Vision of the Institution

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institution

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of ECE Department

In pursuit of world class excellence in the field of Electronics& Communication Engineering by imparting quality education and promoting Research.

Mission of ECE Department

- To empower students with knowledge and competencies in the field of Electronics & Communication Engineering conforming to International standards.
- To produce creative solutions essential to local and global needs in the field of Electronics & Communication Engineering.
- To mould the students professionally with a consciousness of moral values and professional ethical code**.**

Program Educational Objectives (PEOs) of ECE Department

PEO1: To provide world class Education in the principles of engineering that incorporate open ended design experience and the use of software and hardware tools related to Electronics and Communication Engineering and hence improve the employability skills of the student.

PEO2: To make the students able to function with multi-disciplinary teams that will enhance the leadership qualities and to formulate and solve engineering problems as a team which helps the student to adopt better professional conduct.

PEO3: To provide learning environment that provides open interaction for the students with faculty and staff that makes them innovative and dynamic and encourages research and motivate them to solve the problems of the society.

Program Outcomes (POs) of ECE Department

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) of ECE Department

1. Will be equipped with knowledge of innovative, dynamic complete design flow specialized in implementation of projects pertaining to communication system, signal processing, digital and analog IC design, embedded systems and will integrate all areas to illustrate the goal of digital India.
2. Will have the ability to analyze, design electronics and communication applications using software tools like, pSpice, XYLINX, MATLAB, Mentor Graphics and other related software's.
3. Can demonstrate the principles of semiconductor devices, digital system, Microprocessor and microcontrollers, signal processing, antenna design in fields of consumer electronics, medical, defence and spacecraft electronics industry.
4. Will have strong ethical moral values and sound fundamental foundation of technical knowledge in all core subjects which help them to explore scientific theories, ideas, methods and technologies that help in solving current and future universal societal problems through Assistive Technology Laboratory as a flat form.

IIYear-II Semester

L	T	P	C
4	0	0	3

ELECTRONICCIRCUITANALYSIS

Objectives:

Themainobjectivesofthiscourseare:

- SmallsignalhighfrequencyBJTtransistoramplifierHybrid-πequivalentcircuitandtheexpressionsforconductancesand capacitances arederived.
- Cascadingofsinglestage amplifiersisdiscussed.Expressionsforoverallvoltage gainarederived.
- Theconceptoffeedbackisintroduced.Effectofnegativefeedbackonamplifiercharacteristicsisexplainedandnecessaryequations arederived.
- Basicprincipleofoscillatorcircuitsisexplainedanddifferentoscillatorcircuitsaregivenwiththeiranalysis.
- PoweramplifiersClass A,ClassB,ClassC,ClassABandothertypesof amplifiersare analyzed.
- Differenttypesoftunedamplifiercircuitsareanalyzed.

Syllabus:

UNIT-ISmallSignalHighFrequencyTransistorAmplifiermodels:

BJT: Transistor at high frequencies, Hybrid- π common emitter transistor model, Hybrid π conductances, Hybrid πcapacitances, validity of hybrid π model, determination of high-frequency parameters in terms of low-frequencyparameters , CE short circuit current gain, current gain with resistive load, cut-off frequencies, frequency responseandgain bandwidth product.

FET: Analysisof commonSourceand commondrainAmplifiercircuitsathighfrequencies.

UNIT-II

Multistage Amplifiers : Classification of amplifiers, methods of coupling**, c**ascaded transistor amplifier and itsanalysis,analysis of two stage RC coupled amplifier, high input resistance transistor amplifier circuits and theiranalysis-Darlingtonpairamplifier,Cascodeamplifier,Boot-strapemitterfollower,Analysisofmultistageamplifiersusing FET, Differential amplifierusing BJT.

UNIT-III

Feedback Amplifiers : Feedback principle and concept, types of feedback, classification of amplifiers, feedbacktopologies,Characteristicsofnegativefeedbackamplifiers,Generalizedanalysisoffeedbackamplifiers,Performancecomparison offeedbackamplifiers,Methodofanalysisoffeedback amplifiers.

Unit-IV

Oscillators: Oscillator principle, condition for oscillations, types of oscillators, RC-phase shift and Wein bridgeoscillators with BJT and FET and their analysis, Generalized analysis of LC Oscillators, Hartley and Colpitt'soscillatorswith BJTand FETand theiranalysis,Frequencyandamplitudestabilityofoscillators.

