ChhattisgarhSwamiVivekanandTechnicalUniversity,Bhilai

SchemeofTeachingandExamination

B.E.VIISemesterElectronics&TelecommunicationEngineering

Sl. No.	Boardof Study	CodeNo.	Subjects	PeriodPer Week			SchemeofExam			Total Marks	Credit L+(T+P)
							Theory/Practical				
				L	T	P	ESE	CT	TA		
1	Electronics&T elecom.	328731(28)	MicrowaveCommunicationand Engineering	4	1	-	80	20	20	120	5
2	Electronics&T elecom.	328732(28)	ComputerNetworks	3	1	-	80	20	20	120	4
3	Electronics&T elecom.	328733(28)	WirelessCommunications	3	1	-	80	20	20	120	4
4	Electronics&T elecom.	328734(28)	ManagementConcepts& Techniques	3	1	-	80	20	20	120	4
5	ReferTable-2		ProfessionalElective-II	3	1	-	80	20	20	120	4
6	Electronics&T elecom.	328761(28)	MicrowaveCommunicationand EngineeringLab	-	-	4	40	-	20	60	2
7	Electronics&T elecom.	328762(28)	ComputerNetworksLab	-	-	4	40	-	20	60	2
8	Electronics&T elecom.	328763(28)	AdvanceCommunicationLab	-	-	4	40	-	20	60	2
9	Electronics&T elecom.	328764(28)	MinorProject	-	-	4	100	-	40	140	2
10	Management	328765(28)	Innovative&Entrepreneurial Skills	-	-	2	-	-	40	40	1
11	Electronics&T elecom.	328766(28)	**PracticalTrainingEvaluation andLibrary	-	-	1	-	-	40	40	1
TOTAL				**16**	**5**	**19**	**620**	**100**	**280**	**1000**	**31**

L-Lecture,T-Tutorial,P-Practical,ESE-EndSemesterExamination,CT-ClassTest,TA-Teacher's Assessment

***To becompletedafterVISemesterandbeforethecommencementofVIISemester*

Table-2

ProfessionalElective-II

Sl.No.	BoardofStudy	Code	Subject
1	Electronics& Telecom.	328741(28)	DigitalCircuitDesignwithVerilogHDL
2	Electronics& Telecom.	328742(28)	SystemDesignwithARM
3	Electronics& Telecom.	328743(28)	Robotics&Controls
4	Electronics& Telecom.	328744(28)	RadarandNavigationalAids
5	Electrical and Electronics	325745(25)	IndustrialAutomation
6	Electronics& Telecom.	328746(28)	NeuralNetwork&FuzzyLogic
7	Electronics& Telecom.	328747(28)	RFCommunicationDesign
8	Electronics& Telecom.	328748(28)	VLSISystemDesign
9	Electronics& Telecom.	328749(28)	DigitalImageProcessing

Note (1)- 1/4thoftotal strength ofstudents subjectto minimum oftwentystudents isrequired tooffer anelective in thecollegea particular academicsession.

Note(2)- Choice ofelective course once madefor anexamination cannotbechangedin future examinations.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **MicrowaveCommunication &Engineering** Code:**328731(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. Learnaboutwave propagationthroughwaveguide
2. Learnabouttransmissioninrectangularwaveguide
3. Learnaboutmicrowave tubes
4. Learnabouttransferredelectron device
5. Learnthe theoryofmicrowave cavityandthere various applications
6. Learn designingofmicrowavefilters

UNIT – I **Introduction to Microwaves and Linear Beam Tubes:** Need of Microwave Communications; Microwave Region and Bands; Advantages and Limitations of Microwave Systems; Failure of Conventional Tubes at High Frequencies; Klystron - Velocity Modulation Power Output and Efficiency; Reflex Klystron- Velocity Modulation Power Output and Efficiency; Helix TWT- Amplification Process and Working.

UNIT – II **Microwave Crossed-Field Tubes:** Differencebetween Linear Beam Tubes & Crossed Field Tubes, Magnetron- Cavity Magnetron: Principle and Operation, Mode of Oscillation, Strapping and Mode Jumping, Voltage Tunable Magnetron, Inverted Coaxial Magnetron. Forward wave and Backward wave Crossed Field Amplifier.

UNIT – III **Microwave Devices:** Microwave Bipolar Transistor: Structure, Operation, Characteristics and Power Frequency Limitations of Microwave Transistors, Microwave Field-Effect Transistor: JFET, MESFET, MOSFET, Microwave diode: Tunnel Diode, PIN diode, Crystal diode.

UNIT – IV **Avalanche Transit Time Devices:** Physical Structure, Principle of Operation, Characteristics, Power Output and Efficiency of IMPATT, TRAPATT and BARITT Diodes, Parametric Amplifiers: Parametric Up Converters and Parametric Down Converters.
Transfer Electron Devices: Gunn Diode, Gunn Effect: Principle and Mode of Operation.

UNIT – V **Microwave Components and Measurement:** Rectangular Cavity Resonators, Q of a Cavity Resonator, Reentrant Cavities, Slow-Wave Structure, Microwave Hybrid Circuits, S-parameters and their properties, Wave Guide Tees, Hybrid Ring, Waveguide Corners, Bends and Twists, Two Hole Directional Coupler, S-Matrix, Circulator and Isolator, Hybrid Coupler, Microwave Measurement, Microwave Bench, Precautions, Power Measurement, Bolometric Method, Attenuation, VSWR, Impedance, Frequency and Q of the Cavity.

TextBooks:

1. Microwave Devices andCircuitsbySamuelY.Liao, 3rdEd.,PearsonEducation
2. FoundationsofMicrowave EngineeringbyR .E.Collin,TMHPub.

Reference Books:

1. Microwave PrinciplesbyHerbertJ.Reich,PrincetonN.J.,VanNostrand.
2. Microwaves byGupta,New AgeInternationalPublishers
3. Microwave SemiconductorDevicesbyRoy&Mitra,PHI
4. Microwave Engineering byD. M.Pozar, 2nd Edition, JohnWiley.
5. Microwave CircuitDesignbyG.D.Vendelin,A. M.PavioandU.L.Rohde,JohnWiley.
6. Microwave TransistorAmplifiers:Analysis andDesignby GuillermoGonzalez,2nd Edition,PrenticeHall.

Course outcomes:

1. Understandthe reasonwhyTEMwave are impossible ina Waveguide.
2. Understandthe workingof Microwave Tubes.
3. Understandthedifferentmodes ofoperationofGunn Diodes.
4. Understandmicrowave components suchas Tee Junction and Directional Couplers.
5. Understanddesigning andtransformation ofMicrowave Filters.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **Computer Networks** Code:**328732(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1 Tomakestudentsunderstandthebasicmodelofdatacommunication,OSIModel,TCP/IPsuiteandvariousconceptsof networking.
2. Tomake students acquaintedwithData LinkLayerandvarious flowcontrolanderrorcontrolprotocol.
3. Tofamiliarize students withdifferent LAN protocols like Ethernet,Tokenring andTokenBus andFDDI.
4. Toteachstudents aboutconnectingdevices,Network andtransportlayer protocols.
5. Togive knowledge oftheApplicationlayerfunctions, protocols,switchingandswitched networks likeATM.

