacthours:40
Theory/Practical: Theory	Percentageofnumerical/designproblems:--
Internalmax.marks: 40	Durationofendsemesterexam(ESE):--
Externalmax.marks: 60	Electivestatus:core/elective
Totalmarks: 100	

Prerequisite:--

Corequisite:--

AdditionalmaterialrequiredinESE:--

Course Outcomes:

CO#	Courseoutcomes
CO1	Toteachthestudentsanalysisandpracticalityofvariousystemsonwhichsoftwaresystemcan be
CO2	AftercompletingthiscourseStudentswillbeabletodesignanddevelopsystems.
CO3	Studentswillbeabletolearnaboutthesystemdevelopmentlifecycle model.
CO4	Studentswillbeabletolearnabouthowtodesignthesystemandhowtofindandremoveerrors with
CO5	Studentwillbeabletounderstandhowsystemsshouldbeimplementedand maintained.

DetailedContents	Contact hours
UnitI IntroductiontoCyberSecurity Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace	10
UNIT-II CyberSecurityVulnerabilitiesandCyberSecuritySafeguards CyberSecurityVulnerabilities-Overview,vulnerabilitiesinsoftware,Systemadministration,Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness. Cyber Security Safeguards- Overview, Access control, Audit, Authentication, Biometrics, Cryptography,Deception,DenialofServiceFilters,EthicalHacking,Firewalls,IntrusionDetection Systems, Response, Scanning, Security policy, Threat Management.	10
Unit-III IntrusionDetectionandPrevention Intrusion,PhysicalTheft,AbuseofPrivileges,UnauthorizedAccessbyOutsider,Malwareinfection, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation.	10
Unit-IV Cyberspace and the Law: Introduction, Cyber Security Regulations, Roles of International Law, the stateandPrivateSectorinCyberspace,CyberSecurityStandards.TheINDIANCyberspace,National Cyber Security Policy 2013. CyberForensics:IntroductiontoCyberForensics,ScrutinizingE-mail,ValidatingE-mailheader information, Tracing Internet access, Tracing memory in real-time.	10

TextBooks

1. SystemAnalysisandDesignAwadEliasN.*SecondEdition*,GalgotiaPublications
2. AnalysisandDesignofInformationSystem SenJamesA.*SecondEdition*, TataMcGrawHill.

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:BVHN505-18

CourseName:Programming inPythonLaboratory

Program: B.Voc	L:0P: 3
Branch: Hardware&Networking	Credits: 1.5
Semester: 5th	Contacthours: 4hoursperweek
Theory/Practical: Practical	Percentageofnumerical/designproblems: 90%
Internalmax.marks: 30	Durationofendsemesterexam(ESE): 3hrs
Externalmax.marks: 20	Electivestatus: Core
Totalmarks: 50	

Prerequisite:-NA-

Corequisite:-NA-

AdditionalmaterialrequiredinESE:-Maintainpracticalnotebookaspertheinstructionsbythe instructor.

CourseOutcomes:Studentswillbeableto:

CO#	CourseOutcomes
CO1	SolvesimpletoadvancedproblemsusingPythonlanguage.
CO2	Developlogicofvariousprogrammingproblemsusingnumerousdatatypesandcontrolstructuresof Python.
CO3	Implementdifferentdatastructures.
CO4	Implementmodulesandfunctions.
CO5	DesignandimplementtheconceptofOOP structures.
CO6	Implementfilehandling.

ListofPracticals:

1.	Computesum,subtraction,multiplication,divisionandexponentofgivenvariablesinputbytheuser.
2.	Computeareaoffollowingshapes:circle,rectangle,triangle,square,trapezoidandparallelogram.
3.	Computevolumeoffollowing3Dshapes:cube,cylinder,coneandsphere.
4.	Computeandprintrootsofquadraticequation $ax^2+bx+c=0$,wherethevaluesofa,b,andcareinput by theuser.
5.	PrintnumbersuptoNwhicharenotdivisibleby3,6,9,,e.g.,1,2,4,5,7,....
6.	Printmultiplicationtableofanumberinputbythe user
7.	Computesumofnaturalnumbersfromonetonnumber
8.	PrintFibonacciseriesuptonnumberse.g.011235813.....n
9.	Compute factorialofagivennumber.
10.	Performfollowingoperationsontwomatrices.1)Addition2)Subtraction3)Multiplication
11.	Performfollowingoperationsonalistofnumbers:1)Insertanelement2)deleteanelement3)sortthe list 4)deleteentirelist
12.	DisplaywordafterSortinginalphabeticalorder
13.	Performsequentialsearchonalistofgivennumbers.
14.	WriteaPythonfunctionthatacceptsastringandcalculatesnumberofuppercaselettersandlowercase lettersavailableinthatstring.
15.	To findtheMaxofthreenumbersusingfunctions
16.	DesignaPythonclassnamedRectangle,constructedbylength&width,alsodesignamethodwhichwill computetheareaofarectangle.
17.	DesignaPythonclasstoreverseastring‘wordbyword’.
18.	WriteaPythonprogramtoreadanentiretextfile.
19.	DesignaPythonprogramtoreadfirstnlinesofatextfile
20.	ConstructaPythonprogramtowriteandappendtexttoofileanddisplaythetext.

TextBooks:

1. ProgramminginPython,PoojaSharma,BPBPublishations,2017.
2. CorePythonProgramming,R.NageswaraRao,2ndEdiiton,Dreamtech.

ReferenceBooks:

1. Python,ThecompleteReference,MartinC.Brown,McGrawHillEducation.
2. PythoninaNutshell,A.Martelli,A.Ravenscroft,S.Holden,OREILL Y.

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:BVHN506-18

CourseName:HARDWARELAB-II(Microprocessors)

Program: B.Voc	L:0P:3
Branch: Hardware&Networking	Credits: 1.5
Semester: 5th	Contacthours: 4hoursperweek
Theory/Practical: Practical	Percentageofnumerical/designproblems: 90%
Internalmax.marks: 30	Durationofendsemesterexam(ESE): 3hrs
Externalmax.marks: 20	Electivestatus: Core
Totalmarks: 50	

Prerequisite:-NA-

Corequisite:-NA-

AdditionalmaterialrequiredinESE:-Maintainpracticalnotebookaspertheinstructionsgivenby the instructor.

CourseOutcomes:Studentswillbeableto:

CO#	CourseOutcomes
CO1	Solvesimpletocomplexproblemsusingassemblylanguage.
CO2	Solve1'sand2'scomplementofvarious numbers
CO3	Solveaddition,subtractionandcomplementof8bitand16bitnumbers.

ListofPracticals:

1.	Toexamineandmodifythecontentsofaregisterandmemorylocation.
2.	Toaddtwo8-bit hexadecimal numbers without considering the carry generated.
4.	Tosubtracttwo8-bit hexadecimal numbers without considering borrow.
5.	Tosubtracttwo8-bit hexadecimal numbers considering borrow.
6.	Toaddtwo16-bit hexadecimal numbers without considering the carry generated.
7.	Toaddtwo16-bit hexadecimal numbers considering the carry generated.
8.	Tosubtracttwo16-bit numbers without considering borrow.
9.	Tosubtracttwo16-bit numbers considering borrow.
10.	Tofind2's complement of 8-bit hexadecimal number.

Text/ReferenceBooks:

1. Microprocessor Architecture, Programming and Applications with 8085, Ramesh.S. Gaonkar, Fourth Edition, Penram International Publishing
2. 8051 Microcontroller and Embedded Systems, Muhammad Ali Mazidi Janice Gillispie Mazidi, Second Edition, PHI
3. Fundamentals of Microprocessors and Microcomputers, B.Ram, Fourth Edition, Dhanpat Rai Publications

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN601-18**
CourseName:**WebDesigning**

Program: B. Voc	L: 3 P: 0
Branch: Hardware&Networking	Credits: 3
Semester: 6 th	Contacthours: 40hours
Theory/Practical: Theory	Percentageofnumerical/designproblems:--
Internalmax.marks: 40	Durationofendsemesterexam(ESE):--
Externalmax.marks: 60	Electivestatus: core/elective
Totalmarks: 100	