UNIT-V

Power Amplifiers: Classification of amplifiers, Class A power Amplifiers and their analysis, Harmonic Distortions,Class B Push-pull amplifiers and their analysis, Complementary symmetry push pull amplifier, Class AB poweramplifier,Class-C power amplifier, Thermalstabilityand Heatsinks, Distortionin amplifiers.

UNIT-VI

Tuned Amplifiers : Introduction, Q-Factor, small signal tuned amplifier, capacitance single tuned amplifier, doubletuned amplifiers, effect of cascading single tuned amplifiers on band width, effect of cascading double tunedamplifiersonband width,staggeredtunedamplifiers,stabilityoftunedamplifiers, widebandamplifiers.

TextBooks:

1. IntegratedElectronics-J.MillmanandC.C.Halkias,TataMcGraw-Hill,1972.
2. ElectronicDevicesandCircuits-Salivahanan,N.SureshKumar,A.Vallavaraj,TATAMcGrawHill,SecondEdition

References:

1. ElectronicCircuitAnalysisandDesign–Donald A.Neaman,McGrawHill.
2. ElectronicDevicesandCircuitsTheory–RobertL.BoylestadandLouisNashelsky,Pearson/PrenticeHall,TenthEdition.
3. ElectronicCircuitAnalysis-B.V.Rao,K.R.Rajeswari,P.C.R.Pantulu,K.B.R.Murthy,PearsonPublications.
4. MicroelectronicCircuits-SedraA.S.andK.C.Smith,OxfordUniversityPress,SixthEdition.

<u>Outcomes:</u>

Attheendof thiscoursethestudentcanableto:

- Design andanalysisofsmallsignalhigh frequencytransistor amplifierusingBJTandFET.
- Design andanalysisofmultistageamplifiersusing BJTandFETandDifferentialamplifierusingBJT
- Derivetheexpressionsforfrequencyofoscillationandconditionforoscillationof RCandLCoscillatorsand theiramplitudeand frequencystabilityconcept.
- Knowtheclassificationofthepower andtunedamplifiersandtheiranalysiswithperformancecomparison.

IIYear-II Semester

L	T	P	C
4	0	0	3

CONTROLSYSTEMS

Courseobjectives

1. Tointroducetheconceptsofopenloopandclosedloopsystems,mathematicalmodelsofmechanicalandelectrical systems, and concepts offeedback
2. Tostudythecharacteristicsofthegivensystemintermsofthetransferfunctionandintroducingvariousapproaches to reducetheoverall system fornecessaryanalysis
3. Todeveloptheacquaintanceinanalyzingthesystemresponseintime-domainandfrequencydomainintermsofvarious performanceindices
4. Toanalyzethesystemintermsofabsolutestabilityandrelativestabilitybydifferentapproaches
5. Todesigndifferentcontrolsystemsfordifferentapplicationsasper givenspecifications
6. Tointroducetheconceptsofstatevariableanalysis,designandalsotheconceptsofcontrollabilityandobservability

UNIT-1

Introduction

SystemControlSystem, Open LoopControlSystem,ClosedloopControlSystem,DifferentExamples

MathematicalmodelsofPhysicalSystems

Differentialequationsofphysicalsystems,Transferfunctions,BlockdiagramAlgebra,Signalflowgraphswithillustrativeexamples

EffectsofFeedback

FeedbackCharacteristicsanditsadvantages, Linearizingeffectoffeedback

UNIT-2

ControllerComponents

DC Servomotor (Armature Controlled and Field Controlled) with necessary derivation for transfer function,AC Servomotor and its transfer function, AC Tachometer, Potentiometer, Synchros, AC Position ControlSystems

TimeResponseAnalysis

StandardtestSignals,Timeresponseoffirstandsecondordersystems,steady stateerrorsanderrorconstants, Effect of adding a zero to a system, Design specifications of second order systems, Performanceindices

UNIT-3

ConceptsofStabilityandAlgebraicCriteria

The conceptof Stability,Necessary Conditionsfor Stability,Routh-HurwitzSrability Criterion,Relativestabilityanalysis,

TheRootLocusTechnique

Introduction,TheRoot Locusconcepts,ConstructionofRoot Loci

UNIT-4

Frequencyresponseanalysis

Introduction, Correlation between time and frequency response, Polar Plots, Bode Plots, Nyquist StabilityCriterion

UNIT-5

IntroductiontoDesign

The design problem, Preliminary considerationof classical design, Realization of basic Compensators,Cascade compensation in timedomain and frequencydomain,TuningofPIDControllers

UNIT-6

StateVariableAnalysisandDesign

Introduction, Concepts of State, State Variables and State models, State models for linear continuous-timesystems, State variablesand lineardiscrete-time systems, Solution of state equations and Concepts ofControllabilityandObservability.