UNIT-I **IntroductiontoDataCommunication,DatanetworkingandInternet:**CommunicationSystemModel, DataCommunication Networks,Protocol,NeedofProtocol,TCP/IPProtocolSuite,OSIModel, Transmission Modes,CategoriesofNetwork,TopologiesofNetwork.SignalEncodingTechniques:Digital toDigitalConversion-Unipolar,Polar:NRZ,RZ,Biphase,Bipolar,TransmissionofDigitalData:DTE-DCEInterface, EIA-232D,NullModem,Modems:TraditionalModem, 56KModem.

UNIT-II **DataLinkControlProtocol:**DataLinkLayer:DesignIssues,Framing,ErrorDetectionandCorrection: CRC,ElementaryProtocols-FlowControl: Stop and Wait,SlidingWindow,Error Control:Stop-and-Wait, Go-Back-N,SelectiveRepeat. HDLC:Modes,Frames,DataTransparency,BitStuffing.

UNIT-III **LocalAreaNetwork:** Project802,Basicof–IEEE802.1,LLC,MAC,PDU;ETHERNET:Access Method:CSMA/CD,Implementation: ThickEthernet,ThinEthernet,TwistedPairEthernet,Switched Ethernet,FastEthernet,GigabyteEthernet, TokenRing,FDDI,IntroductiontoWireless LAN-IEEE802.11 : Architecture,MAC: CSMA/CA.

UNIT-IV **InternetandTransportProtocol:** PrincipleofInternetworking,Connectingdevices:Repeaters,Hubs, Bridges,Routers.InternetProtocol: IPAddressing,IPV4Header,Comparison ofIPV4andIPV6, Subnetting,ARP,RARP,ICMP, IGMP.TransportLayerProtocols:UDP,TCP:TCPHeaderformat,ISDN services.

UNIT-V **ApplicationlayerandWideAreaNetwork**:Application Layer:TheWebandHTTP,FTP,SMTP,DNS, WAN:CircuitandPacketswitching,AsynchronousTransferMode-ATMarchitecture:VirtualConnection, Identifiers,Cells,ConnectionEstablishmentandRelease.Switching:VPCswitch; ATMLayers:AAL

Text Books:

1. DataCommunicationandComputerNetworkingbyB.A.Forouzan,3rd Ed.,TataMcGrawHill.
2. DataandComputerCommunicationsbyWilliamStalling,7th Edition,PearsonEducation.

Reference Books:

1. ComputerNetworksbyAndrewSTanenbaum,4thEdition.PearsonEducation/PHI
2. AnEngineeringApproachto ComputerNetworks-S.Keshav,2ndEdition,PearsonEducation
3. UnderstandingcommunicationsandNetworks,3rdEdition,W.AShay,Thomson

CourseOutcomes:

1. Students will be able tounderstandthe workingofinternetbased onOSImodelandTCP/IPprotocolsuite.
2. Students will be able toanalyze practicalrequirements ofLAN onthe basis ofvarious topologies,signalling techniques and various interfaces.
3 Students will have deepunderstandingofvarious protocols usedatData LinkLayerandwill be able toanalyze the advantages and disadvantages ofvarious available protocols forflowanderrorcontrol.
4. Students will be able toanalyze various Ethernetstandards ,otherstandards andwill be able tochoose anappropriate standard accordingtorequirement ofLAN.
5. Students will be able toidentifyvarious internetworkingdevices andformation ofHeaders ofIPandTCP.
6. Students willgetidea about various Applicationlayerfunctions and some protocolsalongwithswitchingtechniques and ATM.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **WirelessCommunications** Code: **328733(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. Togive students briefhistoryofthe evolutionofmobile communications throughoutthe world.
2. Togive knowledge ofcellular concepts andits designing aspects.
3. Togive students a detailedoverviewofGSM,itsarchitecture,interfaces,frames etc.
4. Tofamiliarize students aboutadvancedmodulationtechniques usedinmobile communications.
5. Toteachstudents aboutthe practicallimitations ontheperformance ofwireless communicationsystems.

UNIT–I **Introductiontowirelesscommunications**:EvolutionofMobileRadioCommunication,DifferentWireless CommunicationSystems.ComparisonofVariousWirelessCommunicationSystem,IntroductiontoModern WirelessCommunicating System-SecondGeneration(2G), ThirdGeneration(3G)andFourthGeneration (4G).

UNIT–II **CellularConceptsandSystemDesignFundamentals**:CellularConceptsandFrequencyReuse, Channel AssignmentStrategies andHandoffStrategies,InterferenceandSystemCapacity Channel Planningfor WirelessSystems,TrunkingandGradeofservice,ImprovingcoverageandcapacityinCellularSystem.

UNIT–III **GlobalSystemsforMobile**:SystemArchitecture,GSMfrequencybands,GSMPLMN,GSMsubsystems, GSMinterface,MappingofGSMLayerontoOSILayers,GSMLogicalChannelandFrame,Structure, GSMBurst,DataencryptioninGSM,MobilityManagement.

UNIT–IV **ModulationTechniques**:ConstantEnvelopModulation,MSK,GMSK,CombinedLinearand Constant EnvelopeModulationTechnique ,MPSK,QAM,OFDM,IntroductiontoSpreadSpectrum, PNSequence, DS-SS,FH-SS,PerformanceofDS-SSandFH-SS.

UNIT–V **Transmission problems**:Introduction to Radio Wave Propagation:The basic Propagation Mechanisms:Reflection,Diffraction,Scattering.PathLoss, Shadowing, Time dispersion, Time Alignment, CombinedSignalLoss,HighBitErrorRate,SolutionToTransmissionProblems,ChannelCoding,Interleaving, Diversity,FundamentalofEqualizationFrequencyHopping.

Textbooks:

1. WirelessCommunications byT.S.Rappaport,PearsonEducation
2. Principles andApplicationofGSM byVijayK.Garg,PearsonEducation.

Reference books:

1. MobileCommunications–Schiller,Jochen;2ndIndianReprint,PearsonEducationAsia–AddisonWesleyLongmanPte. Ltd.
2. Mobile CommunicationEngineeringby W.C.Lee,TMH Pub.

