Model Curriculumfor B.Voc/

D.Voc

in

SoftwareDevelopment
Batch 2025

AllIndiaCouncil forTechnicalEducation Nelson Mandela Marg, New Delhi

1. Introduction

AllIndia CouncilforTechnicalEducation (AICTE) Ministry ofHRD,GovernmentofIndia has introduced Entrepreneurship oriented Skill development courses of B.Voc/D.Voc/Skill Diploma. These courses will be run by AICTE approved institutes by using available infrastructure and facilities. In these courses the institute will conduct generaleducation content and sector specific skills will be imparted by Skill Knowledge Providers/Training Providers/ Industries.

KeyFeatures:

Objectives

- To provide judicious mix of skills relating to a profession and appropriate content of General Education.
- Toensurethatthestudentshaveadequateknowledgeandskills,sothatthey are work ready at each exit point of the programme.
- Toprovideflexibilitytothestudentsbymeansofpre-definedentryand multiple exit points.
- To integrate NSQF within the Diploma,undergraduatelevelofhighereducation toenhanceemployabilityofthestudentsandmeetindustryrequirements.Such student apart from meeting the needs of local and national industry are also expected to be equipped tobecome part of the global workforce.
- Toprovideverticalmobilitytostudentsadmittedinsuchvocationalcourses.
- The certification levels will lead to Diploma/AdvancedDiploma/B. Voc.Degree in Software Development and will be offered by respective affiliating University/Board of Technical Education.
- Students maybe awardedLevelCertificate/Diploma/AdvanceDiploma/Degree as out-lined in the Table below:

Award	DurationafterclassX	CorrespondingNSQF level
Level3Certificate	1Year	3
Level4Certificate	2Years	4
Diploma	3Year	5
AdvanceDiploma	4Years	6
B.Voc Degree	5Years	7

2. CourseObjectives

After successfully completing the vocational course, the student would have acquired relevant appropriate and adequate technical knowledge together with the professional skillsand competencies in the field of Software Development so that he/she is properly equipped to take up gainful employment in this Vocation. Thus he/she should have acquired:-

A. Understandingof

(a) The relevant basic concepts and principles in basic science subjects (Physics, Chemistry and Mathematics) so that he/she is able to understand the different vocationalsubjects.
(b) Thebasicconceptsinengineeringdrawing.
(c) Theconcepts,principlesofworkingofbasicelectronicdevicesandcircuits.
(d) The knowledge oftestingprocedureofcomponentsand circuits by makinguseof different test instruments.
(e) TheprocedureofmakingP.C.B.
(f) The concepts and principles used in Radio/Audio/Video Systems and Communication devices and its maintenance.

B. AdequateProfessionalSkillsandCompetenciesin

(a) Testing different software's.
(b) Testingtheperformanceofelectroniccircuits.
(c) Locatingthefault atcomponentlevelandat thestagelevel.

C. AHealthyand ProfessionalAttitudesothatHe/Shehas

(a) Ananalyticalapproachwhileworkingonajob.
(b) Anopenmindwhilelocating/rectifyingfaults.
(c) Respectforworkingwithhis/herownhands.
(d) Respectforhonesty,punctualityandtruthfulness

D. NSQFcompliantskillsinQualificationdevelopedby sectorskill councilin IT/ITeS sector

3. CourseStructure

The coursewill consistofcombination ofpractice, theoryandhands on skills in theIT/ITeS sector.

Curriculum
The curriculum in eachof the years of the programmewould be a suitable mix of general education and skillcomponents.

SkillComponents:

- The focusof skill componentsshall be to equip students with appropriate knowledge, practice and attitude, to becomework ready. The skill components will be relevantto the industry as per itsrequirements.
- The curriculum will necessarily embed within itself, National Occupational Standards (NOSs)ofspecificjobroleswithintheindustry.Thiswouldenablethestudentstomeet the learning outcomes specified in the NOSs.
- Theoveralldesignoftheskilldevelopmentcomponentalongwiththejobrolesselected will be such that itleads to a comprehensive specialization in fewdomains.
- Thecurriculumwillfocusonwork-readinessskillsineachoftheyearoftraining.
- Adequate attention will be given in curriculum design to practical work, on the job training, development of student portfolios and project work.

GeneralEducationComponent:

- The general education component adhere to the normal senior secondary and university standards. It will emphasize and offer courses which provide holistic development. However,it willnotexceed 40% of the total curriculum.
- Adequateemphasisisgiventolanguageandcommunicationskills.

The curriculum is designedin a mannerthat atthe end ofeach yearafter classXth students can meet below mentioned level descriptors of NSQF:

Level	Processrequired	Professional Knowledge	Professionalskill	Coreskill	Responsibility
Level 3	Person may carry puta jobwhichmay require limited range of activities routine and predictable	Basic facts, processand principleapplied in trade of employment	Recalland demonstrate practicalskill, routine and repetitiveinnarrow rangeofapplication	Communication written and oral withminimum required clarity, skill of basic arithmetic and algebraic principles, personalbanking, basic understanding of socialandnatural environment	Underclose supervision some responsibility for ownwork withindefined limit
Level 4	Workin familiar, predictable,routine, situation of clear choice	Factual knowledgeof fieldof knowledgeor study	Recalland demonstrate practicalskill, routine and repetitivein narrow range of application,using appropriate rule and tool,using quality concepts	Language to communicate written or oral, withrequired clarity,skill to basic arithmetic and algebraic principles, basic understanding of socialpoliticaland natural environment	Responsibility for ownwork and learning
Level 5	Job that requires well developed skill, with clear choiceof proceduresinfamiliar context	Knowledge of facts, principles,processes and general concepts,in afieldof workor study	A range of cognitive and practicalskills required to accomplishtasksand solve problems by selecting andapplyingbasic methods, tools materials andinformation	Desired mathematicalskill, understanding of social,politicaland some skill of collectingand organizing information, communication.	Responsibilityfor own workand learning andsome responsibility for other'sworksand learning

Level 6	Demands wide rangeofspecialized technical skill, clarity of knowledge and practice in broad range of activity involvingstandard/ non-standard practices	Factualand theoretical knowledgeinbroad contexts within a field of work or study	Arangeof cognitive and practicalskills requiredtogenerate solutions to specific problems in afieldof work orstudy	Reasonablygood inmathematical calculation, understandingof social,political and reasonably good in data collecting organizing information,and logical communication	Responsibilityfor ownworkand learning and fullresponsibility for other's works and learning
Level 7	Requires a command of wide rangingspecialized theoreticaland practicalskill, involvingvariable routine and non-routine context	Wideranging, factualand theoretical knowledgeinbroad contexts within a field of work or study	Wide range of cognitiveand practicalskills requiredtogenerate solutions to specific problems in afieldof work orstudy	Good logical and mathematicalskill understanding of socialpoliticaland natural environmentgood in collecting and organizing information, communication and presentation skill	Full responsibilityfor output of group anddevelopment

CurriculumforSoftwareDevelopment

Level	Code	EducationalComponent		Credit	Marks
3 Semester I		**Theory**			
	3.GE.01	Language-I		3	50
	3.GE.02	Applied Chemistry		3	50
	3.GE.03	Applied Physics		3	50
	3.GE.04	Applied Maths-I		3	50
		Lab/Practical			
	3.GP.01	AppliedChemistryLab		1	25
	3.GP.02	AppliedPhysicsLab		1	25
	3.VP.01	IT-ToolsPractical		1	50
	On-Job-Training(OJT)/QualificationPacks				
	DomesticDataEntryOperator(SSC/Q2212)		(Anyone)	15	200
	DomesticIThelpdeskAttendant(SSC/Q0110)				
	CRMDomesticVoice(SSC/Q2210)				
3 Semester II	**Theory**				
	3.GV.01	GeneralFoundationCourse–I		3	50
	3.GV.02	BasicElectricity		3	50
	3.GV.03	BasicElectronics		3	50
	3.GV.04	AppliedMathematics-II		3	50
	EMC-101-25	**Entrepreneurship Setup and Launch****		**2**	**50**
	Lab/Practical				
	3.VP.02	BasicElectricityLab		1.5	50
	3.VP.03	BasicElectronicsLab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	AnyoneoftheQP'scanbeoptedasofferedinSemester I		(Anyone)	15	200
The department of Higher Education and Languages, Government of Punjab endeavor to AI-powdered entrepreneurship learning platform on the said course. The Institute /Campus shall appoint an assistant professor as faculty coordinator.					
4 Semester I	**Theory**				
	4.GV.01	GeneralFoundationCourse		3	50
	4.GV.02	ITTools		3	50
	4.GV.03	WebApplications		3	50
	4.GE.01	Language–II		3	50
	Lab/Practical				
	4.VP.01	IT-ToolsLab(Advanced)		1.5	50
	4.VP.02	WebApplicationsLab		1.5	50
	On-Job-Training(OJT)/Qualification Packs				
	MediaDeveloper(SSC/Q050)		(Anyone)	15	200
	JuniorSoftware Developer(SSC/Q0508)				

Level	Code	Educational Component		Credit	Marks
	CRMDomesticNon-Voice(SSC/Q2211)				
4 Semester II	**Theory**				
	4.GV.04	DatabaseManagementSystems(795)		3	50
	4.GV.05	DigitalElectronics		3	50
	4.GV.06	ComputerNetworks		3	50
	4.GV.07	MaintenanceofComputerSystems		3	50
	Lab/Practical				
	4.VP.03	DatabaseManagementSystemLab		1.5	50
	4.VP.04	MaintenanceofComputerSystemsandComputerNetwork Lab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	AnyoneoftheQP'scanbe optedasofferedin SemesterI		(Anyone)	15	200
5 Semester I	**Theory**				
	5.GV.01	ITFoundationandProgrammingConcepts		3	50
	5.GV.02	WebDesigning		3	50
	5.GV.03	ProgramminginC		3	50
	5.GV.04	OperatingSystem(OS)		3	50
	Lab/Practical				
	5.VP.01	WebDesigningLab		1.5	50
	5.VP.02	CProgrammingLab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	TechnicalWriter(SSC/Q0505)		(Anyone)	15	200
	InfrastructureEngineer(SSC/Q0801)				
	Associate–CRM(SSC/Q2202)				
5 Semester II	**Theory**				
	5.GV.05	DataStructures		3	50
	5.GV.06	ConceptsofData Mining		3	50
	5.GV.07	OOPswithJava		3	50
	5.GV.08	MultimediaTools&Applications		3	50
	Lab/Practical				
	5.VP.03	DataStructureLab		1.5	50
	5.VP.04	JavaLab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	WebDeveloper(SSC/Q0503)		(Anyone)	15	200

Level	Code	EducationalComponent		Credit	Marks
	TestEngineer(SSC/Q1301)				
6 Semester I	**Theory**				
	6.GV.01	LinuxOperatingSystem–OperationsandManagement		3	50
	6.GV.02	SoftwareEngineering		3	50
	6.GV.03	WebDevelopmentusingPHP		3	50
	6.GV.04	WindowsDevelopmentFundamental		3	50
	Lab/Practical				
	6.VP.01	WebDevelopmentusingPHPLab		1.5	50
	6.VP.02	WindowDevelopmentFundamentalsLab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	JuniorDataAssociate(SSC/Q0401)		(Anyone)	15	200
	IPExecutive(SSC/Q6201)				
	Security Analyst (SSC/Q0901)				
6 Semester II	**Theory**				
	6.GV.05	SoftwareTestingandProject Management		3	50
	6.GV.06	AndroidApplicationDevelopment		3	50
	6.GV.07	WindowConfigurationandServerAdministration		3	50
	6.GV.08	ManagementInformationSystems		3	50
	Lab/Practical				
	6.VP.03	AndroidApplicationDevelopmentLab		1.5	50
	6.VP.04	MISLab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	QA Engineer(SSC/Q1302)		Anyone)	15	200
	SoftwareEngineer(SSC/Q4601)				
7 Semester I	**Theory**				
	7.GV.01	TechnologyTrendsinIT		3	50
	7.GV.02	WindowMobileApplicationDevelopment		3	50
	7.GV.03	IntroductiontoPythonProgramming		3	50
	7.GV.04	IntroductiontoMicroprocessors		3	50
	Lab/Practical				
	7.VP.01	WindowMobileApplicationDevelopmentLab		1.5	50

Level	Code	EducationalComponent		Credit	Marks
	7.VP.01	PythonProgrammingLab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	ManagementTrainee(SSC/Q6301)		(Anyone)	15	200
	Associate-Transactional F&A (SSC/Q2301)				
	ConsultantNetworkSecurity(SSC/Q0917)				
7 Semester II	**Theory**				
	7.GV.05	IntroductiontoAI		3	50
	7.GV.06	e-Commerce		3	50
	7.GV.07	ComputerNetworkSecurity		3	50
	7.GV.08	IntroductiontoBiometrics		3	50
	Lab/Practical				
	7.VP.03	AILab		1.5	50
	7.VP.04	ComputerNetworkSecurityLab		1.5	50
	On-Job-Training(OJT)/QualificationPacks				
	MasterTrainer forSoftwareDeveloper(SSC/Q0509)		(Anyone)	15	200
	HardwareEngineer(SSC/Q4701)				

DetailedCurriculum

Level3(SemesterI)

(3.GE.01)Language-I

Module1:Readingcomprehension(prescribedtexts)andfunctionalgrammar

A variety ofgenres – shortstories, expositorypieces, biographies,poems, plays, newspaper and magazine excerpts have beenincluded. Teaching of grammarhas been integrated with the reading texts. The emphasis is on functionalgrammar.
Thefollowingtenprosetextsandfivepoemshavebeenselectedfordevelopmentofdifferent readingskills.