TextBook

I.J.NagarathandM.Gopal,"**ControlSystemEngineering,"**NewAgeInternationalPublishers,FifthEdition

ReferenceBooks

1. KatsuhikoOgata,"ModernControlEngineering,"Pearson,FifthEdition
2. S.Salivahanan,R.Rengaraj,andG.R.VenkataKrishnan,"ControlSystemsEngineering,"Pearson,FirstImpression
3. BenjaminC.Kuo,FraridGolnaraghi,"AutomaticControlSystems,"WileyStudentEdition,EigthEdition
4. PadmaRajuandReddy," InstrumentationandControlSystems",McGrawHillEducation,2016

CourseOutcomes

1. Thiscourseintroducestheconceptsoffeedbackanditsadvantagestovariouscontrolsystems
2. Theperformancemetricstodesignthecontrolsystemintime-domainandfrequencydomainareintroduced.
3. Controlsystemsforvariousapplicationscanbedesignedusingtime-domainandfrequencydomainanalysis.
4. Inadditiontotheconventionalapproach,thestatespaceapproachfortheanalysisofcontrolsystemsisalsointroduced.

IIYear-II Semester

L	T	P	C
4	0	0	3

EMWAVESANDTRANSMISSIONLINES

OBJECTIVES:

Themainobjectivesof thiscoursearetounderstand:

1. Fundamentalsofsteadyelectricand magneticfieldsusingvariouslaws
2. Theconceptofstaticandtimevarying Maxwellequations andpower flow usingpointingtheorem
3. Wavecharacteristicsindifferentmediafornormalandobliqueincidence
4. Variousconceptsoftransmissionlinesandimpedancemeasurements

SYLLABUS:

UNITI:
Review of Co-ordinate Systems,**Electrostatics:**, Coulomb's Law, Electric Field Intensity, Electric Flux Density,Gauss Law and Applications, Electric Potential, Maxwell's Two Equations for Electrostatic Fields, Energy Density,Illustrative Problems. Convection and Conduction Currents, Dielectric Constant, Continuity Equation, RelaxationTime, Poisson's and Laplace's Equations; Capacitance – Parallel Plate, Coaxial Capacitors, Illustrative Problems.**[1,5]**

UNIT II: Magneto Statics : Biot-Savart Law, Ampere's Circuital Law and Applications, Magnetic Flux Density,Maxwell's Two Equations for Magnetostatic Fields, Magnetic Scalar and Vector Potentials, Forces due to MagneticFields,Ampere'sForceLaw,InductancesandMagneticEnergy.IllustrativeProblems**.[1,5]**
Maxwell's Equations (Time Varying Fields): Faraday's Law and Transformer emf, Inconsistency of Ampere'sLaw and Displacement Current Density, Maxwell's Equations in Different Final Forms and Word Statements.Conditions at a Boundary Surface : Dielectric-Dielectric and Dielectric-Conductor Interfaces. Illustrative Problems.**[1,2]**

UNIT III: EM Wave Characteristics - I: Wave Equations for Conducting and Perfect Dielectric Media, UniformPlane Waves – Definition, All Relations Between E & H, Sinusoidal Variations, Wave Propagation in Lossydielectrics, lossless dielectrics, free space, wave propagation in good conductors, skin depth, Polarization & Types.IllustrativeProblems. **[1,2,3]**

UNIT IV: EM Wave Characteristics – II: Reflection and Refraction of Plane Waves – Normal and ObliqueIncidences, for both Perfect Conductor and Perfect Dielectrics, Brewster Angle, Critical Angle and Total InternalReflection, Surface Impedance. Poynting Vector and Poynting Theorem – Applications, Power Loss in a PlaneConductor.IllustrativeProblems. **[2,3,4]**

UNIT V: Transmission Lines - I : Types, Parameters, T&π Equivalent Circuits, Transmission Line Equations,Primary & Secondary Constants, Expressions for Characteristic Impedance, Propagation Constant, Phase and GroupVelocities, Infinite Line,Lossless lines, distortion less lines, Loading - Types of Loading. Illustrative Problems.**[1,7]**

UNIT VI: Transmission Lines – II : InputImpedance Relations, SC and OCLines, Reflection Coefficient,VSWR. Low loss radio frequency lines and UHF Transmission lines, UHF Lines as Circuit Elements; ImpedanceTransformationsλ/4,λ/2,λ/8Lines–.SmithChart–
ConstructionandApplications,Quarterwavetransformer,StubMatching-single& double,IllustrativeProblems.**[1,7]**

TEXTBOOKS:

1. ElementsofElectromagnetic–MatthewN.O.Sadiku,OxfordUniv.Press,3rded.,2001.
2. Electromagnetic Waves and Radiating Systems – E.C. Jordan and K.G. Balmain, PHI, 2nd Edition, 2000.