Detailedcontents	Contact hours
Unit1 Internet Basics: Basic concepts, communicating on the internet, internet domains,internet server identities. 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 and Footer, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines). BasicFormattingTags HTML Basic Tags, Text Formatting (Paragraph Breaks, Line Breaks), Emphasizing Material in a Web Page (Heading Styles, Drawing Lines), Text Styles (Bold, Italics, Underline),OtherTextEffects(Centering(Text,Imagesetc.),Spacing(IndentingText), HTMLColorCoding.	10
Unit2: Lists : 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 spacing Attribute, Using the BGCOLOR Attribute, Using the COLSPAN and ROWSPAN Attributes Linking Documents: Links (External Document References, Internal Document References), Image As Hyperlinks. Frames : Introduction to Frames: The<FRAMESET> tag, The <FRAME> tag, Targeting Named Frames. DHTML: Cascading Style Sheets, Style Tag.	10
Unit3: Forms Used by a Web Site: The Form Object, The Form Object's Methods (The Text Element,ThePasswordElement,TheButtonElement,TheSubmit(Button)Element,The Reset (Button) Element,TheCheckboxElement,TheRadioElement,TheTextAreaElement,TheSelect and Option Element, The Multi Choice Select Lists Element).	10
Unit4: Introduction to JavaScript : JS Introduction, Where To, Output, Statements, Syntax, Comments, Variables, Operators, Arithmetic, Assignment, Data Types, Functions, Numbers,NumberMethods,Arrays,ArrayMethods,ArraySort,ArrayIteration,Dates, Date Formats, Date Get Methods, Date Set Methods, Math, Random, Booleans, Comparisons, Conditions, Switch, Loop For, Loop While, Break.	10

TextBooks:TextBooks/ReferenceBooks:

1. InternetforEveryOne:AlexisLeon,1stEdition,LeonTechworld,Publication,2009.
2. GreenlawR;Heppe,“FundamentalsofInternetandWWW”,2ndEdition,TataMcGraw-Hill,2007.
3. RajKamal,“Internet&WebTechnologies”,editionTataMcGraw-HillEducation.2009.

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:BVHN602-18
Course Name:EnvironmentScience

Program: B.Voc	L: 3 P: 0
Branch: Hardware&Networking	Credits: 3
Semester: 6 th	Contacthours: 40
Theory/Practical: Theory	Electivestatus: core/elective
Internalmax.marks: 40	
Externalmax.marks: 60	
Totalmarks: 100	

Detailedcontents	Contact hours
Unit 1: Introduction to Environmental Studies Multidisciplinary nature of Environmental Studies: Scope & Importance, Need for Public Awareness.	10
Unit 2: Ecosystems, Concept of an Ecosystem: Structure & functions of an ecosystem (Producers,Consumers&Decomposers) EnergyFlowinanecosystem: FoodChain,Food web and Ecological Pyramids Characteristicfeatures,structure&functionsoffollowingEcosystems: • ForestEcosystem • AquaticEcosystem(Ponds,Lakes,River&Ocean)	10
Unit3:NaturalResourcesRenewable&Non-renewableresources Forest Resources: Their uses, functions & values (Biodiversity conservation, role in climate change, medicines) & threats (Overexploitation, Deforestation) Water Resources: Their uses (Agriculture, Domestic & Industrial), functions & values, Overexploitation and Pollution of Ground & Surface water resources (Case study of Punjab), Water Conservation, Rainwater Harvesting Land Resources: Land as a resource; Land degradation, soil erosion and desertification. EnergyResources: Renewable&non-renewableenergyresources,useofalternative energy resources.	10
Unit4:BiodiversityconservationandEnvironmentalPollution TypesofBiodiversity: Species,Genetic&Ecosystem,Indiaasamegabiodiversity nation, Biodiversity hot spots and biogeographic regions of India EnvironmentalPollution: Types, Causes, Effects &Control of Air, Water, Soil&Noise Pollution ,Nuclear hazards and accidents & Health risks GlobalClimateChange: Globalwarming,Ozonedepletion,Acidrain,Meltingof Glaciers & Ice caps, Rising sea levels Environmentaldisasters: Earthquakes,Floods,Cyclones,Landslides	10

TextBooks:

1. Bharucha,E.TextBookforEnvironmentalStudies.UniversityGrantsCommission,NewDelhi.
2. Agarwal,K.C.2001EnvironmentalBiology,NidiPubl.Ltd.Bikaner.
3. BharuchaErach,TheBiodiversityofIndia,MapinPublishingPvt.Ltd.,Ahmedabad –380013,India, Email:mapin@icenet.net (R)
4. BrunnerR.C.,1989,HazardousWasteIncineration,McGrawHillInc.480p
5. ClarkR.S.,MarinePollution,ClandersonPressOxford(TB)
6. Cunningham,W.P.Cooper,T.H.Gorhani,E&Hepworth,M.T.2001,EnvironmentalEncyclopedia,Jaico Publ. House, Mumbai, 1196p
7. DeA.K.,EnvironmentalChemistry,WileyEasternLtd.
8. DowntoEarth,CentreforScienceandEnvironment(R)
9. Gleick,H.P.1993.Waterincrisis,PacificInstituteofStudiesinDev.,Environment&Security.Stockholm Env. Institute Oxford Univ. Press. 473p
10. HawkinsR.E.,EncyclopediaofIndianNaturalHistory,BombayNaturalHistorySociety,Bombay(R)
11. Heywood,V.H&Waston,R.T.1995.GlobalBiodiversityAssessment.CambridgeUniv.Press1140p.

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

Course Code : BVHN603-18
CourseName:OperatingSystem

Program: B.Voc	L: 3 P: 0
Branch: Hardware&Networking	Credits: 3
Semester: 6 th	Contacthours: 40
Theory/Practical: Theory	Electivestatus: core/elective
Internalmax.marks: 40	
Externalmax.marks: 60	
Totalmarks: 100	

Detailedcontents	Contact hours
Unit1: Fundamentals of Operating system: What is Operating system? Functions of an operating system. Operating system as a resource manager. Structure of operating system (Role of kernel and Shell). Views of operating system. Evolution and types of operating systems. Process & Thread Management: Program vs. Process; PCB, State transition diagram, Scheduling Queues, Types of schedulers, Concept of Thread, Benefits, Types of threads, synchronization issues. CPU Scheduling: Need of CPU scheduling, CPU I/O Burst Cycle, Pre-emptive vs. Non-pre-emptive scheduling, Different scheduling criteria's, scheduling algorithms (FCSC, SJF, Round-Robin, Multilevel Queue).	10
Unit2: Memory Management: Introduction, address binding, relocation, loading, linking, memory sharing and protection; Paging and segmentation; Virtual memory: basicconcepts of demand paging, page replacement algorithms.	10
Unit3:I/ODeviceManagement: I/Odevicesandcontrollers,devicedrivers; disk storage FileManagement: Basicconcepts,fileoperations,accessmethods,directorystructures andmanagement,remotefilesystems;fileprotection.	10
Unit4: Advanced Operating systems: Introduction to Distributed Operating system, Characteristics, architecture, Issues, Communication & Synchronization; Introduction Multiprocessor Operating system,Introduction to Real-Time Operating System and its Characteristics.	10

TextBooks:

1. OperatingSystemPrinciplesbyAbrahamSilberschatzandPeterBaerGalvin,SeventhEdition, Published by Wiley-India.
2. PrincipalsofOperatingSystembyNareshChauhan,PublishedbyOXFORDUniversityPress, India.

ReferenceBooks:

1. OperatingSystemsbySibsankarHaldarandAlexA.Aravind,PublishedbyPearsonEducation.
2. OperatingsystembyStalling,W.,SixthEdition,PublishedbyPrenticeHall(India).

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

Code:BVHN604-18

CourseName:ComputerPeripheralsandInterfaces

Program:B.Voc	L: 3 P:0
Branch:Hardware&Networking	Credits:3
Semester:6 th	Contacthours:40
Theory/Practical:Theory	Electivestatus:core/elective
Internalmax.marks:40	
Externalmax.marks:60	
Totalmarks:100	