Prosetexts(Prescribed)

1. Awarmeroracolderearth(popularscience)Arthur –C.Clark
2. Thetigerinthetunnel(narrative)–RuskinBond.
3. FirsttwoorfourpagesfromSunnyDays(autobiographical)–BySunilGavaskar
4. Caseofsuspension(narrative)
5. Bigbrother(narrative)ShekharJoshi
6. Father,dearfather(newspaperarticleformtheHindu)
7. Faceto face(autobiographical)VedMehta
8. Imustknowthetruth(narrative)SigrunSrivastva
9. IfIwereyou(play)DouglasJames
10. India,herpastandherfuture(speech)JawaharLalNehru

Poems

1. Leisure–WHDavis
2. Theroadnottaken–RobertFrost
3. Wherethemindiswithout fear-Tagore
4. Mygrandmother'shouse–KamlaDas
5. Thenight ofthescorpion –Nissi,Ezekiel

Nonprescribed

In this section learners will be exposed to newspaper, articles, tables, diagrams, advertisements etc. which they have to read carefully and interpret. In the examination similar pieces will be used.

Grammarandusage:

Thefollowingpointsofgrammarandusagehavebeenselectedfromthereadingpassages.

1. agreement/concord:number–genderetc.
2. Tenses:simplepast(negatives/interrogatives)presentperfect,pastperfectcontinuous, past perfect, expressing future time (willand going to)
3. Passivevoice(perfecttensesandmodals)
4. Modals(must,shouldoughtto,would)
5. Linkingwords(tolikebecausealthough,insteadof,if,as,since,who,whichthat,when however, inspite of)
6. Reportedspeech,statements,questions(yes/no)

Module2:Functionalwritingandstudyskills

This module help the learner to write descriptive and narrative paragraph,letters, reports notices etc. and also practice skills of note making

1. Paragraphwriting
   - Describingobjects
   - Describingpeople
   - Narratingevents,stories
2. Letterwriting
   - Applicationfor leave
   - Applicationfor jobs
   - Asking forinformation formvarious agencies (e.g.Last date forgetting prospects; price of items before placing doers etc.)
3. Notemaking
4. Ending(punctuation,spelling, appropriatevocabulary,structures)

(3.GE.02)Applied Chemistry

1. **StructureofAtom:**

Rutherfordmodelofthestructureofatom,Bohr'stheoryofelectrons,quantumnumbersand their significance,de-Broglie equationanduncertainty principle, electronic configurationof 1 to 30 elements.

2. **PeriodicPropertiesof Elements:**

Periodiclaw,periodictable,periodicityinpropertieslikeatomicradiiandvolume,ionicradii, ionization energyand electronaffinity.Division of elements into s, p,d and f blocks.

3. **ChemicalBonds:**

Electrovalent,covalentandcoordinatebondandtheirproperties.Metallicbonding(electron cloud mode)and properties (liketexture,conductance,luster, ductilityand malleability).

4. **FuelandtheirClassification:**

Definition, characteristics, classificationinto solid, liquid and gaseous fuel. Petroleum and brief idea ofrefining into various factionsand their characteristics anduses. Calorific value of fuel, Gaseousfuels- preparation, properties,compositionand useof producer gas, water and oil gas.

5. **Water:**

Impurities in water, methods of their removal, hardness of water, its types, causes and removal, disadvantages of hard water in boilers, pH value and its determination by calorimetric method.

6. **Corrosion:**

Its meaning, theoryofcorrosion,preventionofcorrosionbyvariousmethodsusing metallic and non-metalliccoatings.

7. **PlasticandPolymers:**

Plastic-thermo-plasticandthermo-setting.IntroductionofPolythene.P.V.C.Nylon,synthetic rubber and phenol-formal-dehyde resin, their application in industry.

(3.GE.03)Applied Physics

1. **Units & Dimensions:**M.K.S. fundamentals & derived units, S.I. base units supplementary units and derived units, Dimensions of various physical quantities, uses of dimensional analysis.
2. **Surface Tension and Viscosity:** molecular forces, molecular theory of surface tension, surface energy, capillary action, concept of viscosity, coefficientof viscosity, principle and construction of viscometers.
3. **Vibrations:**Vibrationas simple spring masssystem, elementaryand qualitative concept of freeandforcedvibrations,resonance.Effectsofvibrationsonbuilding bridgesandmachines members.
4. **Heat:**Temperatureanditsmeasurement,thermoelectric,platinumresistancethermometers and pyrometers. Conduction through compound media and laws ofradiations.
5. **Ultrasonics:** Productionsof ultrasonic wavesby magnetostriction and piezo-electric effect, application of ultrasonics in industry.
6. **Optics:** Nature of light, reflection and refraction of a wave from a plane surface. Overhead projector and Epidiascope.

(3.GE.04)AppliedMathematics–I

Sets,RelationsandFunctions

1. Sets
2. RelationsandFunctions-I
3. TrigonometricFunctions-I
4. TrigonometricFunctions-II
5. RelationbetweenSides andAngles ofAtriangle

SequencesandSeries

1. SequencesandSeries
2. SomeSpecialSequences

Algebra-I

1. ComplexNumbers
2. QuadraticEquationsand Linearinequalities
3. PrincipleofMathematicalInduction
4. PermutationsandCombinations
5. BinomialTheorem

Co-ordinateGeometry

1. CartesianSystemofRectangularCo-ordinates
2. StraightLines
3. Circles
4. ConicSections

StatisticsandProbability

1.MeasuresofDispersion
2.RandomExperimentsand Events
3.Probability

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'remostcurious to try and why
4	Chooseapathandgenerateabasic business idea	Studentswritedownaclearoffer(what,for whom, why) and one way to reach their customer
5	Takefirst realaction:message, post,pitch,orsell	Studentsreachouttoorserve1realpotential customerandrecordwhat happened
6	Reflectonfirstattempt andshare with peers	Studentssharetheirresult,achallenge faced, andoneideatoimprovenext time
7	Improveandtryagain:aimforfirst ₹100	Studentsapplyachange,tryagain,and aim tomaketheirfirst₹100orgetmeaningful response
8	Learn how to identify and understandyourtargetcustomer	Students talk to 2 potential customers or observethemandlist3insightsabouttheir needs
9	Learnhowtoserveyourtarget audience better	Students improve one part of their offer (product, delivery, messaging, or interaction)basedoncustomerfeedbackor need
10	Explorecoreentrepreneurial values(resilience,honesty, effort)	Studentsreflecton1valuethey're building andshowitinabusinesstaskorpeerstory
11	Focusonearningandstaying consistent	Studentscompleteasecondearningtaskand tracktheirconsistency(e.g.,sameproductor messagefor3 days)
12	Reflectonearnings,grit,andhow to keep going	Studentsrecordtotalearnings,oneresilience moment, and one support system or habit they'llcontinuewith

WeeklyComponent:

Component	Duration	Description
Learning Module	~1.5hrs	- Introduceskeyconceptsinasimpleandengagingway - Includes,examples,and1–2interactivediscussionsor quizzes
ActionLab	~2hrs	- Hands-ontaskontheweeklyconcept - Includesstep-by-stepguidance,templates,and worksheets - Endswithasubmission(e.g.,video,reflection,orproofof action)
Resources	Self-paced	-Supplementaryvideos,shortreadings,real-lifestories,and tools to deepen understanding at their own pace

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:Could*You*Beanentrepreneur?

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 doingsomethingaboutit.Likesomeonewhostartssellingsnacksbecausetheirschoolcanteen isalwaysshut, or a friend who fixes brokenchargersforothers.Ifyou'veeverspottedaneedand thought, “I can solve this,” - you’ve already taken your first step.

Component1:LearningModule(~1.5hours)Unit1:

Whatis Entrepreneurship?

1. *Solvingproblemsorcreatingvalueinexchangeformoney.*
2. Entrepreneurshipisnotjustaboutstartingacompany:it’saboutinitiative, resourcefulness, and value creation.
3. Differenttypesofentrepreneurs:smallshopowners,streetvendors, YouTubers, local tailors, mechanics, and more.
4. Entrepreneursbuildopportunitiesinsteadofwaitingforthem.

SimpleSlide/VisualAidTip:

A circle that says "Problem", an arrow pointing to "Solution", then anarrowto "Earn". That’s entrepreneurship.
<Avideothatvisuallyshowshowentrepreneurshipstartswithspottingaproblem (e.g., long food lines), creating a solution (e.g., pre-order lunch service), andearning fromit:illustrating the simple flow: Problem →Solution → Earn>

MCQ1

Q:Whatbestdescribesentrepreneurship?

A. Gettingajobinacompany
B. Solvingproblemsforothersandearningfromit
C. Studyingbusinessincollege
D. Buyingexpensivethings

Feedback:

1. *Correct!Entrepreneurssolveproblemsoroffervalueandgetpaidforit.*
2. *Notquite! Entrepreneurshipisaboutcreatingsomethinguseful,notjustgettingajob or studying.*

Unit2:WhoCanBeanentrepreneur?

Entrepreneurshipstartswithspottingaproblem,findingasolution,andcreatingvalue.Today, anyonewithaphoneandaninternetconnectioncanstartabusiness:moneyhelps,butmindset and initiative matter more at the start.

Youjust need:

1. Aproblemtosolve
2. Asimpleskillorproduct
3. Thecouragetostartsmall

ExamplesCarousel(Swipeablecards)

1. **Pooja(India)**–SellshandmaderakhisonInstagram,learneddesigningonYouTube. ***Problemshesaw****:Expensiveorgenericrakhisinthemarket;nopersonal touch.*
2. **Luis(Mexico)**–Repairsusedphonesinhisgarage,nowhasloyal customers. ***Problemhesaw****: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. ***Problemhesaw****:Hiscousinneededhelpwithmath,butgoodlearningresourceswere hard to access.*

MCQ

Q:Whichofthesecanbe aformofentrepreneurship?

A. Makingreelsonskincaretipsandsellinghomemadefacepacks
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&Learnfrom2EntrepreneursNe

arYou

Steps(Checklist):

1. Lookaroundyourneighborhoodoronline:find2peoplewhoearnthroughtheirownwork

2. Askorobserve:
   a) Whatdotheydo?
   b) Howdothey earn?

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

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Week2:CanIBeanentrepreneur?