Course Outcomes

1. Students will have idea aboutthegrowthinmobile communications thatgives risetotechnologicalimprovements.
2. Studentswillbeabletovisualizetheuseoffrequencyreusetoincreasethesystemscapacityandalsootherdesigning aspects.
3. Students will be able tounderstandthe architecture ofthe GSMandmechanismtosupportmobilityofthe GSMterminals.
4. Studentswillseehowmodulationtechniquesareusedtotransportthemessagesignalviaaradiochannelwith best possiblequality withminimumradiospectrum.
5. Studentswill be ableto understand various transmission problems andtheircounter measures.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **ManagementConcepts and Techniques** Code: **328734(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. Toenable the studentstoacquireknowledge abouttheprinciples ofmanagement
2. Togetanidea ofhumanresource management
3. Togetanidea aboutmarketingmanagement
4. Togive aninsightto theproduction/operationmanagement
5. Togive aninsightto theorganizationofa business andpublic sectorcompanies.

UNIT-I: **Basic Managementand T echniques:**Planning: N a ture P urposeandObjectivesofPlanning,Organizing: Natureand Purposeof Organizing, Authority and Responsibility, Staffing, PerformanceAppraisal, Controlling: Processof Controlling, Control Techniques.

UNIT-II: **HumanResource M anagement:**NatureandScopeof Human Resource Planning,TrainingandDevelopment, Recruitment and Selection, Career Growth, Absenteeism, Grievances, Motivationanditstypes, Needof Motivation, Modelsof Motivation, Leaders, TypesofLeaders, Leadership Styles, RolesandFunctions of Leaders, Conflict Management:Typesandcausesof Conflict, Groupand TeamWorking,Organizational Designand Development.

UNIT-III: **MarketingManagement:**Marketing Environment,Industrial Markets (B2B Marketing)andBuyerBehaviour, MarketingMix, Overviewof Advertisingand Sales Promotion, ChannelsofDistribution.
Financial Managementand AccountingConcepts: Concept of Book Keeping, Overviewof Financial Statements and Breakeven Analysis.

UNIT-IV: **Production/Operations Management:** ProductionSystems, Facilities, P lanning, Location, Layout and Movementof Materials, Materials Management, Maintenance Management,PERTandCPM.

UNIT-V: **OrganizingaBusiness:**FormsofOwnershipOrganization:SoleProprietor,Partnership, Private andPublic Ltd.Companies,Choiceof suitableformofBusinessOrganization.
PublicSector:CentralGovernment,PublicCorporation, LocalGovernment,Organizationneither Publicnor PrivateSector,Clubs&Society,CooperativeSocieties.

TextBooks:

1. Industrial Managementand Engineering Economics,K.C.Arora,KhannaPbs.
2. Industrial Engineering and ProductionManagement, MartandTelsang, S.Chand
3. Industrial Managementand Organization,Ahuja,KhannaPbs.
4. Industrial Engineering andManagement,O.P.Khanna,DRD.

Reference Books:

1. Industrial Organizationand Management,Ramchandran,RamanaMutrhy,TMH.
2. ManagementScience,Ramchandra,TMH.
3. Industrial Engineering and Production Management, Mahajan,DRP.
4. BusinessOrganisation&ManagementbyR.K. Sharma, ShashiK.Gupta,KalyaniPublisher,NewDelhi.
5. PrinciplesofBusinessOrganisationbyY.K.Bhushan, S.Chand.

Course Outcome:

Atthe completion ofthe course,the studentwill be ableto:

1. Definetheconceptofmanagementanddiscusswhyorganizationsareneeded,whymanagersarenecessary,andwhy managementis a challenge.
2. Identifytheessentialcharacteristicsofdecisionmakingandindicatetherangeandtypesofdecisionsamanagerisaskedto make.
3. Analyzetheleadershipfunction,recognizingleadershipastherelationshipbetweenasupervisorandsubordinatesinan organizationalenvironment.
4. Recognize the symptoms of organizational conflict, describe its sources, and discuss the manager's role in conflict management.
5. Recognizethelinkbetweenplanningandcontrolling,andthevariousmeansbywhichmanagersmeasureandcompare performance toobjectives.
6. To understanddifferentiate betweenthe various types oforganizationalstructures andpatterns.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Branch:	**Electronics&Telecommunication**	Semester:	**VII**
Subject:	**Microwave Communication and EngineeringLab**	Code:**328761(28)**	
TotalLabPeriod:	**50**	BatchSize:	30
MaximumMarks:	**40**	MinimumMarks	20

Listof Experiments:(AtleastTenexperimentsaretobeperformedbyeachstudent)

1. TomeasuretheVSWRatallthethreeopenportsofa Directional Coupler.
2. TomeasuretheCouplingFactor,directivityandinsertionlossofa DirectionalCoupler.
3. TostudymodecharacteristicsofaReflex Klystronandhencetodeterminemodenumber,transittime,Electronic TuningSensitivity(ETS)andElectronicTuningRange(ETR).
4. Tostudythecharacteristics ofWave PropagationinaWaveGuidebystudyingstandingwavepatternandhenceto plotω-βdiagramandverifyrelationshipbetweenguidewavelength(λg)and freespacewavelengthλ.
5. TostudytheV-Icharacteristicsofa GUNNDiodeandtomeasureoutputpowerandfrequencyvsvoltage.
6. Tostudyandmeasuresquare wavemodulationthroughPIN voltage.
7. Toenergizea GUNNOscillator.
8. Toenergizea ReflexOscillator.
9. TocalibratePhase Shifter.
10. TomeasureDielectricConstant.
11. Tostudythecharacteristicand behaviorofa Magic Tee.
12. TostudythecharacteristicsandbehaviorofIsolatorandCirculators.
13. Tostudythecharacteristicsandbehavior ofAttenuator(fixedandvariable type).
14. TomeasureMicrowave Frequencyusing Frequency Meter.
15. MeasurementofQofa cavity.
16. Tostudythefunctionof Multiple Directional Couplerbymeasuringthefollowingparameters:
    a. Tomeasure main-lineandauxiliary-lineVSWR.
    b.TomeasuretheCoupling FactorandDirectivityoftheCoupler.
17. TostudythecharacteristicsoftheReflexKlystron Tubeandtodetermineitselectronictuningrange.
18. Todeterminethefrequencyandwavelengthina Rectangular Wave GuideworkingonTE10mode.
19. Todeterminethestandingwaveratioandreflectioncoefficient.