REFERENCEBOOKS:

1. Electromagnetic Fieldsand WaveTheory–GSNRaju, PearsonEducation2006
2. EngineeringElectromagnetics:NathanIda,Springer(India)Pvt.Ltd.,NewDelhi,2nd ed., 2005.
3. EngineeringElectromagnetics–WilliamH.Hayt Jr.andJohnA.Buck, TMH,7thed.,2006.
4. ElectromagneticField TheoryandTransmissionLines:GSasiBhushanaRao,WileyIndia2013
5. TransmissionLinesandNetworks– UmeshSinha,SatyaPrakashan(Tech.IndiaPublications),NewDelhi, 2001.
6. Electromagneticwavesandtransmissionlines–RSRao,PHI,EEEedition

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OUTCOMES:

Attheendof thiscoursethestudentcanableto:

1. DetermineEandHusingvariouslawsandapplicationsofelectric &magneticfields
2. ApplytheMaxwell equationstoanalyzethetime varyingbehaviorofEMwaves
3. Gaintheknowledgeinuniformplanewaveconceptandcharacteristicsofuniformplanewaveinvariousmedia
4. CalculateBrewsterangle,criticalangleandtotalinternalreflection
5. Derivethe expressionsforinputimpedanceoftransmissionlines
6. Calculatereflectioncoefficient,VSWRetc.usingsmithchart

IIYear-II Semester

L	T	P	C
4	0	0	3

ANALOGCOMMUNICATIONS

CourseObjectives:

Studentsundergoingthiscourse,areexpectedto

1. Familiarizewiththefundamentalsofanalogcommunicationsystems
2. Familiarizewithvarioustechniquesfor analogmodulationanddemodulationofsignals
3. Distinguishthefigure ofmeritsofvariousanalogmodulationmethods
4. Developtheabilitytoclassifyandunderstandvariousfuctionalblocksof radiaotransmittersandreceivers
5. Familiarizewith basic techniques for generating and demodulating various pulsemodulatedsignals

UNITI

AMPLITUDEMODULATION: Introductiontocommunicationsystem,Needformodulation,FrequencyDivision Multiplexing , Amplitude Modulation, Definition, Time domain and frequency domain description, singletone modulation, power relations in AM waves, Generation of AM waves, square law Modulator, Switchingmodulator,Detection ofAM Waves;Squarelawdetector, Envelopedetector.

UNITII

DSB & SSB MODULATION : Double side band suppressed carrier modulators, time domain and frequencydomain description, Generation of DSBSC Waves, Balanced Modulators, Ring Modulator, Coherent detection ofDSB-SC Modulated waves, COSTAS Loop.Frequency domain description, Frequency discrimination method forgenerationofAMSSBModulatedWave,Timedomaindescription,PhasediscriminationmethodforgeneratingAM SSB Modulated waves. Demodulation of SSB Waves, Vestigial side band modulation: Frequency description,Generation of VSB Modulated wave, Time domain description, Envelope detection of a VSB Wave pulse Carrier,ComparisonofAM Techniques, Applications ofdifferent AM Systems.

UNITIII

ANGLE MODULATION : Basic concepts, Frequency Modulation: Single tone frequency modulation, SpectrumAnalysis of Sinusoidal FM Wave, Narrow band FM, Wide band FM, Constant Average Power, Transmissionbandwidth of FM Wave - Generation of FM Waves, Direct FM, Detection of FM Waves: Balanced Frequencydiscriminator,Zero crossingdetector, Phaselocked loop, ComparisonofFM &AM.

UNITIV

TRANSMITTERS & RECEIVERS: Radio Transmitter - Classification of Transmitter, AM Transmitter, Effectof feedback on performance of AM Transmitter,FM Transmitter – Variable reactance type and phase modulatedFM Transmitter, frequency stability in FM Transmitter. **Radio Receiver** - Receiver Types - Tuned radio frequencyreceiver, Superhetrodyne receiver, RF section and Characteristics - Frequency changing and tracking, Intermediatefrequency, AGC, FM Receiver, Comparison with AM Receiver, Amplitude limiting. Communication Receivers,extensionsofsuperheterodyneprincipleandadditional circuits.