INTRO–WhatMakesanentrepreneur?

Youdon'tneedasuit,adegree,oralotofmoneytobeanentrepreneur.
Youneedonething:amindset.Entrepreneursnoticeproblemsaroundthem:anddosomething about it. From the boy fixing bikes outside his housetothegirlteachingdanceonInstagram, theyallstartedsmall.What matters most is not what you have: it's how you think and act.

Component1:LearningModule(~1.5 hours) Unit 1: What Makes an entrepreneur?

KeyConcepts:

1. **Entrepreneurs are driven by curiosity:** they ask questions, explore possibilities, and seek better ways to do things.
2. **Theytakeinitiative:**theyact,experiment,andcreateusing limitedresourceswith creativity and courage
3. **Theylearnbydoing:**embracingmistakesassteppingstonestoprogress.
4. **They take full ownership:** one day they're the marketer, thedelivery person, and the customer support, all in one.
5. **Theyareresilient:**theypersistthroughchallenges,adapttochange,andkeep moving forward with purpose.

Real-LifeExamples:

1. Nithin & Nikhil Kamath (Zerodha) – Started India's largest stock brokerage without formaldegreesorexternalfunding,justdeepcuriosityaboutstockmarketsandadesire to simplify investing.
2. *Qualities:Tookinitiativeearlyandstayedpersistentthroughchallenges.*
3. PrajaktaKoli(MostlySane)–Startedbymakingcomedysketchesabouteveryday Indianlife:family,school,relationships:andbecameoneofIndia'stopdigitalcreators.
4. *Qualities:Stayedconsistent,adaptedovertime,andbuiltstrongaudience trust.*
5. TilakMehta(PapernParcels)–Asateenager,launchedacourierstartupusing Mumbai'sdabbawalanetworkfordelivery.
6. *Qualities:Thoughtcreativelyandactedwithconfidenceatayoungage.*

***

Unit2:StartSmall:BuildIdeasfromWhatYouKnow

In thelastunit,youlearnedthat entrepreneurs don'tjusthaveideas:they act,solveproblems, and use what they have.
Butthebigquestionnowis:

"WhatcanIoffer?"

That'swheretheValueMapcomesin.It helpsyoutake yourfirststeptowardthinkingand acting like an entrepreneur: in your own way.

WhatisaValue Map?

AValueMapconnectsthreesimplethings:

A. **Whatpeoplearoundyouneed**
   → *Look around: is there something people often struggle with or something that could be better?*
B. **Whatyou*enjoy*orare*willingtotry***
   →*Youdon'tneedtobeanexpert.Startwithsmallthingsyou like doing: talking to people, fixing, organizing, helping, designing, or learning something new.*
   →*Evenifyou'rejustcuriousaboutsomething:that'senoughto begin.*
C. **Whatsolutionyoucancreate**
   → *Use what you enjoy or are learning to try solving a realneed around you: even in asmall way*

Visuals:

3overlappingcircles:

1. "PeopleNeed"
2. "ICan"
3. "MyOffer"

Examples:

1. **PeopleNeed→Affordablemeals**
   ICan→Cook+haveaccesstohomekitchenMyOffer→₹40tiffin service
2. **PeopleNeed→StudytipsinPunjabi ICan→Speakclearly+loveteaching**
   MyOffer→3-minutevideotipsonInstagram

MCQ

Q:What'sthefirststeptobeinganentrepreneur?

A. Waitingfortheperfectidea
B. Solvingaproblemwithyourskills
C. Buyinga shop
D. Studyingforyears

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**ValueMapTemplateintheresources**toorganizeyourideas.

FinalDeliverable(SubmittedinApp):

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

SupplementaryResources(Optional)

1. "StartwithWhy"bySimonSinek
2. 10CharacteristicsofSuccessful Entrepreneurs|Business:Explained

(3.GP.01)AppliedChemistry–Lab

1. Proximateanalysisofsolidfuel.
2. ExperimentsbasedonBombCalorimeter.
3. Determinationofturbidityinagivensample.
4. Todeterminetheflashandfirepointofagivenlubricatingoil.
5. Todeterminetheviscosityofagivenlubricatingoilby Redwoodviscometer.
6. Todeterminecloudandpourpointofagivenoil.

(3.GP.02)AppliedPhysics–Lab

1. Todeterminethesurfacetensionofaliquidbyriseincapillary.

2. Todeterminetheviscosityofagivenliquid.
3. Todeterminethefrequencyoftuningforkusingasonometer.
4. TodeterminethefrequencyofAC mainusingsonometer.
5. Timeperiodofacantilever.

(3.VP.01)IT Tools–Lab

- Spreadsheets, Word,Presentation
- MultimediaDesign
- Troubleshooting
- Project/PracticalFile
- VivaVoce

Level3(SemesterII)

(3.GV.01)GeneralFoundationCourse–I

A. BusinessManagementandEntrepreneurship

(a) **EntrepreneurshipOrientation**
Importanceandrelevanceinreallife:Emphasisonself-employment.

(b) **EntrepreneurshipValuesandAttitudes**
Innovativeness,Independence,RiskTaking,Analyticalability.

(c) **EntrepreneurialMotivation**
AchievementPlanning,personalefficacy,entrepreneurialgoalsetting.

(d) **LaunchingofaBusinessVenture**
Identificationofproject,stepsin settingupabusiness,information about various institutionsproviding assistance, project formulation.

B. ComputationalSkills

(a) Percentage, ratio & proportion, profit& loss, discount, simple and compound interest,populationgrowthand depreciationofvalueofarticles usinglogarithm. Areaandvolume: rectangle,parallelogram,circle, cube,cone, cylinder&sphere.

(b)

C. EnvironmentalEducation

(a) Environmentandthesociety.

(b) Environment propertiesrisksin differenteconomicenterprises,in useof raw materials,in processing / manufacturing and designing.

(c) Povertyandenvironment.

D. RuralDevelopment

(a) Agriculture,thebackboneofIndianEconomy.

(b) Ruraldevelopmentprojectsin India including Integrated ruraldevelopment programme.

(c) Agrobasedruralindustries.

(d) Communityapproachtoruraldevelopment.

(3.GV.02)BasicElectricity

1. CurrentElectricity

Definition of Resistance, Voltage, Current, Power, Energy and their units, Relation between electrical, mechanical and thermal units, Temperature variation of resistance, Difference between AC and DC voltage and current.

2. D.C.Circuits

Ohm'sLaw,Series–parallelresistancecircuits,calculationofequivalentresistance, Kirchhoff's Laws and their applications.

3. ElectricCells

Primary cell, wet cell, dry cell, battery, Li-ion battery, seriesand parallelconnectionsof cells, Secondarycells,LeadAcidCell,Dischargingandrechargingofcells,preparationofelectrolyte,

careandmaintenanceofsecondarycells.

1. LightingEffectsofCurrent

Lightingeffectofelectric current,filaments usedin lamps,and Tubelight,LED,their working andapplications.

2. Capacitors

Capacitor and its capacity, Concept of charging and Discharging of capacitors, Types of Capacitorsandtheiruseincircuits,Seriesandparallelconnectionofcapacitors,Energystored in a capacitor.

3. ElectromagneticEffects

Permanent magnets and Electromagnets, their construction and use, Polarities of an electromagnet and rules for finding them.

Faraday's Laws of Electromagnetic Induction, Dynamically induced e.m.f., its magnitude and induction, inductanceandits unit. Mutuallyinducede.m.f., its magnitudeanddirection, Energy stored in an inductance.

Force acting on a current carrying conductor in magnetic field, its magnitude and direction, Principles and construction of dynamo.

4. A.CCircuits

GenerationofA.C.voltage,itsgenerationandwaveshape.Cycle,frequency,peakvalue R.M.S.value,formfactor,crestfactor,Phasedifference,powerand powerfactor, A.C. SeriesCircuitswith(i)resistanceandinductance (ii)resistanceandcapacitance and(iii) resistance inductance and capacitance, Q factor of R.L.C. series circuits.

(3.GV.03) BasicElectronics

i) OverviewofAtom,Sub-AtomicParticlesandCRO

- BriefHistoryof Electronics.
- Atomanditselements,
- Electron,Force,Fieldintensity,Potential,Energy, current
- Electricfield,Magneticfield,Motionofchargedparticlesinelectricandmagneticfield.
- OverviewofCRO,ElectronicandMagneticdeflectioninCRO,Applications.

ii) **VoltageandCurrent**

- Resistance,Ohm'slaw,V-ICharacteristics,Resistors,Capacitors,Inductors.
- VoltageandCurrentsources,SymbolsandGraphicalrepresentation
- OverviewofAC,DC,CellsandBatteries,EnergyandPower.

iii) Basics ofSemiconductor

- Semiconductormaterials,MetalsandSemiconductorsandPhoto-electricemission.
- N-typeandP-typesemiconductor,EffectsoftemperatureonConductivityofsemiconductor.
- PN junctiondiode, depletion layer, Forward& Reversebias, V-I Characteristic, Effects of temperature, Zener diode, Photo diode, LED, Types and applications of diode.
- Diodeasarectifier, Halfwaveandfullwaverectification,ZenerdiodeRegulator.
- IntroductiontoFilters,Clippers,Clampers

iv) BipolarJunctionTransistor

- OperationofNPNandPNPtransistors,BiasingofBJT.
- CB,CEandCCconfiguration
- IntroductiontoFET,JFET,MOSFET,CMOS andVMOS

v) TransistorAmplifierandApplications

- Introduction,Singleand Multi-stageamplifiers
- IntroductiontoOscillators
- IntroductiontoThyristors,PNPNdiode,SCR,LASCR,DIAC,TRIAC

(3.GV.04)AppliedMathematics–II

Algebra-II

1. Matrices
2. Determinants
3. InverseofaMatrixanditsApplications

RelationsandFunctions

1. RelationsandFunctions-II
2. InverseTrigonometricFunctions

Calculus

1. LimitsandContinuity
2. Differentiation
3. DifferentiationofTrigonometricfunctions
4. DifferentiationofExponentialandLogarithmicfunctions
5. Application ofDerivatives
6. Integration
7. DefiniteIntegrals
8. DifferentialEquations

VectorsandThreeDimensionalGeometry

1. IntroductiontoThreeDimensionalGeometry
2. Vectors
3. Plane
4. StraightLine

LinearProgrammingandMathematicalReasoning

1. Linear Programming
2. Mathematical Reasoning

(3.VP.02)BasicElectricityLab

1. Verifythatresistanceofconductorisdirectly proportionaltoresistivity and length and inversely proportional to cross- sectional area of the conductor.
2. VerificationofOhm'sLaw.
3. Verificationoftemperatureco-efficientofresistance:
   (i) PositiveforTungstenandNichromeand

(ii) Negativeforcarbon.

4. Studyofseriesresistivecircuits.
5. Study ofparallelresistivecircuits.
6. Studyofseriesandparallelconnectionofcellsincircuits.
7. PreparationofElectrolyteforleadacid battery andits chargingand measurementof Specific gravity with the help of hydrometer.
8. Tofindheatefficiencyofanelectrickettle.
9. ChargingandDischargingofacapacitor.
10. VerificationofmagneticfieldofaSolenoidwith:
    (i) Ironcoreand
    (ii) Aircore.
11. VerificationofFaraday'sLawsofelectromagneticinduction.
12. VerificationofTorquedevelopmentinacurrentcarryingcoilinmagneticfield.
13. StudyofR.L.seriescircuitandmeasurementofpowerandpower factor.
14. StudyofR.C.seriescircuitandmeasurementofpowerandpowerfactor.
15. StudyofR.L.C.seriescircuitandmeasurementofpowerandpowerfactor.
16. StudyofR.L.C.seriescircuitforcalculationofinductivereactance, capacitive reactance, impedance and Q- Factor.