Listof EquipmentsRequired:

Microwavesource,Isolator,Variableattenuator,FixedAttenuator,Frequency meter,Slottedline,Tunableprobe, Circulators,Matchedterminations,Gunn/Klystronpowersupply,Detectormount,Coolingfan, MagicTee,Phaseshifter, Movableshort,DielectricMaterial.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Branch:	**Electronics&Telecommunication**	Semester:	**VII**
Subject:	**Computer Networks Lab**	Code:	**328762(28)**
TotalLabPeriod:	**50**	BatchSize:	30
MaximumMarks:	**40**	MinimumMarks	20

Listof Experiments:(AtleastTenexperimentsaretobeperformedbyeachstudent)

1. IntroductiontoLocalAreaNetworkwithitscables,connectorsandtopologies.
2. TobuildCAT-5UTPEthernetcable (Cross-overandStraight–Through)
3. InstallationofSwitches,theircascadingandnetworkmapping.
4. InstallationofUTP,NICandLANcardtoconnecttwoPC.
5. CaseStudyofEthernet(10base5, 10base2, 10baseT)
6. InstallationandworkingofRemoteDesktop.
7. InstallationandworkingofTelnet(TerminalNetwork).
8. InstallationandworkingwithFTP(FileTransferProtocol).
9. InstallationandconnectingComputerstosharediskandprinter
10. InstallationofModemandProxyServer.
11. WorkingwithNullModem.
12. IntroductiontoServeradministration.
13. SimulationofLANProtocols:TokenBus, TokenRingetc.usingsimulator.

RecommendedBooks:-

1. ComputerNetworkandInternetbyDouglasE. Comer(PearsonEducation)

ListofSoftwaresrequired:-

1. Windows2003server/Windows2000server.
2. NetSIM,NS-2,Simulator.

ListofHardwaresrequired:-

1. LANTrainerKit, LANCardCable,Connectors,Switch,cables,CrimpingTools.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Branch:	**Electronics&Telecommunication**	Semester:	**VII**
Subject:	**AdvanceCommunicationLab**	Code:	**328763(28)**
TotalLabPeriod:	**50**	BatchSize:	30
MaximumMarks:	**40**	MinimumMarks	20

Listof Experiments:(AtleastTenexperimentsaretobeperformedbyeachstudent)

1. Implementation/simulation ofPNsequencegeneratorusinglinearfeedbackshiftregistertechnique.
2. Implementation/simulation ofQAMmodulationanddemodulation.
3. Implementation/simulation ofGMSK modulationanddemodulationusingGMSKtrainer module.
4. Implementation/simulation ofMSKmodulationanddemodulation.
5. Implementation/simulation ofMPSKmodulationanddemodulation.
6. Implementation/simulation ofDS-CDMAwithBERusingCDMAtrainermodule.
7. Implementation/simulation ofFrequencyhoppingspreadspectrumtechnique(FHSS).
8. Tounderstand RFenvironment,GSMtechnologyitsnetworkGSMcapabilityanddataservices usingGSMtrainer module.
9. Implementation/simulation ofencryptionanddecryptionof voiceinGSM(A5algorithm).
10. SimulationofHuffmancode algorithm.
11. SimulationofRunlengthcodealgorithm.
12. SimulationofShannon–Fanocodealgorithm.
13. Simulationof Linearblockcodealgorithm.
14. SimulationofHammingcodealgorithm.
15. SimulationofCycliccodealgorithm.
16. SimulationofBHCcodealgorithm.

Listof EquipmentsRequired:

1. PCs,simulationsoftware,trainerkits.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **MinorProject** Code:**328764(28)**

TotalPracticalPeriod: **50**

TotalMarksin EndSemesterExamination:100

- Thestudentsareexpectedtotakeupa Projectundertheguidanceofa facultyfromtheInstitute.
- Thetopicoftheprojectshouldbejustifiedforthedegreeof BE(Electronics&Telecommunication)
- The projectselectedshouldensurethesatisfactionoftheurgentneed toestablishadirectlinkbetweeneducation, nationaldevelopmentandproductivities.
- Thestudentsmaybeaskedtoworkindividuallyorina grouphavingnotmorethanFOURstudents.
- Thestudent/groupofstudentshallcollectallnecessaryinformationfromliteratureonselectedtopic/project.
- Itshouldincludethescopeofproject,identificationofnecessarydata,sourceofdata,developmentofdesign methodandidentification,methodology,softwareanalysis.
- Studentsshoulddelivera seminarontheselectedProject/topic.
- Thestudentsareexpectedto submitthereportinstandardformatapprovedbytheUniversityinpartialfulfillment oftherequirementforthedegreeofB.E.(Electronics&Telecommunication).
- Therewillbeanexternalviva-voceattheendofthesemesterandthestudentsaretodemonstratetheprojectat thetimeof viva-voce.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **Innovative&Entrepreneurial Skill** Code: **328765(28)**

TotalPracticalPeriods: **28** TotalTutorialPeriods: **NIL**

UnitI **Innovation:**Innovation:anabstractconcept;creativity,innovationandimagination;typesofinnovation-classifiedaccordingtoproducts,processesorbusinessorganizations.

UnitII **Entrepreneurship: who is an entrepreneur? Entrepreneurship:** A state of Mind, Emergence of entrepreneur;RoleofEntrepreneur;ADoernotaDreamer-Characteristics ofanentrepreneur;Factors affectingentrepreneurial growth–Social,cultural,personalityfactors,psychologicalandSocialFactors. ImpactofEntrepreneurshipfor sustainabledevelopment.

UnitIII **Difference between entrepreneur and entrepreneurship**: Difference between entrepreneur and intrapreneur,CommonEntrepreneurialcompetencies/Traits;Entrepreneurshipstimulants,Obstaclesinhibiting Entrepreneurship;Typesofentrepreneurs,Functionsofanentrepreneur.

UnitIV **IdentificationofBusinessOpportunities:**Introduction,SourcesofBusinessofProductIdeas,Stepsin IdentificationofBusinessopportunityanditsSWOTAnalysis.

UNIT-V **Techno-EconomicFeasibilityoftheproject:**Introduction,Techno-Economicfeasibility oftheProject, FeasibilityReport,Considerations whilepreparingaFeasibilityReport,ProformaofFeasibilityReport,Role ofInstitutionsandentrepreneurship..

ReferenceBooks:

1. CompetingthroughInnovation-Bellon&Whittington,Prentice Hall ofIndia
2. A Guide toEntrepreneurship –DavidOates-JAICO PublishingHouse.
3. Entrepreneurship-RoberD Hisrich,Peters,Shepherd-TMH
4. EntrepreneurshipinAction-Coulter,Prentice HallofIndia
5. EntrepreneurshipManagementandDevelopment–AjithKumar,HPH
6. Fundamentals ofentrepreneurship-Mohanty,PHI
7. Patterns ofEntrepreneurship-JackMKaplan,Wiley,studentEdition.

Course Outcomes

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **IndustrialAutomation** Code: **325745(25)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. To developand applyMathematicalandEngineeringskills toidentify,formulate andsolve industrial processproblems.
2. This subjectseeks toclosethe gap betweenInstrumentationandMechanicalEngineering.
3. This subject provides the knowledge ofdifferenttypes ofcontroller&theirapplications.
4. This subject provides thebasic knowledge ofPLC andDCS.