Detailedcontents	Contact hours
Unit 1: SYSTEM RESOURCES: Interrupt, DMA Channel, I/O Port Addresses and resolvingandresolvingtheconflictresources.I/O buses-ISA,EISA,Localbus,VESA Local bus, PCI bus, PCI Express, Accelerated graphics port bus.	10
Unit 2: IDE & SCSI Interfaces: IDE origin, IDE Interface ATA standards ATA1 to ATA7.ATAfeature,ATARAIDandSCSIRAIID,SCSICableandpinConnectorpin outs SCSI V/s IDE Advantages and limitation.	10
Unit 3: Video Hardware : Video display technologies, DVI Digital signals for CRT Monitor,LCDPanels,Videoadaptertypes,IntegratedVideo/Motherboardchipset, Video RAM, Video driver and multiple Monitor, Graphic accelerators.	10
Unit4:I/OInterfaces: I/OInterfacesfromUSBandIEEE1394,I/OInterfacefromserial and Parallel to IEEE1394 and USB 961, Parallel to SCSI converter. Testing of serial and parallel port, USB Mouse/ Keyboard Interfaces. Input/OutputDriversoftwareaspects: RoleofdevicedriverDOSandUNIX/LINUX device drivers.	10

Text/ReferenceBooks:

1. DouglasV.Hall,“MicroprocessorsandInterfacing”,TataMcGrawHill2006.
2. BarryB.Brey&C.R.Sarma”Theintelmicroprocessors,”Pearson 2003.
3. P.PalChandhari,“ComputerOrganizationanddesign”PrenticeHallofIndiaPvt.Ltd,1994.
4. DelCorso,H.Kirrmann,JDNicond“Microcomputerbuses&links”AcademicPress1986.

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode: **BVHN605-18**

CourseName: **WebDesigning Laboratory**

Program: B.Voc	L:0P:3
Branch: Hardware&Networking	Credits: 1.5
Semester: 6 th	Contacthours: 24hours
Theory/Practical: Practical	Percentageofnumerical/designproblems:--
Internalmax.marks: 30	Durationofendsemesterexam(ESE):--
Externalmax.marks: 20	Electivestatus: core/elective
Totalmarks: 50	

Instructions: Instructor can increase/decrease the experiments as per the requirement.

1	Create a simple HTML page to demonstrate the use of different tags.
2	Design index page of a book on web designing.
3	Display Letter Head of your college on a web page.
4	Create a Hyperlink to move around within a single page rather than to load another page.
5	Display letter using different Text formatting Tags.
6	Design Time Table of your department and highlight the most important periods.
7	Use Tables to provide layout to your web page.
8	Design a web page and display two different pages at a time.
9	Write an HTML code to create a Registration Form. On submitting the form, the user should be asked to login with the new credentials.
10	Write a program to perform following operations on two numbers input by the user: Addition 2) subtraction 3) multiplication 4) division

Reference Books:

1. Greenlaw R; Hepp E, "Fundamentals of Internet and www", 2nd Edition, Tata McGraw-Hill, 2007.
2. A Beginner's Guide to HTML <http://www.Ncsa.Nine.Edit/General/Internet/www/html.prmter>.

Online Experiment material

1. https://www.w3schools.com/html/html_examples.asp
2. https://www.cs.uct.ac.za/mit_notes/web_programming.html

IKGujralPunjabTechnicalUniversityJalandhar
B.Voc.(HardwareandNetworking),Batch-2018

CourseCode:**BVHN606-18**

CourseName:**OperatingSystemLaboratory**

Program: B.Voc	L:0P:3
Branch: Hardware&Networking	Credits: 1.5
Semester: 6th	Contacthours: 24hours
Theory/Practical: Practical	Percentageofnumerical/designproblems:--
Internalmax.marks: 30	Durationofendsemesterexam(ESE):--
Externalmax.marks: 20	Electivestatus: core/elective
Totalmarks: 50	

1	InstallationofwindowsOS.
2	InstallationofLinuxOS.
3	DualbootinstallationofOperatingsystems.
4	ImplementationofFCFSSchedulingalgorithm.
5	ImplementationofSJFSchedulingalgorithm.
6	ImplementationofRound-RobinSchedulingalgorithm.
7	ViEditor&itscommands.
8	ShellCommands.
9	ShellScripting-Usingvariables.
10	ShellScripting-Input&Output.

ReferenceBooks:

1. Linux:ThecompleterefERENCEbyRichardPetersen,PublishedbyTataMcGraw-Hill Publication.
2. OperatingSystemPrinciplesbyAbrahamSilberschatzandPeterBaerGalvin,Seventh Edition, Published by Wiley-India.