Instruments Required

- Trainerkitforverifyingohm'slaw,
- TrainerkitformeasuringTCR
- Leadacidbattery,
- Hydrometer,
- Electrickettle,
- TrainerkitformeasuringpowerandpowerfactorinRLCcircuits

(3.VP.03)BasicElectronics–Lab

1. StudyofcurrentandvoltagemeasurementusingAmmeterandVoltmeter.
2. StudyofcurrentandvoltagemeasurementusingGalvanometer.
3. Studyofcurrent,voltageandresistancemeasurementusingofMulti-meter
4. StudyofPowerandEnergymeasurementusingWattmeterandEnergymeter.
5. Study ofworkingprinciple ofSignal Generatorandmeasurementofamplitude, timeperiod and frequency of signal using Oscilloscope.
6. StudyofV-ICharacteristicofDiode.
7. Study ofV-ICharacteristic ofZener Diode.AnduseofZener Diodeasvoltage regulator.
8. StudyofHalfwaverectifierwithandwithoutfiltercircuit.
9. StudyofFullwaverectifierwithandwithoutfiltercircuit.
10. Study CEconfigurationforNPNandPNP transistorsandmeasurementofvoltage and current gain.
11. Study CBconfigurationforNPNandPNPtransistorsand measurementofvoltage and current gain.
12. Study CCconfigurationfor NPNandPNP transistorsandmeasurementofvoltage and current gain.

13. StudyofworkingofsinglelayerPCBmanufacturing
14. StudyofworkingofdoublelayerPCBmanufacturing.
15. Designof7segmentdisplayusingLED andbreadboard.

Instruments Required

- Ammeter
- Voltmeter,
- Multimeter,
- Galvanometer,
- EnergyMeter,
- CRO,
- DiodeTrainerkit
- ZenerdiodeTrainerkit
- Rectifiertrainerkit
- Transistorcharactricstrainerkit,
- PCBmanufacturingLab
- Breadboardtrainerkit todesign7segmentdisplay.

Level4(SemesterI)

(4.GV.01)GeneralFoundationCourse–II

A. BusinessManagementandEntrepreneurship

Management of Business, Elementary treatment/exposureto basic conceptual frame work of the topic listedbelow:

(a)BasicFunction(b)MarketingManagement(c)FinancialManagement(d)Production Management (e) Personnel Management

B. ComputationalSkills

1. (a)Solutionoflinearequationsandtheirapplicationtoproblemofcommercial mathematics.

   (b)Systemoflinearequationsand in equationin two variables.Applicationsinformation of simplelinear programming problems.

2. Statistics:Raw data, bar charts and Histogram; Frequency Tables; Frequency Polygon; Ogive;Menu, Median and Mode of ungrouped and grouped data; Standard Deviation; Introduction to Mortality tables; Price Index etc. Introduction to Computers.

C. EnvironmentalEducation &RuralDevelopment

EnvironmentalEducation:

a. Modernization of agriculture and environment, irrigation, water logging, use of fertilizers, pesticides, soil erosion, land degradation (desertification and deforestation), silting and drying of water resources.
b. Rational utilization, conservation and regeneration of environmental resources (soil, air, water, plant, energy, minerals).

2. RuralDevelopment

Principlesandgoalsofruraldevelopment,majorproblems/constraintsinruraldevelopment in India.

(4.GV.02)ITTools

I. ComputerOrganization&OS:Userperspective.
   - UnderstandingofHardware.
   - BasicsofOperatingSystem.

II. NetworkingandInternet.
   - NetworkSafetyconcerns.
   - NetworkSecuritytoolsandservices.
   - Cyber Security.
   - SafepracticesonSocialnetworking.

III. Officeautomation tools:
   - Spreadsheet.
   - Wordprocessing.
   - Presentation.

IV. MultiMediaDesign:(OpenSourceDesignTools)

- InterfaceandDrawingToolsinGIMP.
- ApplyingFilters.
- Creatingandhandlingmultiplelayers.
- UsingStampingandSmudgingtools.
- Importingpictures.

V. Troubleshooting:Hardware,Software and Networking.
- Commonlyencountered problems.
- (Monitor: No display, KB/Mouse not responding, monitor giving beeps, printer not responding, check for virus, Delete temporary files if system is slow, adjust mouse speed).

VI. WorkIntegratedLearningIT–ISM
- IdentificationofWorkAreas.
- WorkExperience.

(4.GV.03)Web Applications

I. **MovieEditingTools**.
- Familiarizationofinterfacecomponents.
- Importingpictures.
- ImportingAudioand VideoFiles.
- SplittingandJoiningMovieClips.
- AddingTitlesandpublishing.

II. CustomizingandEmbeddingMultimediacomponentsinWebPages.
- CompatibleMultimediafileformatsforWebPages.
- EmbeddingAudiofile.
- EmbeddingVideofile.
- EmbeddingFlashfile.

III. WebScripting–JavaScript.
- JavaScriptreview.
- Functions–userdefined.
- StringObject.
- MathObject.
- ArrayObject.
- Events.
- CaseStudies.

IV. WorkIntegratedLearningIT–WA-II.
- AdvancedFeaturesofWebDesign.
- Codeview,Add-ins/SnippetsandPageTransitions.
- DynamicWebtemplates.
- SEO-SearchEngineOptimization.
- Forms-Advanced.
- Publishingwebpagesorwebsites-I.
- Publishingwebpagesorwebsites-II.
- Authoringtools.
- CSStemplates.

(4.GE.01) Language-IIModule

– 3:Listening and speaking skills

In this modulethe learnerswillbeexposedtoavariety oflistening activitiesrecordedon audiotapes.Thesewillbesamplesofgoodspoken English, which thelearnerscanuseas models.Worksheets will accompany the listening material.
Thismodulewillincludethefollowing:

1. Introducingyourself/friendsinformalandinformalsituations.
2. Invitingpeople(overthephoneandfacetoface) giving detailsofoccasion,time place and date.Acceptance and refusalof invitation– formaland informal.
3. Seeking andsupplying information(exampleopeningan accountin abank,applying for loans etc.)
4. Talkingandconveyingmessages(overthephoneandfaceto face).
5. Givingdirections/instruction.
6. Discussingcontemporaryissuesrelatedtoenvironment, child labour,genderbias etc.
7. Listeningtoexceptsformtelevisionandradio.
8. Listeningtopoems/plays(prescribed).
9. Listeningtospeeches/talks.
10. Listeningtosongslike“Weshallovercome”.

Module–4to6
(Englishfor specificpurposes)(optanyone)

Theremodulesarebeingoffered.Alearnerhasto optforanyone.Thefirst is foracademic purposes and the nexttwoare for vocationalpurposes. The focus is noton the teaching of the subjectmatter likescienceandliterature butonthe way in which languageis usedin the deferent subjects.

Module4:EnglishforScience

Thiscoursewillintroducelearnerstosomeinterestingpiecesofpopularscience

1. Health andhygiene
2. Conservationof(nearlyextinct)animals.
3. Plantlife.
4. Biogas/solar energy.

ThesepiecesillustratetheuseofEnglishinscientific writing: givinginformation factually, logicallyand objectively.

Module4:EnglishforReceptionist

This module will introduce the learners to a variety of exercises,tasks and meaningful activitiesrelated tothe receptionist’suseofEnglish.The printedcoursematerialswillbe supported by tapes.
Thefollowingcompetenciesbedeveloped:

1. Receivingmessages, makingrequest etc.
2. Supplying information
3. Givingadvice andmaking suggestions
4. Dealingwithcomplaints

5. Makingentriesinanappointmentbook,registeretc.

Module4:EnglishforOfficeUse

This coursewillhelp thelearnertouseEnglisheffectively andappropriatelyinthe office environment. The competencies will be developed.

1. Usingthetelephonetakingandpassingmessages.
2. Receivingmessages
3. Markingnotingonfilesandcircular.
4. Writingofficenotes,memos,notices,agendasformeetings.
5. Telegramsandfaxmessages.
6. Writingbusinessletters,applicationenquires,complaints.
7. Fillinginforms,cheques,payinslips etc.

(4.VP.01)ITTools Lab(Advanced)

- Studyofcomputercomponents,Bootingof Computeranditsshutdown
- PracticingsomefundamentalDOSCommands
- SimplePrograms inBASICtocomputeMean,Variance,CorrelationandRegression
- Creatingdatabase in MS-Access, structuring with different types of fields and use of query facility foraccessing the information

(4.VP.02)WebApplicationsLab

1. Programs/PracticalQuestions:
    - MovieEditing Tools
    - CustomizingandEmbedding,MultimediaComponentsinWebPages
    - WebScripting- JavaScript
2. Project/PracticalFile
3. VivaVoce

Level4(SemesterII)

(4.GV.04)DatabaseManagementSystems

I. DatabaseConcepts–RDBMSTool.
- BasicsofRDBMS.
- SQL–Creating andOpeningDatabase.
- Creatingandpopulatingtables.
- Modifyingthecontentandstructureoftable.
- OrderingandGrouping.
- Operatingwithmultipletables.

II. Operating WebBasedApplications.
- OnlineReservationSystems.
- E-Governance.
- OnlineShoppingandBillpayments.
- OnlineTutorialsandTests.
- ProjectManagement–WebBasedApplicationdevelopment.
- Projectessentialsandtips.
- CaseStudy-OnlineGame.
- CaseStudy-OnlineQuiz.
- CaseStudy – OnlineBillCalculator.

III. Fundamentals of Java programming,IntroductiontoJava,Object Oriented Programming,JavaLanguageElements,Operators, ControlFlow,Array,ClassDesign, ExceptionHandling, Assertions, Threads, Wrapper Classes,String Manipulation.

IV. WorkIntegrated LearningIT–DMA.
- IdentificationofWorkAreas.
- WorkExperience.

(4.GV.05)Digital Electronics

1. NumberSystemsandBooleanAlgebra
- BasicsofAnalogandDigital.
- Booleanalgebra,De-morgan'slaw,Truthtables.

2. Logical Circuits
- Logicgates:AND,OR, NOT,NOR, NAND,XOR,XNOR.
- CombinationalCircuits:
  (i) ArithmeticCircuits: Halfadders,Fulladders,Subtractors,
  (ii) DataProcessingCircuits: Encoders,Decoders,Multiplexers, De-Multiplexers,

3.LatchesandFlip-Flops
- ConceptofLatches,TypesofLatches,SRlatch.
- SRFlipFlop,JKFlipFlop,DFlipflop,TFlipFlop,FlipFlop.
- Introductiontocounters,TypesofcountersAsynchronousandSynchronous.
- Introductiontoshift registers,typesofshift registers,

4. **IntroductiontoDisplayDevices**
   - LED,LCD,7segmentdisplay

5. **IntegratedCircuitsand Memories**
   - IntroductiontoIC's,Importanceandapplications,LinearandDigital IC's.
   - IntroductiontoSSI,MSI,LSIandVLSI(Terminology&Definitions).
   - MemoryOrganisationandOperations,RAM,ROM.