UNIT–I **IntroductiontoProcess C ontrol:**ProcessControlBlockDiagram,ControlSystemEvaluation,Digital Control,Supervisory Control,DirectDigitalControl,NetworkedControlSystems,DistributedDigital Control,Smart Sensor, Definitionsof the terms used to describeProcess C ontrol.Data Acquisition Systems:DASHardware,DASSoftware, DataLogger.

UNIT–II **Controller Principles:** Process Characteristics,Process Equation, Process Load, Process Lag, Self-Regulation,ControlSystemParameters: Error,Variable Range,Control ParameterRange,ControlLag, Dead Time, Cycling, ControllerModes: DiscontinuousControllerMode, Two Position Mode, Multi Position Mode,FloatingControlMode,ContinuousControlMode,ProportionalControlMode,Integral ControlMode,DerivativeControlMode,CompositeControlModes:PI Control,PDControl,PIDControl.

UNIT–III **Analog Controllers:** Introduction, Electronic Controllers: Error Detector, Single Controller Modes, CompositeControllerModes,PneumaticControllers:Generalfeatures,ModeImplementation.

UNIT–IV **Programmable Logic Controller:** PLC Architecture, Basic Structure, PLC Programming:Ladder Diagram,Ladder Diagramsymbols,Ladder Diagramcircuits, PLCCommunications andNetworking,PLCSelection,I/OQuantityandType,I/ORemotingrequirements,Memorysizeandtype, ProgrammerUnits,PLCInstallation,Advantagesof usingPLCs.

UNIT–V **Distributed Control System:** Introduction,Overview of DistributedControl Systems, DCS Software configuration,DCSCommunication, DCSSupervisory ComputerTasks,DCSIntegrationwithPLCsand Computers,FeaturesofDCS,AdvantagesofDCS.

TextBooks:

1.ProcessControlInstrumentationTechnologybyC.D.Johnson,PHI
2.Computer AidedProcessControlbyS.K.Singh,PHI

Reference Books:

1.IntroductiontoInstrumentation&Controlby A.K.Ghosh,EasternEconomyEdition
2.IntelligentInstrumentation, byGeorge C.Barney,Prentice HallIndia.

CourseOutcomes:

The students will be ableto:

1 Understand process variables,degrees offreedom,and Selfregulation,first&second orderProcessSystem.
2 Knowthe importanceofon-off, proportional,integralandderivative modes,composite controlmodes-PI,PDandPID controllers.
3 Understand,CommunicationinDCS,DCSsystemintegrationwithPLC and computers,Data loggers,Data Acquisitionsystems (DAS),computer control hierarchylevels andDirectDigitalcontrol(DDC).

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**
Branch: **Electronics&Telecommunication** Semester: **VII**
Subject: **SystemDesignwith ARM** Code:**328742(28)**
TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. TounderstandthefundamentalsofARMprocessorsandarchitecture.
2. TogainknowledgeofinternalfeaturesofARMProcessors.
3. Tounderstandvariousstandards,protocolsandtransmissiontechniques.
4. Tohaveaninsightintodesign methodology.
5. Togainknowledgeofdesignoptimization.

UNIT-I **Introduction to16/32-bitMicrocontrollers:** IntroductiontoRISCprocessor, DifferencebetweenCISC &RISC,ARMMicrocontrollers andProcessorCores,ARM-7/ARM-9ArchitectureandOrganization, ARM7TDMIProcessorBlockDiagram,ARM7TDMIMainProcessorlogic,ARM/THUMB Programming Model,ARM/THUMBInstructionSet,ARMExceptionHandling,MoreARMInstructions,ARM/THUMB AssemblyProgramming.

UNIT-II **Timers &Interrupts:** Data handling, Interfacing with Memory, Interrupts, Timers, ARM Bus, I/O Devices,Controllers,Simple&AutonomousI/O Controllers,

UNIT-III **BusStandardsandProtocols:**Parallel,Multiplexed,Tristate,andOpen-DrainBuses,BusProtocols,Serial TransmissionTechniques&Standards,WirelessprotocolsCAN&AdvancedBuses.

UNIT–IV **DesignMethodology:**DesignMethodology,DesignFlow,ArchitectureExploration,FunctionalDesign, FunctionalVerification,Synthesis,PhysicalDesign,

UNIT–V **Design Optimization:** Design Optimization, Area Optimization, Timing Optimization, Power Optimization,DesignforTest,FaultModelsandFaultSimulation,ScanDesignand BoundaryScan,Built-InSelfTest(BIST),Non-technicalIssues.

TextBooks

1. DatabooksofARM7/ARM9J.StaunstrupandW.Wolf,editors,Hardware/SoftwareCo-Design:PrinciplesandPractice, KluwerAcademic Publishers.

Reference Books:

1. ARMSystem-on-ChipArchitecture, bySteve Furber,2nd Edition,PearsonEducation.
2. ArmSystemDeveloper'SGuide:DesigningAndOptimizingSystemSoftware(Paperback)bySlossAndrewN.Et.Al,1st Edition,Publisher:MorganKaufmannPublishers.

Course Outcome:

1. Studentwill be abletounderstandthe fundamental ofARMarchitecture thatincludes register array,cache,virtualmemory, pipeline andmemory management units
2. Studentwill be abletounderstandthe assemblylanguage instructions forARM processor
3. Studentwill be abletounderstand the internalfeatures of ARMProcessor
4. Studentis able to create small embeddedsystemusingARMcontrollerandrealizationofhardware based designthrough teamproject
5. Implementationofcontrolsystem algorithms usingARMController

ChhattisgarhSwami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Tele communication**

Semester: **VII**

Subject: **Robotics&Controls**

Code: **328743(28)**

TotalTheoryPeriods: **40**

TotalTutorialPeriods 12

ClassTests: **Two(Minimum)**

:Assignments: **Two(Minimum)**

ESEDuration: **ThreeHours**

MaximumMarks:80 MinimumMarks:28

CourseObjectives:

1. Tostudyoverviewofrobotmechanisms,dynamics,andintelligentcontrols.
2. Tostudybasicrobot co-ordinate configurations.

UNIT–I **IntroductiontoRobotics:**Evolution of Robots and Robotics, Laws of Robotics, ProgressiveAdvancement inRobots,RobotAnatomy,Human Arm Characteristics, Design and Control Issues, Manipulation and Control, Sensors and Vision,ProgrammingRobots,TheFutureProspects,Notations.

UNIT– II **CoordinateFrames,MappingandTransforms:**Coordinate Frames, Description of Objects in Space, Transformation of Vectors,Inverting aHomogeneousTransform, FundamentalRotationMatrices

UNIT– III **RoboticSensorsandVision:**The Meaning of Sensing, Sensors in Robotics, Kinds of Sensors used in Robotics, Roboticvision,Industrial Applications of Vision-Controlled Robotic Systems, Process of Imaging, Architecture ofRoboticVisionSystems,Image Acquisition, Description of Other components of Vision System, Image Representation, ImageProcessing.