UNITV

NOISE : Review of noise and noise sources, noise figure**,** Noise in Analog communication Systems, Noise inDSB&SSBSystem,NoiseinAMSystem,NoiseinAngleModulationSystems,ThresholdeffectinAngleModulationSystem, Pre-emphasis &de-emphasis

UNITVI

PULSE MODULATION : Time Division Multiplexing,, Types of Pulse modulation, PAM (Single polarity, doublepolarity)PWM:Generation&demodulationofPWM,PPM,Generationanddemodulationof PPM,TDMVsFDM

TEXTBOOKS:

1. PrinciplesofCommunicationSystems–HTaub&D.Schilling,GautamSahe,TMH,20073rdEdition.
2. CommunicationSystems –B.P. Lathi,BSPublication,2006.

REFERENCES:

1. PrinciplesofCommunicationSystems-SimonHaykin,JohnWiley,2ndEd.,.
2. Electronics &CommunicationSystem–GeorgeKennedyandBernardDavis,TMH2004.
3. CommunicationSystems–R.P.Singh,SPSapre,SecondEditionTMH,2007.
4. FundamentalsofCommunicationSystems-JohnG. Proakis,Masond,SalehiPEA,2006.
5. ElectronicCommunicationsystems–Tomasi,Pearson.

CourseOutcomes:

Afterundergoingthecourse,students willbeableto

1. DifferentiatevariousAnalogmodulationanddemodulationschemesandtheirspectral characteristics
2. Analyzenoise characteristicsofvariousanalogmodulationmethods
3. Analyzevariousfunctionalblocksofradiaotransmittersandreceivers
4. Designsimpleanalogsystemsforvariousmodulationtechniques.

IIYear-II Semester

L	T	P	C
4	0	0	3

PULSEANDDIGITALCIRCUITS

OBJECTIVES

Thestudentwillbemade

- Tounderstandtheconceptofwaveshapingcircuits,SwitchingCharacteristicsofdiodeand transistor.
- TostudythedesignandanalysisofvariousMultivibrators.
- Tounderstandthefunctioningofdifferenttypesoftime-baseGenerators.
- Tolearntheworkingoflogicfamilies &SamplingGates.

UNITI

LINEAR WAVESHAPING: High pass, low pass RC circuits, their response for sinusoidal, step, pulse, square,ramp and exponential inputs. RC network as differentiator and integrator; Attenuators , its applications in CROprobe,RLand RLCcircuits and theirresponsefor step input, Ringingcircuit.

UNITII

NON-LINEAR WAVESHAPING: Diodeclippers, Transistor clippers, clipping attwo independentlevels,Transfer characteristics of clippers, Emitter coupled clipper; Clamping operation, clamping circuits using diode withdifferent inputs, Clamping circuit theorem, practical clamping circuits, effect of diode characteristics on clampingvoltage,Transfercharacteristics ofclampers.

UNITIII

SWITCHING CHARACTERISTICS OF DEVICES : Diode as a switch, piecewise linear diode characteristics,Design and analysis of Transistor as a switch, Break down voltage consideration of transistor, saturation parametersofTransistorand theirvariationwith temperature,Designoftransistorswitch,transistor-switchingtimes.

Bistable Multivibrator: Analysis And Design of Fixed Bias, Self Bias Bistable Multi Vibrator, Collector CatchingDiodes, Commutating Capacitors, Triggering of Binary Circuits, Emitter Coupled Bistable Multivibrator (SchmittTrigger).

UNITIV

Monostable Multivibrator: Analysis and Design of Collector Coupled Monostable Multi vibrator, Triggering ofMonostableMultivibrator, Applications ofMonostableMultivibrator.

Astable Multivibrator: Analysis and Design of Collector Coupled Astable Multivibrator, Application of AstableMultivibratoras aVoltageto FrequencyConverter.

UNITV

VOLTAGETIMEBASEGENERATORS:

General features of a time base signal, Methods of generating time base waveform Exponential Sweep Circuits,Negative Resistance Switches, basic principles in Miller and Bootstrap time base generators, Transistor Miller timebase generator, TransistorBootstrap timebasegenerator.

UNITVI

LOGICFAMILIES&SAMPLINGGATES:

LOGIC FAMILIES: Diode Logic, Transistor Logic, Diode-Transistor Logic, Transistor-Transistor Logic, EmitterCoupledLogic, AOILogic, Comparison of LogicFamilies.