(4.GV.06)ComputerNetworks

UNIT-I

IntroductiontocomputerNetwork-Communication:AnEssential Partof OurLives,Communicating in a Network-Centric World, Network as a Platform, Architecture of the Internet, Trends in Networking

Communicating overthe Network -PlatformforCommunications, LANs, WANs, and Internetworks, Protocols, Using Layered Models,Network Addressing

UNIT-II

Application Layer Functionality and Protocols- Applications:The InterfaceBetween the Networks, MakingProvisionsforApplicationsandServices,ApplicationLayerProtocolsandServicesExamples

OSI Transport Layer - Roles of the Transport Layer, IPv4 Addresses, TCP: Communicating with Reliability, UDP: Communicating with Low Overhead

UNIT-III

OSI Network Layer - IPv4,Networks: Dividing Hosts into Groups, Routing, How Data Packets Are Handled, Routing Processes

Addressingthe Network-IPv4 Addresses for Different Purposes, AssigningAddresses, Calculating Addresses,Testing the Network Layer

OSIDataLinkLayer-DataLinkLayer,MACTechniques,MACAddressingandFramingData

(4.GV.07)MaintenanceofComputerSystems

UNIT-I

OSIPhysicalLayer-PhysicalLayer,CommunicationSignals,PhysicalSignalingandEncoding: RepresentingBits, PhysicalMedia: Connecting Communication

Ethernet - Overviewof Ethernet, Ethernet: Communication through the LAN, Ethernet Frame EthernetMAC, EthernetPhysicalLayer,Hubs and Switches,Address Resolution Protocol(ARP)

UNIT-II

Planning and CablingNetworks -LANs:Making the Physical Connection, DeviceInterconnections, developing an AddressingScheme, Calculating the Subnets, DeviceInterconnections

ConfiguringandTestingYourNetwork-ConfiguringDevices,applyingaBasicConfiguration, Verifying Connectivity, Monitoring and Documenting Networks

(4.GP.03)DatabaseManagementSystemsLab

1. Programs/PracticalQuestions
   - SQLQueries
   - JAVA Programs
   - Operating WebBasedApplication
2. Project/PracticalFile
3. VivaVoce

(4.GP.04)MaintenanceofComputerSystemsandComputer NetworkLab

- Identifyingexternalportsandinterfacing
- IdentifyingPCcardsandinterfacing
- Identifyingportsonthecardsandinterfacing
- PreventivemaintenanceofaPC
- UnderstandingCMOS
- PartitioningandformattingHarddisks.
- WorkingwithAntivirussoftware's

Level 5(SemesterI)

(5.GV.01)ITFoundations&ProgrammingConcepts

Computer characteristics: Speed, storage, accuracy, diligence; Digital signals, Binary System,ASCII;HistoricEvolutionofComputers;Classification ofcomputers:Microcomputer, Minicomputer, mainframes, Supercomputers; Personal computers: Desktop, Laptops, Palmtop, Tablet;Hardware & Software; Von Neumann model.

Hardware: CPU, Memory, Input devices, output devices. Memoryunits: RAM (SDRAM, DDR RAM, RDRAM etc. feature wise comparison only); ROM-different types: Flash memory; Auxiliary storage: Magnetic devices, Optical Devices; Floppy, Hard disk, Memory stick, CD, DVD,CD/DVD-Writer;Inputdevices-keyboard,mouse,scanner,speechinputdevices,digital camera,TouchscreenVoiceInput,Joystick,Opticalreaders,barcodereader;Outputdevices: Display device, size and resolution; CRT, LCD, LED; Printers: Dot-matrix, Inkjet, Laser; Plotters, Sound cards & speaker.

Software: Systemsoftware,Application software;conceptsoffiles andfolders,Introduction to Operating systems, Differenttypes of operating systems: single user, multitasking, time-sharingmulti-user; Booting, POST; Basic featuresoftwoGUI operatingsystems: Windows& Linux (Basic desk top management); Programming Languages, Compiler, Interpreter, Databases; Applicationsoftware: Generic Features of Word processors,Spread sheets and Presentation software;Generic Introduction to Latex for scientific typesetting; Utilities and theiruse; Computer Viruses & Protection, Free software, open source.

Computer Networks and Internet: Connecting computers, Requirements for a network: Server, Workstation, switch, router, network operating systems; Internet: brief history, World Wide Web, Websites, URL, browsers, search engines, search tips; Internet connections: ISP, Dial-up, cable modem, WLL, DSL, leased line Wireless and Wi-Fi connectivity ; email, email softwarefeatures(sendreceive,filter,attach,forward,copy,blind copy); characteristics of web-based systems, Web pages, Web Programming Languages.

Information Technology And Society: Indian IT Act, Intellectual Property Rights, issues. Application of information Technology in Railways, Airlines, Banking, Insurance,Inventory Control, Financial systems, Hotel management, Education, Video games, Telephone exchanges, Mobile phones, Information kiosks, special effects in Movies.

Programming Concepts & Techniques: Program Concept, Characteristics of Programme, Stages in Program Development, Tips for Program Designing, Programming Aids, Algorithms, Pseudo code, Notations, Design, Flowcharts, Symbols, Rules, compiler & Interpreter. Introduction to programming techniques, Top-down & Bottom-up approach, Unstructured, & Modular programming, Cohesion, Coupling, Debugging, Syntax & Logical Errors, Linking and Loading, Testing and Debugging, Documentation.

(5.GV.02)Web Designing

UNIT-I

Introduction to HTTP, HTML, Basic HTML Tags, Body Tags, Coding Style, Modifying & formatting Text, Lists – Unordered, Ordered, Definition, Insert Links -Linking to another Document, Internal Links, Email Links, Relative and Absolute Links, Insert Images - Referencing Images, ClickableImages, Image Placementand Alignment,Image Size,Image

Margins, Image Formats, Image Maps- Defining an Image Map, Advanced Coloring Body Content, Working with tables - Basic Tables, Table Attributes, Table Cell Attributes, Table RowAttributes,TablesInsideofTables,InvisibleSpacers,WorkingwithFrame-BasedPages-Creating Windows, Single Window Frames,CreatingColumn Frames,Creating Row Frames, Creating Complex Frames.

UNIT-II

Cascading Style Sheet (CSS) – Introduction, creating style, using inline and external CSS, Creating Divs with ID style, Creating Tag& Class style, creating borders,Navigation links, creating effects with CSS.

JavaScript–Introduction,useofJavaScriptinwebpages.UnderstandJavaScripteventmodel, use some basic event and control webpage behavior.

UNIT-III

DESIGNINGWEBSITESWITHDREAMWEAVER/EXPRESSIONWeb/AMAYA/COFEECUP WYSIWYGHTMLEditor-IntroductiontoWYSIWYGHTMLeditor,advantagesofusingHTML editors, Creating a New Site, Creating a New Page, Adding Images with Alternate Text, Inserting & Formatting Text, Aligning Images, Creating an Email Link, Linking to Other Websites, Testing & Targeting Links, OrganizingFiles & Folders

CREATING & INSERTING IMAGES - OptimizingImages for the Web,Saving GIFs & PNGs in Photoshop, Inserting GIFs, Adjusting Transparency Settings, Saving JPGs for the Web

UNIT-IV

DESIGNING ACCESSIBLE TABLES-Understanding Tables& Accessibility,UsingTables for Tabular Data, styling a Table, Editing Table Layouts,Adding Style to aTable Using CSS

CREATINGWEBSITES WITHFRAMES -Introducing Frames,creating a Frameset, Opening Pages into Frames, Controlling Scrollbars & Borders, Targeting Links in Frames

CUSTOMIZINGTHEINTERFACE-OpeninganExistingSite,ReviewingMenuOptions& Preferences, Comparing the Macintosh &PC Interfaces, PreviewinginBrowsers & Device Central

Introduction toResponsive Web Designing– Introduction,advantages, creating and using responsive web pages.

UNIT-V

WebHosting-What isDomain?Introductionto DNS,howto registeraDomain?Whatisweb hosting?Howtogetawebhosting?HostyourwebsiteonwebServer.FTP-FTPIntroduction, FTP Commands Viewing Files and Directories, FTP Commands Transferand Rename files, FTP with WS FTP/ CuteFTP, Filezillaon Windows.

(5.GV.03)ProgramminginC

Introductionto'C'Language-Characterset,VariablesandIdentifiers, Built-inDataTypes, Variable Definition, Arithmeticoperators and Expressions,Constants and Literals,Simple assignment statement, Basic input/output statement, Simple'C' programs.

Conditional Statementsand Loops - Decision making withina program,Conditions, RelationalOperators,LogicalConnectives, ifstatement,if-else statement,Loops:whileloop, do while,for loop,Nestedloops,Infinite loops,Switch statement,structuredProgramming.

Arrays- One dimensional arrays:Arraymanipulation;Searching,Insertion, Deletionofan elementfromanarray;Findingthe largest/smallestelementin anarray;Twodimensional

arrays,Addition/Multiplicationoftwomatrices,Transposeofasquarematrix;Null terminated strings as array of characters, Standard library string functions

Functions-Top-down approach of problemsolving,Modular programming and functions, Standard Library of C functions, Prototype of a function: Formalparameter list, Return Type, Functioncall,Blockstructure, PassingargumentstoaFunction:call by reference,call by value, Recursive Functions, arrays as function arguments.

StorageClasses- Scopeandextent, StorageClassesina single sourcefile:auto,externand static,register,Storage Classes in a multiplesource files:extern and static

Structures and Unions-Structurevariables,initialization,structureassignment, nested structure,structuresandfunctions, structuresandarrays:arraysofstructures,structures containing arrays, unions

Pointers - Address operators,pointer type declaration,pointer assignment, pointer initialization,pointer arithmetic,functionsandpointers,ArraysandPointers,pointer arrays, pointers and structures, dynamic memory allocation.

FileProcessing - ConceptofFiles, File openingin variousmodesandclosingofafile, reading from a file, writingonto a file

(5.GV.04)OperatingSystem(OS)

- **SystemSoftware:**OperatingSystem,Compiler,InterpreterandAssembler;
- **Operating System:** Need for Operating System, Functions of Operating System (Processor Management, Memory Management, File Management and Device Management),TypesofOperatingSystem-Interactive(GUIbased),TimeSharing,Real Time and Distributed, commonly used Operating System: UNIX, LINUX, Windows, Solaris, BOSS (Bharat Operating System Solutions); Mobile OS – Android, Symbian, IOS.
- **Utility Software:** Anti-Virus, File Management tools, Compression tools and Disk Management tools (Disk Cleanup, Disk Defragmenter, Backup).

(5.VP.01)WebDesigningLab

- genericawarenessaboutHyperTextMarkupLanguage(HTML).
- designingofwebsites.
- basicsofHTMLtags.
- CascadingStyleSheet(CSS).
- functionalknowledgeofwebhosting

(5.VP.02)CProgrammingLab

ProgrammingFundamentals

- DataTypes: Conceptofdata types;Built-indata types-byte,short,int,long,float, double, char, string, boolean

- Variables:Needtousevariable, declaringvariables, variablenaming convention, assigning value to variables;
- Integerobjectmethod:parseInt
- Doubleobjectmethod:parseDouble, parseFloat
- ControlStructures:DecisionStructure – if, if-else, switch;LoopingStructure-while, do. . while, for;

ProgrammingGuidelines:

- GeneralConcepts;Modularapproach;
- StylisticGuidelines:Clarityandsimplicityofexpressionsandnames;Comments, Indentation;
- Runninganddebuggingprograms,SyntaxErrors,Run-Time Errors,LogicalErrors;
- ProblemSolving Methodology: Understanding of the problem, identifyingminimum numberofinputs requiredforoutput,breakingdownproblemintosimple logical steps.

Level 5(SemesterII)

(5.GV.05)DataStructure

UNIT–I

An Overviewof ComputersandProgramming - Simple programlogic, The steps involved in the program development cycle, Pseudo code statements and flowchart symbols, Using a sentinel value to end a program, Programming and user environments, The evolution of programmingmodels.

UNIT–II

The conceptofdatastructure,Abstract datastructure,Analysis ofAlgorithm, The conceptof List Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application: Infix, post fix, Prefix and Recursion, Introduction to queues,PrimitiveOperationsonthe Queues,Queue asanabstractdatatype,Circular queue, Dequeue, Priority queue, Applications of queue

UNIT–III

Introduction to the Linked List ofStacks, Basic operationsonlinked list,Stacks and queues as a circular linked list, Header nodes, Doubly Linked List, Circular Linked List, Stacks & Queues as a Circular Linked List, Application of Linked List.

UNIT–IV

TREES -BasicTerminology, BinaryTrees,TreeRepresentationsasArray&LinkedList,Basic operation on Binary tree, Traversal of binary trees: - In order, Preorder & post order, ApplicationofBinarytree,threadedbinarytree,B-tree&Heightbalancedtree,B+&B*trees, 2-3 trees, Binary tree representation of trees, Counting binary trees

UNIT–V

Sequential Searching, Binary search, Insertion sort, Selection sort, Quicksort, Bubble sort, Heap sort, Comparison of sorting methods
HashTable,CollisionresolutionTechniques,Introductiontographs,Definition,Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal-Depth first & Breadth first search, Spanning Trees, minimum spanning Tree, Shortest path algorithm

(5.GV.06)ConceptsofDataMining

Unit-I

Introduction,toDatawarehousing,needsfordevelopingdataWarehouse,Data warehouse systems and its Components, Design of Data Warehouse, Dimension and Measures, DataMarts:-DependentDataMarts,IndependentsData Marts& Distributed Data Marts, ConceptualModeling of Data Warehouses: -Star Schema, Snowflake Schema, Fact Constellations, Multidimensional Data Model & Aggregates.