UNIT– IV **ControlofManipulators:**Open-andClose-LoopControl,TheManipulatorControlProblem, Linear Control Schemes, Characteristics of Second-Order Linear Systems, Linear Second-OrderSISOModelofaManipulatorJoint,JointActuators,PartitionedPDControlScheme, PIDControlScheme,ComputedTorqueControl, ForceControlofRoboticManipulators, Description ofForce-ControlTasks, Force-ControlStrategies, Hybrid Position/Force Control, ImpedanceForce/Torque Control.

UNIT–V **Robot Applications:** IndustrialApplications, Material Handling, Processing Applications, Assembly Applications,InspectionApplication,Principles forRobot Application and Application Planning, Justification ofRobots, RobotSafety,Non-IndustrialApplications, Roboticapplicationforsustainable Development.

TextBooks

1. Robotics&ControlbyR.K.Mittal&I.J.Nagrath, TMHPublications
2. RoboticsforEngineersbyYoramKorean,McGrawHillCo.
3. IntroductiontoRoboticsbyS.K.Saha,McGraw-HillEducation.

ReferenceBooks

1. RoboticsControlSensing,VisionandIntelligenceby K.S.Fu,R.C.Gonzalex, C.S.G.Lee,McGrawHill.
2. KinematicsandSynthesisofLinkagesbyHartenbergandDenavit,McGrawHill.
3. KinematicsandLinkageDesignbyA.S.Hall- PrenticeHall
4. KinematicsandDynamicsofMachinaryb yJ.Hirchhorn, McGrawHill.

CourseOutcomes:

Bystudyingthiscourse,studentswillbe

1. Familiarwiththeconceptdevelopmentandkeycomponents ofrobotics technologies.
2. Understandbasicmathematicmanipulations ofspatialcoordinate representationandtransformation.
3. Abletoundertakepracticalrobotics experiments thatdemonstratetheabove skills.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **Radar&NavigationalAids** Code: **328744(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:
1. Mainobjective ofthis courseis tomake the studentsunderstandthebasic conceptinthe field ofRadarandNavigationalaids.
2. Students are taughtaboutdifferenttypes ofRadarSystems.

UNIT–I **PrinciplesandApplications:**BasicRadar,RadarBlockDiagram,RadarFrequencies,Applicationsof Radar,RadarRangeEquation,ProbabilitiesofDetectionofFalseAlarmIntegrationofRadarPulses, RadarCrossSectionofTargets.

UNIT–II **MTI And Pulse Doppler Radar**:Introductionto Dopplerand MTI Radar, Delay Line Cancellers, StaggeredPRF,Range GatedDoppler Filter,LimitationstoMTIPerformance,TrackingwithRadar, MonopulseTracking,ConicalScanandSequentialLobing,LimitationstoTrackingAccuracy,Low AngleTracking,Trackinginrange,ComparisonofTrackers.

UNIT–III **PropagationofRadarWaves:**ForwardScatteringfromaFlatEarth,ScatteringfromRoundEarths Surface,Atmospheric Refraction–StandardPropagation, Non-Standard Propagation, Diffraction, AttenuationbyAtmosphericGases,ExternalorEnvironmentalNoise,OtherPropagationEffects.

UNIT–IV **AntennasforDetectionofRadarSignals**:Parabolic Antennas, Introductionto Phased Array, Cosecant SquaredAntenna,Radome.

UNIT–V **RadarTransmitterandReceiver:**RadarReceiver,ReceiverNoiseFigure,SuperheterodyneReceiver, DuplexersandReceiverProtectors,RadarDisplays,introductiontoECMandECCM,LinearBeam PowerTubes,SolidStatePowerSources,Magnetron.

TextBooks:

1.IntroductiontoRadar Systems byM.I Skolnik,TMHPub.Co.
2. Microwave RadarandNavigationalAids by A.K. SenandA.B.Bhattacharya,KhannaPublisher.

Reference Books:

1.Radar:Principles,Technology,ApplicationsbyEdde,PearsonEcuationPub.
2.Elements ofElectronic NavigationbyNagaraj,TMH Pub.

CourseOutcomes:

1. Tobecomefamiliarwithfundamentals ofRadar.
2. Togainindepthknowledge aboutthe differenttypes ofRadarandtheiroperation.
3. NeedforsignaldetectioninRadarandvarious Radarsignal detectiontechniques.
4. TobecomefamiliarwithRadioNavigationtechniques

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **DigitalCircuitDesignwith VerilogHDL** Code: **328741(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. To understandbasics ofVerilogHDLLanguage,includingitsuseinsynthesis ofdigital designs.
2. Togainknowledge ofmodeling, simulationandverification ofdesigns withVerilogHDL.
3. To understandcombinationalcircuitdesign ofdigitalsystemswithVerilogHDL.
4. To understandsequentialcircuitdesign ofdigitalsystemswithVerilogHDL.
5. To understanddesigningusingMealyState and Moore State Model.

UNIT-I **OverviewofDigitalDesignwithVerilog-HDL:**Emergence of HDLs,TypicalDesignFlow,Importance of HDLs,Popularity of VerilogHDLs.DesignMethodologies,Modules,Instances,Lexicalconventions,Data Types,SystemTasksandCompilerdirectives.

UNIT-II **ModelinginVerilog-HDL:**Modules andPorts,**Gate-LevelModeling:**GateTypes,GateDelays;**Dataflow Modeling:**AssignmentStatement,Delays,Expressions, OperatorTypes,Operands;**BehavioralModeling:** StructuredProcedures,ProceduralAssignment,Timing Controls,Conditional AssignmentStatements,Loops, SequentialandParallel,Blocks,GenerateBlocks.

UNIT-III **CombinationalCircuitDesign:**Multiplexers,Demultiplexers,Encoder,Decoders,CodeConverters, ArithmeticComparisonsCircuits,TasksandFunctions.

UNIT-IV **SequentialCircuitDesign:**Flip-Flops:SR,JK,TandD;Registers:ShiftRegisters,ParallelAccessShift Registers;Counter:AsynchronousCounters,Synchronous Counters,CounterswithParallelload,BCD counter.

UNIT-V **FSM:**BasicDesign Steps,State Diagram,State Table, StateAssignment, State Assignment Problem, OneHot Encoding,MealyStateModel,MooreStateModel,DesignExample:SerialAdder,Vending Machine, Bus Architecture.

TextBooks:

1. VERILOGHDL:A Guide toDigitalandSynthesis,IEEE1364-2001Compliant,SamirPalnitkar,PearsonEd.
2. Fundamentals ofDigitalLogicwith VerilogDesign, StephenBrown&ZvonkoVranesic,The McGraw-Hill.

