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.

III Year-ISemester

L	T	P	C
4	0	0	3

COMPUTERARCHITECTUREANDORGANIZATION

OBJECTIVES:

- Understandthearchitectureofamoderncomputerwithitsvariousprocessingunits.Alsothe Performancemeasurementofthecomputersystem.
- Inadditiontothisthememorymanagementsystemofcomputer.

UNIT-I:

BasicStructureOfComputers: Functionalunit,BasicOperationalconcepts,Busstructures,SystemSoftware,Performance, Thehistoryofcomputerdevelopment.

UNIT-II:

MachineInstructionandPrograms:

InstructionandInstructionSequencing: RegisterTransferNotation, AssemblyLanguageNotation,BasicInstructionTypes, AddressingModes,BasicInput/outputOperations,TheroleofStacksandQueuesincomputerprogrammingequation.Compo nent ofInstructions:LogicInstructions, shiftand Rotate Instructions

UNIT-III:

TypeofInstructions: Arithmeticand LogicInstructions,BranchInstructions,AddressingModes,Input/outputOperations

UNIT-IV:

INPUT/OUTPUTORGANIZATION: AccessingI/ODevices,Interrupts:InterruptHardware,EnablingandDisablingInte rrupts, HandlingMultipleDevices,DirectMemoryAccess, Buses:SynchronousBus,AsynchronousBus,InterfaceCircuits,StandardI/OInterface:PeripheralComponentInterconnect(PCI)Bus,Universal SerialBus(USB)

UNIT-V:

TheMEMORYSYSTEMS: Basicmemorycircuits,MemorySystemConsideration,Read-OnlyMemory:ROM,PROM,EPROM, EEPROM, Flash Memory, CacheMemories:MappingFunctions,INTERLEAVING
SecondaryStorage: MagneticHardDisks,OpticalDisks,

UNIT-VI:

ProcessingUnit: FundamentalConcepts:RegisterTransfers,PerformingAnArithmeticOrLogicOperation,FetchingAW ordFromMemory, ExecutionofCompleteInstruction,HardwiredControl,
MicroprogrammedControl: Microinstructions,MicroprogramSequencing,WideBranchAddressingMicroinstructions with next –Address Field

TEXTBOOKS:

1. ComputerOrganization,CarlHamacher, ZvonksVranesic,SafeaZaky,5thEdition,McGrawHill.
2. Computer Architecture and Organization, John P. Hayes,3rdEdition,McGrawHill.

REFERENCEBOOKS:

1. ComputerOrganizationandArchitecture–WilliamStallingsSixthEdition,Pearson/PHI
2. StructuredComputerOrganization–AndrewS.Tanenbaum,4thEditionPHI/Pearson
3. FundamentalsorComputerOrganizationandDesign,-SivaraamaDandamudiSpringerInt.Edition.
4. "ComputerOrganizationandDesign:TheHardware/SoftwareInterface"byDavidA.PattersonandJohnL.Hennessy.
5. J .P.Hayes,"ComputerArchitectureandOrganization",McGraw-Hill,1998.

OUTCOMES:

- Studentscanunderstandthearchitectureofmoderncomputer.
- TheycananalyzethePerformanceofacomputerusingperformanceequation
- Understandingofdifferentinstructiontypes.
- 4.Studentscan calculate theeffectiveaddressofanoperandbyaddressingmodes
- 5.Theycanunderstand howcomputerstores positiveand negativenumbers.
- 6.Understandingofhowacomputerperforms arithmeticoperationofpositiveandnegativenumbers.

IIIYear-I Semester

L	T	P	C
4	0	0	3

LINEARICAPPLICATIONS

OBJECTIVES

- Tounderstandthebasicoperation&performance parametersofdifferential amplifiers.
- Tounderstand&learnthemeasuringtechniquesofperformanceparametersof OP-AMP
- Tolearnthelinearandnon-linearapplicationsof operationalamplifiers.
- Tounderstandtheanalysis&designofdifferenttypesofactive filtersusingopamps
- Tolearntheinternalstructure,operationandapplicationsofdifferentanalogICs
- ToAcquireskillsrequiredfordesigningandtestingintegratedcircuits

UNITI

INTEGRATEDCIRCUITS: DifferentialAmplifier-DCandACanalysisofDualinputBalancedoutputConfiguration, Properties of other differential amplifier configuration (Dual Input Unbalanced Output, Single EndedInput– Balanced/UnbalancedOutput),DCCouplingandCascadeDifferentialAmplifierStages,Leveltranslator.