Unit-II

OLAP, Characteristics of OLAP System, Motivation for using OLAP, Multidimensional View and Data Cube, Data Cube Implementations, Data Cube Operations, Guidelines for OLAP Implementation, DifferencebetweenOLAP & OLTP, OLAP Servers:-ROLAP,MOLAP, HOLAP Queries.

UNIT-III

IntroductiontoDataMining,KnowledgeDiscovery,DataMiningFunctionalities,Data

MiningSystem categorization and its Issues. Data Processing:- Data Cleaning, Data Integration andTransformation. Data Reduction, Data Mining Statistics. Guidelines for Successful Data Mining.

Unit-IV

Association Rule Mining:-Introduction, Basic, The Task and a Naïve Algorithm, Apriori Algorithms, Improving the efficiency of the Apriori Algorithm, Apriori-Tid, Direct Hasing andPruning(DHP),Dynamic Item set Counting (DIC), Mining Frequent Patterns without CandidateGeneration(FP-Growth), Performance Evaluation of Algorithms,

Unit-V

Classification:-Introduction, Decision Tree, The Tree Induction Algorithm, Split Algorithms Basedon Information Theory, Split Algorithm Based on the Gini Index, Overfitting and Pruning,Decision Trees Rules, Naïve Bayes Method.

Cluster Analysis: - Introduction, Desired Features of Cluster Analysis, Types of Cluster AnalysisMethods:- Partitioned Methods, Hierarchical Methods, Density- Based Methods, DealingwithLarge Databases.Quality and Validity of Cluster Analysis Methods.

(5.GV.07)ObjectOrientedProgrammingwithJAVA

UNIT–I

C++vsJAVA,JAVAandInternetandWWW,JAVAsupportsystems,JAVAenvironment.

JAVA program structure, Tokens,Statements,JAVA virtualmachine,Constant & Variables, Data Types, Declaration of Variables,Scope of Variables,Symbolic Constants, Type Casting.

Operators:Arithmetic, Relational, LogicalAssignments,IncrementandDecrement,Conditional, Bitwise, Special, Expressions & its evaluation**.**

If statement, if…else… statement,Nesting of if…else… statements,else…if Ladder,Switch,? operators, Loops – While, Do, For, Jumps in Loops, Labelled Loops.

UNIT–II

Defininga Class,AddingVariablesandMethods,Creating Objects,Accessing Class Members, Constructors, Methods Overloading, StaticMembers, Nesting of Methods.

Inheritance:ExtendingaClass,OverridingMethods,FinalVariablesandMethods,Final Classes,FinalizeMethods,Abstractmethods and Classes,VisibilityControl.

UNIT–III

Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining InterfaceExtending Interface,ImplementingInterface,Accessing InterfaceVariable,System Packages, Using System Package,Adding a Class to a Packages, Hiding Classes.

UNIT–IV

CreatingThreads,ExtendingtheThreadsClass,StoppingandBlocking aThread,LifeCycleof a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementingthe Runnable Interface.

UNIT–V

Localand Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet,Designing aWebPage,AppletTag,Adding Appletto HTML File,Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

(5.GV.08)MULTIMEDIA–TOOLS&APPLICATIONS

UNIT-I

IntroductionToMultimedia,NeedsandAreasofuse,IdentifyingMultimediaElements-Text, Images, Sound,Animation and Video,Making SimpleMultimedia With PowerPoint.

TEXT - Concepts of Plain & Formatted Text, RTF & HTML Texts, Using Common Text Preparation Tools, Conversion to and from of Various Text Formats, Creating text using standardsoftware.

UNIT-II

SOUND - Sound and its Attributes, Sound and Its Effects in Multimedia, Frequency, Sound Depth, Channels and its Effects on Quality and Storage, Size Estimationof Spaceof a Sound File, SoundCardStandard –FMSynthesisCards,WavesTableCards,MIDIandMP3Filesand Devices, 3D Sounds, Recordingand editing sound using sound editors likeAudacity, Sound forge etc.

UNIT-III

IMAGES-ImportanceofImagesGraphicsinMultimedia,VectorandRasterGraphics,Regular Graphics vs. Interlaced Graphics, Image Capturing Methods - Scanner, Digital Camera Etc. Colormodels-RGB,CYMK,Hue,Saturation,andBrightness,VariousAttributesofImagesSize, Color, Depth Etc, Various Image File Format BMP, DIB, CIF, PIC, and TIF Format Their FeaturesAndLimitations,Imageformatconversion,variouseffectsonimages.Createimages using Photoshop,CorelDrawandapplyvariouseffects,Using Layers,ChannelsandMasks in images.

UNIT-IV

VIDEO- Basic ofVideo, AnalogandDigital Video Type ofVideo, DigitizationofAnalogVideo, Video Standard – NTSC, Pal, HDTV, Video Capturing Media /Instruments Videodisk Camcorder Compression Techniques, File Formats AVI, MJPG, MPEG, Video Editing and Movie Making Tools, convertingformatsofvideos, recordingandediting videos usingvideo editing software likeadobe premiere or Sony Vegas.

UNIT-V

ANIMATION- Concepts of animation, 2D and 3D animation, tools for creating animation, character and text animation, creating simple animation using GIF animator and flash, Morphing and Applications.

Authoring tools for Multimedia – Introduction to various types of multimedia authoring tools, CD/DVD based and web based tools, features and limitations, creating multimedia package using all components.

(5.VP.03)Data Structure Lab

- Implementstack.Writefunctionslike push,pop,Initialize,EmptyorFull.
- Implementconceptof queues
- Implementqueuesinacirculararray.
- Implementqueuesasacircularlinkedlist
- Implementingdoublylinked list
- Binarysearchtreetosortanarray

(5.VP.04)JavaLab

Programmingproblemsbasedonallconceptscoveredintheorysuchas Arrays, Classes, Threads, Methods, Applets etc.

Level 6(SemesterI)

(6.GV.01)LinuxOperatingSystem-Operations&Management

UNIT–I

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell.

Linux File system-Boot block,super block,Inode table, data blocks,How Linux access files, storage files, Linux standard directories, Commands forfilesand directoriescd, ls, cp,md, rm, mkdir,rmdir, more, less, creating and viewingfiles,using cat,file comparisons,Viewfiles, diskrelatedcommands, checking disk free spaces.

PartitioningtheHarddriveforLinux,InstallingtheLinuxsystem,Systemstartupandshut-down.

UNIT–II

Essential Linux commands Understanding shells, Processes in Linux process fundamentals, connecting processes with pipes, redirecting input output, manual help, Background processing, managing multiple processes, changing process priority,scheduling ofprocesses at command,batch commands,kill,ps,who,sleep,Printingcommands, grape, fgrep,find,sort,Cal, banner,touch,file,file related commands-ws, sat, cut, grep, dd, etc.

Mathematicalcommands-bc,expr, factor,units.

vi, joe, vim editor

UNIT–III

Shell programming Basic of shell programming, Various types ofshell, shell programming in bash, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, shell keywords,Creating Shell programs forautomate system tasks and report printing, use of grep in shell, awk programming.

UNIT–IV

SystemadministrationCommonadministrativetasks, identifyingadministrative files–configuratinn andlogfiles,Roleofsystemadministrator,Managinguseraccounts-adding&deletingusers,changing permissionsandownerships,Creatingandmanaginggroups,modifyinggroupattributes,Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performancefilesecurity&Permissions, becoming super user using su.Getting system information-host name, disk partitions & sizes, users, kernel.

Backup and restore files, linuxconf. utility in GUI, reconfiguration hardware with kudzu Configure desktop-X configurator, understandingXF86configfile, starting & using X desktop. KDE & Gnome graphical interfaces, changing X settings.

UNIT–V

BasicnetworkingadministrationSettingupaLANusingLinux,choosingpeertopeervsclient/server model, setting up an Ethernet Lan, configuring host computers, checking Ethernet connecting, connecting to internet, administration in a networked environment, common networking administrative tasks, the network file system, configuring Ethernet, initializing Ethernet Interface, ifconfig,netstatandnetconfigcommands aTCP/IPnetworks,DNSservices,routingusingLinux,SLIP & PPP services, UUCP.

Installation&Administrationofmailserver,ftpserverandApachewebserver.

(6.GV.02)SoftwareEngineering

UNIT-I

SOFTWARE:SoftwareCharacteristics,Components&Applications,SoftwareEngineering-ALayered Technology, Software Process Models - Linear Sequential Model, Prototype & Rad Model., Evolutionary SoftwareProcess Model – Incremental Model and Spiral Model.

SOFTWAREPROJECTMANAGEMENT:ProjectManagementConcepts – PeopleProblem and Process S/W process and Project Metrics : Metrics in The Process and Project Domains . Software Measurement–SizeOriented, Function Oriented Metrics, Extended Function

UNIT-II

SOFTWAREPROJECTPLANNING: Objectives, Scope, Project Estimation, DecompositionTechniques, Empirical Estimation Models.

ANALYSISCONCEPTANDPRINCIPLES:RequirementAnalysis,Communication Techniques,Analysis Principles, Software Prototyping,Specifications.

ANALYSISMODELING:Elements of TheAnalysis Modeling, Data Modeling. FunctionalModelingand Information Flow, Behavioral Modeling,Data Dictionary.

UNIT–III

DESIGNCONCEPTSAND PRINCIPLES: Design Process,Design Concepts, DesignPrinciples,Effective Modular Design .

DESIGN METHODS : Architectural Design Process, Transform Mapping and Transaction Mapping, InterfaceDesign,-InternalandExternalDesign, Human Computer InterfaceDesign, InterfaceDesign Guidelines, Procedural Design.

UNIT-IV

S/W QualityAssurance:Quality Concepts, Matrix forSoftwareQuality,Quality Movement,S/W Q A, S/WReview,FormalTechnicalReviews,FormalApproachestoSQA,S/WReliability,ISO9000quality Standards

S/WTESTINGMODELS:S/WTesting Fundamentals,TestCase Design, Whiteand BlackBoxTesting, Basic Path Testing, Control Structure

S/W TESTINGSTRATEGIES: Strategic ApproachToS/W Testing,Unit Testing,Integration Testing, Validation Testing, System Testing, Debugging

UNIT-V

S/WREUSE : ReuseProcess,BuildingReuseComponents,ClassifiedAnd RetrievingComponents, EconomicsOf S/W Reuse

COMPUTERAIDED S/WENGINEERING: IntroducingofCase,BuildingBlockForCase,TaxonomyOf CaseTools,IntegratingCaseEnvironment,IntegratingArchitecture,CaseRepository.

(6.GV.03)WebDevelopmentusingPHP

UNITI

Introduction to PHP as a programming Language: - Advantages of PHP, the server side architecture Decomposed, overview of PHP, history, object oriented support, benefits in runningPHPasa serversidescript.Installingawebserver,Internetinformationserver,and IIS installation, testing web server setup.

UNITII

The basics of PHP: - data types, variables, constants, operators, Arrays, Conditional statements(ifstatement,ExecutingMultipleStatements,elseifclauseandswitchstatement), Iterations (forloop, while loop, controlling an array using a while loop, do while statement, for each loop and special loop key words)

UNITIII

Functions, user defined functions, functions with arguments, built in functions (print(), includer(), header(), phpinfo()), PHP server Variables, working with date and time , performingmathematicaloperations,working with string functions.SystemVariable (GET, POST,cookies& Session, Forums)

UNITIV

Workingwithforms,formelements(TextBox,TextArea,Password,Radio Button,Checkbox, The ComboBox, Hidden Field and image), adding elements to a form, uploadingfilesto the

WebServerusingPHP, building achallenge andresponsesubsystemandunderstandingthe functionality of the FORM attribute Method RegularExpressions:- Engine, types of Regular Expressions, symbols used in Regular Expressions. Error handling in PHP: - Displaying errors, warnings, types of errors, error levels in PHP, loggingErrors and Ignoring errors.