Reference Books:

1. DesignThroughVerilog-HDL,T.R.PadmanbhanandB.Bala Tripura Sundari;IEEEPress
2. VerilogHdl Synthesis: APracticalPrimer,J.BhaskerPHI.

Course Outcome: Students will be able to:

1. UseVLSI designmethodologies to understandanddesigncomplexdigitalsystems.
2. Create circuits thatrealize specified digitalfunctions.
3. Identifylogic andtechnology-specific parameters tocontrolthe functionality,timing, power,andparasitic effects.
4. Complete a significantVLSI designproject havinga setofobjective criteria &designconstraints.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **NeuralNetwork andFuzzy Logic** Code: **328746(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. The mainobjective ofthis courseis toprovide the studentwiththe basic understandingofneuralnetworksandfuzzylogic fundamentals,Programthe relatedalgorithms andDesignthe required andrelatedsystems.
2. Tolearnthe various architectures ofbuilding anANN andits applications.
3. Tolearnthe advancedmethods ofrepresentinginformationinANN like selforganizingnetworks,associative and competitive learning
4. Tolearnthe fundamentals ofCrispsets, Fuzzysets and FuzzyRelations.

UNIT-I **IntroductiontoArtificialNeuralNetworks:**ElementaryNeurophysiology,ModelsofaNeuron,Neural Networksviewedas DirectedGraphs,FeedbackfromNeuronstoANN,ArtificialIntelligence andNeural Networks,NetworkArchitectures, Single-LayeredFeedforwardNetworks, Multi-LayeredFeedForward Networks,RecurrentNetworks,Topologies.

UNIT-II **LearningandTraining:**ActivationandSynapticDynamics,Hebbian,Memorybased,Competitive, Error-CorrectionLearning,CreditAssignmentProblem:SupervisedandUnsupervisedlearning,Memory models,StabilityandConvergence,Recalland Adaptation.

UNIT-III **ASurveyofNeuralNetworkModels:**Single-Layered Perceptron–Least Mean Square Algorithm,Multi-LayeredPerceptrons–BackPropagation Algorithm,XOR–Problem,The GeneralizedDeltaRule,BPN Applications,AdalinesandMadalines–AlgorithmandApplications.

UNIT-IV **Applications:**TalkingNetworkandPhoneticTypewriter,SpeechGeneration andSpeechRecognition, Neocognitron,CharacterRecognitionandHandwritten DigitRecognition, PatternRecognition Applications.

UNIT-V **NeuralFuzzySystems:**Introduction toFuzzySets,Operations,Relations,ExamplesofFuzzyLogic, Defuzzification,FuzzyAssociativeMemories,Fuzzinessin NeuralNetworksandExamples.

TextBooks:

1. ArtificialNeuralNetworksbyB.YagnaNarayan,PHI.
2. NeuralNetworksFuzzyLogic&GeneticAlogrithmsbyRajshekaran&Pai,PrenticeHall.

ReferenceBooks:

1.NeuralNetworksbyJamesA.FreemanandDavidM.Strapetuns,PrenticeHall.
2. NeuralNetwork&FuzzySystembyBartKosko,PHI.
3. NeuralNetworkDesignbyHaganDemuthDealeVikasPublicationHouse.

CourseOutcomes:

1. Students will be ableto understandArtificialNeuralNetwork conceptwiththehelp ofBiologicalNeuralNetwork.
2. Students will be ableto implementalgorithms totrainANN byusinglearning algorithms.
3. Students will be ableto testfuzzyset operations andbinaryrelations.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **RFCommunication Design** Code: **328747(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:
1. To understandconcepts ofRadiofrequencydesign.
2. Togainknowledge ofsmithChartfundamentals.
3. To understandconcepts ofRFfilter design.
4. To have insightintoactive RFcomponents.
5. Tolearnmodelingusing active RFcomponents.

UNIT-I **Introduction:** Importance of RadiofrequencyDesign, Dimensions and Units, Frequency Spectrum, RF BehaviorofPassive Components,Transmission LineAnalysis,MicrostripTransmissionLines,Terminated Lossless Transmission Line:Voltage Reflection Coefficient, Propagation Constantand PhaseVelocity, Standing Waves, Special Terminated Conditions: Input Impedance of Terminated Lossless Line, Short Circuit Transmission Line,Open Circuit Transmission Line,Quarter WaveTransmission Line,SourcedandLoaded TransmissionLine.

UNIT-II **TheSmithChart:** Reflection CoefficientinPhasor Form,NormalizedImpedance Equation,Parametric Reflection Coefficient Equation, Graphical Representation,Impedance Transformation forGeneralLoad, Standing WaveRatio,Special Transformation Conditions,AdmittanceTransformations,Paralleland Series Connections:Parallel Connections ofRandL Connections,Parallelconnections ofRandCConnections, Series Connections ofRandLConnections,SeriesConnections ofRandCConnections,ExampleofaT Network.

UNIT-III **RFFilterDesign:**Filter Typesand Parameters,Low Pass Filter,HighPass Filter,Bandpass andBandstop Filter,InsertionLoss,SpecialFilterRealizations:Butterworth TypeFilter,Chebyshev TypeFilters, Denormalizationof Standard LowPassDesign,FilterImplementation:UnitElements,Kuroda'sIdentities andExamplesofMicrostripFilterDesign,CoupledFilters:OddandEvenModeExcitation,BandpassFilter Design,Cascadingbandpassfilterelements,Designexamples.

UNIT-IV **ActiveRFComponents:**SemiconductorBasics:Physical Propertiesof Semiconductors, PN-Junction, SchottkyContact,Bipolar-Junction Transistors:Construction,Functionality, Temperature Behaviour, LimitingValues,RFFieldEffectTransistors:Construction,Functionality,Frequency Response,Limiting Values,HighElectronMobilityTransistors:Construction,Functionality,FrequencyResponse.

UNIT-V **Active RF Component Modeling:** TransistorModels: Large-signalBJT Models,Small-signalBJT Models,Large-signalFETModels,Small-signalFETModels,Measurement ofActiveDevices,DC Characterization ofBipolarTransistors,MeasurementsofACparametersofBipolarTransistors, Measurement ofFieldEffectBipolarTransistors'TransistorParameters,ScatteringParameterDevice Characterization.

TextBooks:

1. RFCircuitDesignTheory AndApplicationby ReinholdLudwig2nd EditionPearsonEd.
2. RFCircuitDesignbyChristopherBowick,Newnes.
3. Wireless CommunicationElectronics:IntroductiontoRFcircuits, SpringerIndia ltd;(2014)

Reference Books:

1. Electromagnetic Field TheoryandTransmissionLines by Gottapu SasibhushanRao,WileyPrecise India.
2. Fields andWaves-AFundamentalApproach byDeepakSood,UniversityScience Press.