SAMPLING GATES: Basic Operating Principles of Sampling Gates, Diode Unidirectional Sampling Gate andTwo-Diode Bi-Directional Sampling Gate, Four-Diode gates, Six-Diode Gates, Reduction of Pedestal in SamplingGates,Applications ofSamplingGates.

TEXTBOOKS:

1. Pulse,DigitalandSwitchingWaveforms-J.MillmanandH.Taub,McGraw-Hill
2. PulseandDigitalCircuits–A.AnandKumar,PHI,2005

REFERENCES:

1.Pulse, Digital and Switching Waveforms - J. Millman and H. Taub, Mothiki S Prakash Rao McGraw-Hill,SecondEdition, 2007.
2. SolidStatePulsecircuits-DavidA.Bell,PHI,4thEdn.,2002
3. Pulse&DigitalCircuitsbyVenkataRao,K,RamasudhaK,ManmadhaRao,G.,Pearson,2010

OUTCOMES

After goingthroughthiscoursethestudentwillbe ableto

- Designlinearandnon-linearwaveshapingcircuits.
- Applythe fundamentalconceptsofwaveshapingforvariousswitchingandsignalgeneratingcircuits.
- Designdifferentmultivibratorsandtimebasegenerators.
- Utilizethenonsinusoidalsignalsinmanyexperimentalresearch areas.

II Year-II Semester

L	T	P	C
0	0	3	2

ELECTRONICCIRCUITANALYSISLAB

Note: The students are requiredto design the circuit and perform the simulation using Multisim/ EquivalentIndustrial Standard Licensed simulation software tool**.** Further they are required to verify the result using necessaryhardwareequipment.

ListofExperiments:(MinimumofTenExperimentshastobeperformed)

1. Determinationoff$_T$of a giventransistor.
2. Voltage-SeriesFeedbackAmplifier
3. Current-ShuntFeedbackAmplifier
4. RCPhaseShift/WienBridgeOscillator
5. Hartley/Colpitt'sOscillator
6. TwoStageRCCoupledAmplifier
7. DarlingtonPairAmplifier
8. BootstrappedEmitterFollower
9. ClassASeries-fedPowerAmplifier
10. Transformer-coupledClassAPowerAmplifier
11. ClassBPush-PullPowerAmplifier
12. ComplementarySymmetryClassBPush-PullPowerAmplifier
13. SingleTunedVoltageAmplifier
14. DoubleTunedVoltage Amplifier

Equipmentrequired:

Software:

i. Multisim/EquivalentIndustrialStandardLicensedsimulationsoftwaretool.

ii. ComputerSystemswithrequiredspecifications

Hardware:

10. RegulatedPowersupplies
11. Analog/DigitalStorageOscilloscopes
12. Analog/DigitalFunctionGenerators
13. DigitalMultimeters
14. DecadeRésistanceBoxes/Rheostats
15. DecadeCapacitanceBoxes
16. Ammeters(AnalogorDigital)
17. Voltmeters(AnalogorDigital)
18. Active&PassiveElectronicComponents

II Year-IISemester

L	T	P	C
0	0	3	2

ANALOGCOMMUNICATIONSLAB

ListofExperiments(Twelveexperimentstobedone-**Thestudentshavetocalculatetherelevantparameters**)-
(a.Hardware,b.MATLABSimulink, c. MATLABCommunication tool box)

A. AmplitudeModulation-Mod.&Demod.
B. AM-DSBSC-Mod.&Demod.
C. SpectrumAnalysisofModulatedsignalusingSpectrumAnalyser
D. DiodeDetector
E. Pre-emphasis &De-emphasis
F. FrequencyModulation - Mod. &Demod.
G. AGCCircuits
H. SamplingTheorem
I. PulseAmplitudeModulation-Mod.&Demod.
J. PWM, PPM-Mod.&Demod.
K. PLL
L. Radioreceivercharacteristics

Equipments&Softwarerequired:

Software:

i.) ComputerSystemswithlatestspecifications
ii) Connectedin Lan(Optional)
iii) Operatingsystem(WindowsXP)
iv) Simulationssoftware(Simulink&MATLAB)

Equipment:

1.	RPS	-	0 –30 V
2.	CRO	-	0 –20 M Hz.
3.	FunctionGenerators	-	0 – 1 M Hz
4.	Components		
5.	Multimeters		
6.	SpectrumAnalyser		