UNITV

Data base connectivity using PHP (MySQL, ODBC, ORACLE, SQL) Performing, executing Commands,differenttypesofDataBaseOperationslikeInsertion,deletion,updateandquery ondata

(6.GV.04)WindowDevelopmentFundamentals

- Programmingwebapplications
- Workingwithdataandservices
- Troubleshootinganddebuggingweb applications
- Workingwithclient-sidescripting
- Configuringanddeployingwebapplications
- Understandingcoreprogramming
- Understandingobject-orientedprogramming
- Understandinggeneralsoftwaredevelopment
- Understandingwebapplications
- Understandingdesktopapplications
- Understandingdatabases

(6.VP.01)WebDevelopmentusingPHPLab

PHPprogramminglanguageand2D,3D animationbasedonthetheorycoveredinclass.

(6.VP.02)WindowDevelopmentFundamentalsLab

- Client-side scriptingPrograms
- Deployingwebapplications
- Basicobject-orientedprograms
- Understandingdesktopapplications
- BasicSQLQueries

Level 6(SemesterII)

(6.GV.05)SoftwareTesting&ProjectManagement

UNIT-I

TestingbasicsandDevelopmentModels: Principalsandcontext oftestingin softwareproduction, UsabilityandAccessibilityTesting,PhasesofSoftwareProject,Processmodelstorepresentsdifferent phases,SoftwareQuality Control and its relation with testing, validating and verification,Software Development life cyclemodels,various development models.

White Box Testing: White Box Testing - Static Testing, Structural Testing-Unit code functional testing, Code coveragetesting,codecomplexity testing,

Black Box Testing- What? Why and when to do Black box testing, Requirements based testing, Positive and Negative Testing, Boundary value testing, Decision Tables, Equivalence Partitioning, State Based or Graph Based Testing, Compatibility Testing, User Documentation Testing, Domain Testing.

UNIT-II

IntegrationTesting: Introductionand types of integration testing, Scenario testing, defect bash.

SystemandAcceptanceTesting-Overview,functionalandnon-functionaltesting,Acceptance testing.

Overviewofsome softwaretesting tools:WinRunner, LoadRunner, TestDirector. (Some practical should be conducted using these tools)

UNIT-III

PerformanceTesting-Introduction,factorsrelatedtoperformancetesting,methodologyfor performing testing, Regression Testing,

AdhocTesting- Overview, Buddy & pair testing, Exploratory testing, Interactive testing, Agile and extreme testing.

TestingofObjectOrientedTesting–Introduction,DifferencesinOOtesting.

UNIT–IV

Software Project Management: Overview, Software Project ManagementFramework,SoftwareDevelopment life cycle,

Organization Issues and ProjectManagement,ManagingProcesses, Project Execution,Problems in SoftwareProjects, ProjectManagement Myths and its clarifications.

SoftwareProjectScope: Needtoscopeasoftwareproject,scopemanagementprocess, communicationtechniques andtools,communicationmethodology

SoftwareRequirement GatheringandResource allocation: Requirementspecifications,SRS Documentpreparation,Resourcestypesforasoftwareprojects,requirementforresourcesallocation.

UNIT– V

Software ProjectEstimation: Work Breakdownstructure (WBS), steps in WBS, Measuringefforts for a project, techniques for estimation– SLOC, FP,COCOMO and Delphi methods.

ProjectScheduling: Scheduling anditsneed,scheduling basics,GanntChart,Networkscheduling techniques, Pert and CPM

UsingaProjectManagementTool: IntroductiontoMSProject2000,ManagingtasksinMSProject 2000,Tracingaprojectplan,creatinganddisplayingprojectinformationreports.

(6.GV.06)AndroidApplicationDevelopment

UNIT-I

Android Introduction,Smartphonesfuture,Preparing the Environment, Installing the SDK, Creating Android Emulator, Installing and Using Eclipse, Installing Android Development Tools, Choosing whichAndroid version to use

AndroidArchitecture,AndroidStack,Android applicationsstructure
Creating a project, Workingwith the AndroidManifest.xml, Using the log system Activities
IntroductiontoUI–Layouts,Fragments,Adapters,Actionbar,Dialogs,Notifications,UIbestpractices
UIArchitecture, Application context, Intents, Activity lifecycle,Supporting multiple screen sizes

Unit-II
Designing User Interface Using Views – Basic Views- TextView, Button, ImageButton, CheckBox,ToggleButton, RadioButton etc., ProgressBar View and AutoCompleteTextView, TimePickerand DatePickerView, ListView,
IMageView, ImageSwitcher and GridView, DigitalClock & AnalogClock Views
Notificationand Toast,Parameters ,onIntents, Pending intents, Status barnotifications
Toastnotifications

UNIT-III
Menus, Localization,Options menu, Context menu
Dialogs-Alert dialog,Customdialog, Dialogas Activity
OrientationandMovement-Pitch,rollandyaw,Naturaldeviceorientation,Referenceframe remapping
SMS-Sendingand Receiving
WorkingwithMedia–Playingaudioandvideo,Recordingaudioandvideo

UNIT-IV
LocationandMaps-Googlemaps,UsingGPStofindcurrentlocation
Working with data storage- Sharedpreferences, Preferences activity,Files access, Using External storage, SQLite database
Animation-Viewanimation,Drawableanimation
Working with Sensors- Finding sensors, Accelerometers, Gyroscopes, Other types
WorkingwithCamera –Controlling the camera,Previewand overlays,Takingpictures

UNIT-V
Contentproviders-Contentproviderintroduction,Queryproviders
NetworkCommunication -WebServices,HTTPClient,XMLandJSON,Usinge-mails. Services - Service lifecycle,Foreground service, Creating own services
PublishingandDistributingYourApp-Preparingforpublishing,GooglePlay requirements, Signingandpreparingthegraphics,PublishingtotheAndroidMarket,Monetization,Tipson becoming a top app, Google analytics

(6.GV.07)WindowsConfigurationandServer Administration

Understanding Windows Programming Basics: Identify Windows application types, Implement user interface design.
Creating Windows Forms Applications: Create and handleevents, Understand Windows Forms inheritance, understand how to create new controls and extend existing controls, Validate and implement user input, Debug a Windows-based application.
Creating Windows Services Applications: Create a Windows Services application, Install a Windows Services application.
AccessingDatainaWindowsFormsApplication: Understanddata accessmethodsfor a Windows Application, Understand data bound controls.
DeployingaWindowsApplication: Understandwindowsapplicationdeploymentmethods, integratingdata.
Network basics:Type of Networks, Topologies, Transmission media, Install UTP(Straight, Cross, Rollover Cables), IP Addressing,Subneting, OSI Model, TCP/IP Model, Wireless Network, Network Devices.
Installation: Installation Server, Drivers, Working with windows server Devices, Troubleshooting Devices & Drivers, Managing system updates.

WorkingWith DiskStorage:Typeof Disk Storage, Typeof volumes, Implementing faulttolerance, Usedisk managementtools, Disk Quota,Troubleshooting disk management,Shadow copy**.**
DomainController:InstallActiveDirectory,ManageActiveDirectoryComponent,WorkingwithOU Structure, Working with Domain User account, Working with Domain Groups, Troubleshooting ActiveDirectory.
DomainNameServices(DNS):DefineName resolution, Install DNS,Configure DNS Client, Manage and Troubleshoot DNS.
Dynamic Host Configuration Protocol: Configure DNS Server, Working With Super Scope, Configure DHCP Client, Manage and Troubleshoot DHCP Server.
BackupandRestore: RequirementforBackupandRecoveryAD,IssueforAD BackupandRecovery, Steps for Backupand Recovery AD.

(6.GV.08)ManagementInformationSystem

UnitI
An introduction to information systems, Information systems in organizations, Information TechnologyConcepts,The IS Revolution; Information requirementfor the different levels lf management,transactionprocessingsystem, Managementinformation34system, Decisionsupport system. Strategic Roleof InformationSystems.Business Processes; Informationmanagement,and Decision Making. Computers and InformationProcessing;

UnitII
Transactionprocessingsystem; hardwareand softwarerequirements,toolsused, casestudies, merits and demerits of transaction processing system.

UnitIII
Managerial control,Informationand toolsrequired, differencebetweentransactional system and managerialsystem. Frequency oftaking outputs, Need for interconnected system, common database, Redundancycontrol,case studies.Decision support system, concept and tools, case studies, virtual organizations, strategic decisions-unstructured approach, cost and valuesof unstructured information.

UnitIV
Optimization techniques,differencebetween optimization tools and DSS tools expert system, differencebetweenexpert systemand managementinformationsystem. Roleofchief Information officer.

(6.VP.03)Android ApplicationDevelopmentLab

1. WriteasimpleApplicationwhichwillprint"HelloWorld!”
2. WriteasimpleApplicationthatusesUILayoutandControl.
3. WriteasimpleApplicationthatmakesuseofStyle&Themes.
4. WriteasimpleApplicationthatusesEventHandling.
5. WriteasimpleApplicationthatusesAlarm,Notification.
6. Makealocationbasedapp.
7. Writeaprogramthatshowstheuseanimation.
8. WriteaprogramthatshowstheuseofImageEffects.
9. WriteaprogramthatshowstheuseImageSwitcher.
10. Writeaprogramthatshowstheuseofdatabase.

(6.VP.04)MISLab

Experimentstobecoveredbasedonthetheorycoveredinclass

Level 7(SemesterI)

(7.GV.01)TechnologyTrendsinIT

Unit-I
Internet of Things (IoT) – Definition of IoT, History of IoT, IoT vs. similar concepts, Application/Segmentoverview, Technology overview

Unit-II
Big Data Analytics: Concepts, examples of big data analytics, benefits of big data analytics, Technologies, and Applications, requirements for being successful withbig data analytics

Unit-III
Cloud Computing – Introduction, Why cloud services are popular, advantages, Characteristics, Service models,Deployment of cloud services, Potential privacy risks

Unit-IV
Cyber Security – Introduction,risks, Maliciouscode, Hacker, attacker or intruder,Cyber security Principles, InformationSecurity (IS) within Lifecycle Management, Risks & Vulnerabilities, Incident Response, Future Implications & EvolvingTechnologies

Unit-V
Wearable Technologies – Introduction, Applications of Wearable Technology, Challenges to Wearable Technology, various Wearable devices.