Course Outcomes:
1. Students will be able tounderstandImportance of Radiofrequency Design.
2. Students will be able tounderstandconcepts ofSmithChart.
3. Students will be able tounderstand Designing Concepts.
4. Conceptsofactive RFcomponents ismade clear.
5. Students will be able tounderstand Modeling concepts ofactive RFcomponents isdone andmeasurement ofvarious parameters ofsemiconductordevices.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **VLSISystemDesign** Code: **328748(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. To understand conceptsof MinimizationandTransformation of SequentialMachines.
2. Togainknowledgefor digital designing.
3. Togainknowledge about SM chart.
4. To understand FaultModeling&Test PatternGeneration.
5. To be able todiagnosefaultinsequentialcircuits.

UNIT-I **MinimizationandTransformationofSequentialMachines:**TheFiniteStateModel: Capabilitiesand LimitationsofFSM, StateEquivalenceand Machine,Minimization-Simplification of Incompletely Specified Machines, Fundamental Mode Model,FlowTable, State Reduction,MinimalClosed Covers, Races,CyclesandHazards.

UNIT-II **DigitalDesign:**DigitalDesignUsingROMs,PALsandPLAs,BCDAdder,32-bitAdder,State Graphsfor Control Circuits,Scoreboard andController,AShiftand AddMultiplier,Array Multiplier,KeypadScanner, Binary Divider.

UNIT–III **SMCharts:**State Machine Charts,DerivationofSMCharts,RealizationofSMChart,Implementationof BinaryMultiplier, Dice Game Controller.

UNIT-IV **FaultModeling&TestPatternGeneration**:LogicFault Model,Fault Detection&Redundancy,Fault EquivalenceandFault Location, Fault Dominance,SingleStuckatFault Model,Multiple Stuckat Fault Models, Bridging Fault Model,Fault Diagnosisof Combinational CircuitsbyConventional Methods, Path Sensitization Techniques,BooleanDifference Method: KohaviAlgorithm, Test Algorithm, DAlgorithm, PODEM,Random Testing,Transition Count Testing,Signature Analysisand Test BridgingFaults.

UNIT-V **FaultDiagnosisinSequentialCircuits:**CircuitTestApproach, TransitionCheckApproach–State Identificationand Fault Detection Experiment,Machine Identification,Designof Fault Detection Experiment.

TextBooks:

1. Fundamentals ofLogic Design byCharles H.Roth,5th Ed.,Cengage Learning.
2. DigitalSystemsTestingandTestableDesign byMironAbramovici,MelvinA.BreuerandArthurD.Friedman-JohnWiley&Sons Inc.
3. Logic DesignTheory byN.N.Biswas,PHI.

Reference Books:

1.Switching andFinite Automata Theory byZ.Kohavi,2ndEd., 2001,TMH.

Course Outcomes:

1. Students will be able tounderstand minimizationandtransformationof sequential machines
2. Students will be able todesign differentcombinationalcircuits.
3. Students will be able todesignandimplementationusingSMchart.
4. Students will be able togenerate text patternand able to diagnosefaultinsequentialcircuits.

Chhattisgarh Swami Vivekanand TechnicalUniversity,Bhilai

Nameofprogram: **BachelorofEngineering**

Branch: **Electronics&Telecommunication** Semester: **VII**

Subject: **DigitalImageProcessing** Code: **328749(28)**

TotalTheoryPeriods: **40** TotalTutorialPeriods: **12**
ClassTests: **Two(Minimum)** Assignments: **Two(Minimum)**
ESEDuration: **ThreeHours** **MaximumMarks:80** **MinimumMarks:28**

CourseObjectives:

1. Toknowthe basiccomponentsofanimage processingsystem..
2. To understandthe basics ofthehumanvisualsystem as theyrelatetoimage processingincludingspatialfrequencyresolutionand brightness adaptation.
3. Toteachthe students aboutvarious image enhancementtechniques andtransformation ofimages.
4. To have anillustrative idea about various edge detectiontechniques.
5. Togive knowledge aboutttheneed ofthresholding andtypes ofthresholdingtechniques.
6. To have a briefidea aboutapproaches torestorationandimage compressions.

UNITI **Introductionto Image Processing**:Applicationsand Fieldsof ImageProcessing,Fundamental stepsin Digital Image Processing,Elementsof Visual Perception,ImageSensingand Acquisition,BasicConceptsin SamplingandQuantization, Representing Digital Images.

UNITII **Image Enhancement in the Spatial Domain**: Some basic gray level Transformations, Histogram Processing,HistogramModification, ImageSubtraction, Spatial Filtering,Sharpening Spatial Filters, Useof Firstand Second DerivativesforEnhancement,ImageEnhancement intheFrequencyDomain,Gaussian Filters,HomomorphicFiltering, Pseudocolouring: IntensitySlicing,Graylevelto Color Transformation.

UNITIII **Image Segmentation**: SomeBasicRelationshipsbetween Pixels,Point, LineandEdge Detection,Gradient Operators,Canny Edge Detection,Pyramid EdgeDetection, Edge Linkingand Boundary Detection,Hough Transform,ChainCodes,BoundarySegments,Skeletons,BoundaryDescriptors,FourierDescriptors.

UNITIV **Thresholding:**The Roleof Illumination,Global Thresholding,AdaptiveThresholding,UseofBoundary Characteristics for Histogram ImprovementandLocalThresholding,RegionbasedSegmentation,Region Growing,Region Splittingand Merging.

UNIT–V **ImageRestoration**:DegradationModel,Restoration in Spatial Domain, Geometric Transformation,Spatial Transformation, Approachto Restoration,Inverse&Wiener Filtering,Image Compression: Basicsof Image Compression.

TextBooks:

1. DigitalImage Processing by Gonzalez&Woods,PearsonEducation.
2. IntroductiontoDigitalImageProcessingbyAlasdair Mc Andrew,Cengage learning.
3. Fundamental ofDigitalImageProcessingbyAK Jain,PHI.

Reference Book:

1. Image Processing,Analysisand Machine VisionbyMilanSonka,ThomsonLearning.
2. DigitalImage ProcessingbyPrattW.K,JohnWiley&Sons.
3. DigitalImage Processing byMadhuriA.Joshi,PHI

Course Outcomes:

1. Students will understand howimages arerepresented;Understandimage types suchas binaryimages,gray-scale images,color andmulti-spectralimages.
2. Emphasiswill be todevelopengineeringskills andintuitive understandingofthe toolsusedinImage Processing.
3. Students will be able todo various operations onimages like Image enhancement, transformation, sharpening etc.
4. Students cananalyze various edge detectiontechniques andtheiralgorithms.
5. Students will be able touse various threshodingtechniques andsegmentations.
6. Students will be able tovisualizeapproaches usedinimage restoration.