(7.GV.02)WindowsMobileApplicationDevelopment

Unit-I

INTRODUCTION TO WINDOWS 8 APPLICATION DEVELOPMENT - brief history of windows application development, History ofAPIs and Tools, Operating System Input Methods TheWindowsCharmBar,StartButton,SearchButton,ShareButton,DevicesButton,Settings Button, Windows Desktop, Switching between Desktop Programs

WINDOWS8ARCHITECTUREFROMADEVELOPER'SPOINTOFVIEW-Windows8Development Architecture, Desktop Application Layers, UnderstandingWindowsRuntime:WindowsRuntime ArchitectureOverview,Metadatain WindowsRuntime,.NETFramework 4.5:TheInstallation Model of.NETFramework4.5, Window Runtime Integration,Pickingthe Appropriate Technology forYour Project, Choosing a Programming Language

GETTING TO KNOW DEVELOPMENT ENVIRONMENT- Introducing the Toolset, Visual Studio IDE: Creating a New Project,Lighting Up Your Applications withExpression Blend

UNIT-II

PRINCIPLESOFMODERNWINDOWSAPPLICATIONDEVELOPMENT-Windows8StyleApplication, Windows8 Design Language, Introduction to Asynchronous Programming, Evolution of Asynchronous, Programming on the .NET Platform

CREATINGWINDOWS8STYLEAPPLICATIONSWITHHTML5,CSS,ANDJAVASCRIPT-HTML5and CSSontheWeb,HTML5Technologies,HTML5ApplicationsonWindowsRuntime,TheWindowsLibrary for JavaScript (WinJS), Creating Windows8 Style Applications with JavaScript, Accessing the Filesystem, Managing Data, Respectingthe User's Device

UNIT-III

USING XAML TO CREATE WINDOWS8 STYLE USER INTERFACES - Describing the User Interface UsingXAML,UsingNamespaces,UnderstandingtheLayoutManagementSystem,ReusableResources in XAML, Basic Controls in Windows 8 Style Applications: Controls with Simply Accessing the Internet: e Values, Content Controls, Workingwith Data: Data Binding Dependency Properties and Notifications, Binding Modes and Directions

WORKINGWITHXAMLCONTROLS-UsingAnimationsinApplication, Designing theVisual Lookof a Control,WorkingwithComplex Controls:Getting toKnow the ListViewBaseControls, Usingthe Grid View Control, Binding to Data, Grouping Data, Defining Visual Groups

BUILDINGWINDOWS8STYLEAPPLICATIONS-TheLifecycleof a Windows8 Application,Deploying Windows 8 Apps, Commanding Surfaces, Persisting Application Data, Applications and the Start Screen

UNIT-IV

CREATINGMULTI-PAGE APPLICATIONS -NavigationBasics,workingwithPages,UsingtheSplit Application and Grid Application Templates

BUILDING CONNECTED APPLICATIONS - Integrating with the Operating System and Other Apps: PickerUnifiedDesigntoAccessData,UnderstandingtheConceptofContracts,AccessingtheInternet: Detecting the Changes of Internet Connectivity, Using Feeds, Accessing WindowsLive
LEVERAGING TABLET FEATURES - Accommodating Tablet Devices, Building Location-Aware Applications, UsingSensors: Using Raw Sensor Data, Using Sensor FusionData

UNIT-V

ADVANCED PROGRAMMING CONCEPTS - Building Solutions with Multiple Languages: Hybrid Solutions, Background Tasks: Understanding Background Tasks, How Background Tasks Work, Cancelling BackgroundTasks, Implementing BackgroundTasks, creatinga Simple BackgroundTask, Managing Task Progress and Cancelation, Input Devices

TESTINGANDDEBUGGINGWINDOWS8APPLICATIONS-TheQualityofSoftware,BecomingFamiliar with Debugging, Controlling the Program Flow in Debug Mode, Monitoring and Editing Variables, ChangingtheCodeWhileDebugging,Windows8StyleApplication-SpecificScenarios,Introductionto SoftwareTesting, Introduction to Unit Testing, Unit Testing Windows8 Style Applications

INTRODUCING THE WINDOWS STORE - Getting to Knowthe Windows Store,How CustomersSeeanAppin the WindowsStore,ApplicationDetails,Making Moneywith Your App, The Developer Registration Process:Submitting the Application,The Application Certification Process, The Windows App Certification Kit.

(7.GV.03)IntroductiontoPython Programming

- Familiarizationwith the basics of Python programming:a simple “hello world" program,processofwritinga program,running it, andprintstatements; simpledata-types: integer, float, string
- Introducethenotion ofavariable,andmethods tomanipulate it(conceptofL-valueand R-value even if not taught explicitly)
- Knowledgeofdata typesandoperators:acceptinginput from theconsole,assignment statement,expressions, operators and their precedence.

- Conditionalstatements:if,if-else, if-elif-else; simple programs:e.g.:absolutevalue,sort numbers, and divisibility.
- Notionofiterative computation andcontrolflow: for,while, flowcharts, decisiontrees and pseudo code;write a lot of programs:interestcalculation, primarily testing,and factorials.
- Ideaofdebugging:errors and exceptions;debugging:pdb,breakpoints.
- Lists, tuples and dictionary: finding the maximum, minimum, mean; linear search on list/tupleof numbers,and counting thefrequencyof elements in a listusing a dictionary.Introducethenotion ofaccessingelements in acollection usingnumbersand names.
- Sortingalgorithm: bubbleandinsertion sort; countthe numberofoperationswhile sorting.
- Strings:compare,concat,substring; notionofstates andtransitions usingstate transition diagrams.

(7.GV.04)IntroductiontoMicroprocessors

Digital DesignandVHDL

Introduction
CombinationalLogic
StructuralModeling
SequentialLogic
FiniteStateMachines
ParameterizedModules
Testbenches

2. ArithmeticLogicUnit(ALU)

Introduction
ArithmeticCircuits
ALU
Number Systems

3. MicroprocessorI:InstructionDataSet.MachineLanguage

Introduction
AssemblyLanguage
MachineLanguage
Programming
Addressing Modes
Lights,Camera,Action:Compiling,Assembling,andLoading
OddsandEnds

4. MicroprocessorII:ControlandDatapathDesign.Single-CycleProcessor

Introduction
PerformanceAnalysis
Single-CycleProcessor

5. MicroprocessorIII:ControlandDatapathDesign.Multi-cycleProcessor

Introduction

PerformanceAnalysis
MulticycleProcessor
PipelinedProcessor

6. MemorysystemsandI/O.

Introduction
Memory System
  Caches
  Virtual Memory
Memory-MappedI/O
  Memory map
  I/ODevices
Busesand organization

(7.VP.01)WindowsMobileApplicationDevelopmentLab

1. Workingwith J2MEFeatures
2. Threads&HighlevelUI
3. Developingnetworkedapplicationsusingthewireless toolkit
4. Authenticationwithawebserver
5. Study WindowsAPI's. Findout theirrelationshipwithMFC classes. Appreciate how they are helpful in finding complexities of windows programming.

(7.VP.02)PythonProgrammingLab

- Findthelargestandsmallestnumbersinalist.
- Findthethirdlargestnumberinalist.
- Testforprimarily.
- Findwhetherastringisapalindromeor not.
- Giventwointegersxandn,computex^n.
- Computethegreatestcommondivisorandtheleastcommonmultipleoftwointegers.
- Test ifa number isequaltothe sum of the cubes of itsdigits.Find thesmallest and largest such numbers

Level 7(Semester

II)(7.GV.05)Introductionto

UNIT–I **AI**

Overview ofA.I: Introduction to AI, Importance ofAI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in thedesign of the search problem Heuristic search techniques : Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction

UNIT-II

Knowledge Representation: Definition and importance of knowledge, Knowledge representation,Variousapproachesusedinknowledgerepresentation,Issuesinknowledge representation.Using Predicate Logic : Represent ting Simple Facts in logic, Representing instances and is-a relationship, Computable function and predicate.

UNIT-III

Natural language processing: Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. Learning: Introduction learning, Rote learning, Learning by takingadvice, Learning in problem solving, Learningfrom example-induction, Explanation based learning.

UNIT-IV

ExpertSystem:Introduction,Representingusing domainspecific knowledge, Expertsystem shells. Knowledge acquisition: General concepts in knowledge acquisition, early work in Machine Learning,examples of Inductive Learners,computer vision, Robotics, overview of LISP- AI language.

(7.GV.06)e-Commerce

UnitI

Introduction E-Business: Origin and Need of E-Commerce, Factors affecting E -Commerce, Businessdimensionandtechnological dimension of E-Commerce, E-Commerce framework Electronic Commerce Models, Value Chains in Electronic Commerce.

UnitII

InternetandE-Business:IntroductiontoInternetandits application,IntranetandExtranets. World Wide Web, Internet Architectures, Internet Applications, Business Applications on Internet, E - Shopping, Electronic Data Interchange, Components of Electronic Data Interchange, Creating Web Pages using HTML.

UnitIII

TechnologyforOnlineBusiness: Internet, ITInfrastructure, Middleware Contents, Textand Integrating E-Business Applications, Mechanism of Making Payment Through Internet, Online Payment Mechanism, Electronic Payment Systems, Payment Gateways, Visitors to Website,ToolsforPromotingWebsite,Plastic Money,DebitCard,CreditCard,Laws Relating to OnlineTransactions.

UnitIV

ApplicationsinE-commerce:E-commerceApplicationsinManufacturing,Wholesale,Retail

andServiceSector.

(7.GV.07)ComputerNetworkSecurity

UNIT-I

Network Concept,Benefits ofNetwork, Networkclassification(PAN, LAN,MAN, WAN), Peer to Peer, Client Server architecture, Transmission media: Guided & Unguided, Network Topologies. Networking terms: DNS, URL, client server architecture, TCP/IP, FTP, HTTP, HTTPS,SMTP,TelnetOSI andTCP/IP Models:LayersandtheirbasicfunctionsandProtocols, Comparison of OSI and TCP/IP. Networking Devices: Hubs, Switches, Routers, Bridges, Repeaters, Gateways and Modems, ADSL.

UNIT-II

Ethernet Networking: Half and Full-Duplex Ethernet, Ethernet at the Data Link Layer, Ethernetatthe Physical Layer.SwitchingTechnologies: layer-2 switching, addresslearning in layer-2 switches, network loop problems in layer-2 switched networks, Spanning-Tree Protocol,LAN switch types and working with layer-2 switches, Wireless LAN

UNIT-III

InternetlayerProtocol:Internet Protocol,ICMP,ARP, RARP.IP Addressing:Differentclasses of IP addresses, Sub-netting foran internet work, Classless Addressing. Comparative study of IPv4 & IPv6. Introduction to Router Configuration.Introduction to Virtual LAN.

UNIT-IV

TransportLayer:Functionsoftransportlayer,DifferencebetweenworkingofTCP and UDP. Application Layer:DomainName System(DNS),Remotelogging,Telnet, FTP,HTTP, HTTPS. Introduction toNetwork Security.

(7.GV.08)IntroductiontoBiometrics

UnitI

Concepts-biometric recognition,biometrics,requirementsforbiometrics Biometric systems, their modes and architectures
Biometricsystemerrorsandevaluation

UnitII

Overview,comparisonandevaluationofvariousbiometrics
Unimodalbiometric systems,their advantages,disadvantagesandlimits
Multimodalbiometric systems,their modesofoperation,levelsoffusion

UnitIII

Biometric pattern recognition methods
Privacyprotectionandsocialacceptance
Biometric standardization, data formats
Designandimplementationofbiometricsystems,applicationsofbiometricsystems, biometric databases, security of biometricsystems

(7.VP.03)AILab

1. StudyofPROLOG.
2. Writeaprogramtosolve8-queen's problem

3. Solveanyproblemusingdepthfirstsearch.
4. Solveanyproblemusingbestfirstsearch.
5. Solve8-puzzleproblemusingbestfirst search
6. SolveRobot(traversal)problem usingmeansEndAnalysis
7. Solvetravelingsalesmanproblem.

(7.VP.04)ComputerNetworkSecurityLab

1. IdentificationofConnectorsandCables:
    a. Connectors:BNC,RJ-45,I/Obox
    b. Cables:Co-axial,twistedpair,Opticalfibre.
2. Identificationofvariousnetworkscomponents
    a. NIC(networkinterfacecard)
    b. Hub,Switch,Router.
3. Executionofbasicnetworking Commands:Netstat, IPConfig,IfConfig,Ping, Arp-a, Nbtstat- a, Netdiag, Nslookup, Traceroute, Pathping
4. DesignEthernetCables:CrossCable,StraightCable,Rollover Cable.
5. Demonstrationtoconnecttwocomputerswith/withoutconnectingdevice.
6. DemonstrationofFilesharing&Printersharing.
7. Studyofvarioustopologiesusingtopologytrainer
8. DetailedstudyofNetworkandInternetSettingsonPC.
9. Troubleshootingofnetworks&Installationofnetworkdevicedrivers.
10. StudyofRouter Configuration.
11. LoggingintoarouterEditingandHelpfeaturesandSavingRouterconfiguration.
12. SettingtheHostname,Descriptions,IPAddress,andClock RateonaRouter.