UNITII

Characteristics of OP-Amps, Integrated circuits-Types, Classification, Package Types and Temperature ranges,Power supplies, Op-ampBlock Diagram, ideal and practical Op-amp Specifications, DC andAC characteristics,741 op-amp & its features, Op-Amp parameters & Measurement, Input & Out put Off set voltages & currents, slewrate,CMRR, PSRR, drift, FrequencyCompensation techniques.

UNITIII

LINEARandNON-LINEARAPPLICATIONSOFOP-AMPS: InvertingandNon-invertingamplifier,Integratoranddifferentiator,Differenceamplifier,Instrumentationamplifier,ACamplifier,VtoI,ItoVconverters, Buffers. Non- Linear function generation, Comparators, Multivibrators, Triangular and Square wavegenerators,Logand AntilogAmplifiers,Precision rectifiers.

UNITIV

ACTIVEFILTERS,ANALOGMULTIPLIERSANDMODULATORS: Design&AnalysisofButterworthactivefilters –1st order,2nd order LPF,HPFfilters. Band pass,Band rejectand allpass filters.
FourQuadrantMultiplier, IC1496,Sample&Holdcircuits.

UNITV

TIMERS & PHASE LOCKED LOOPS: Introduction to 555 timer, functional diagram, Monostable and Astableoperations and applications, Schmitt Trigger; PLL - introduction, block schematic, principles and description ofindividual blocks, 565 PLL, Applications of PLL – frequency multiplication, frequency translation, AM, FM & FSKdemodulators.Applications ofVCO(566).

UNITVI

DIGITAL TO ANALOG AND ANALOG TO DIGITAL CONVERTERS: Introduction, basic DAC techniques,weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, and IC 1408 DAC, Different types of ADCs –parallel Comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC.DAC andADCSpecifications, Specifications AD574 (12 bit ADC).

TEXTBOOKS:

1. LinearIntegratedCircuits–D.RoyChoudhury,NewAgeInternational(p) Ltd,2ndEdition,2003.
2. Op-Amps&LinearICs-RamakanthA.Gayakwad,PHI,1987.
3. OperationalAmplifiers–C.G.Clayton,Butterworth&CompanyPubl. Ltd./Elsevier,1971

REFERENCES:

1. OperationalAmplifiers &LinearIntegratedCircuits–SanjaySharma;SKKataria&Sons;2nd Edition,2010
2. Design withOperationalAmplifiers&AnalogIntegratedCircuits–SergioFranco,McGrawHill,1988.
3. OPAMPSand LinearIntegratedCircuitsconceptsandApplications,JamesMFiore,CenageLearning IndiaLtd.
4. OperationalAmplifiers&LinearIntegratedCircuits–R.F.Coughlin&FredrickDriscoll,PHI,6thEdition.
5. OperationalAmplifiers&LinearICs–DavidABell,OxfordUni.Press,3rdEdition

OUTCOMES

- Design circuitsusingoperationalamplifiersforvariousapplications.
- Analyzeanddesignamplifiersandactivefiltersusing Op-amp.
- Diagnoseandtrouble-shootlinearelectroniccircuits.
- Understandthe gain-bandwidthconceptandfrequencyresponseofthe amplifierconfigurations.
- Understandthoroughlytheoperationalamplifiers withlinearintegratedcircuits.

IIIYear-I Semester	L	T	P	C
	4	0	0	3

DIGITALICAPPLICATIONS

OBJECTIVES

Themainobjectivesofthiscourseare:

- Introductionofdigitallogicfamiliesandinterfacingconceptsfordigitaldesignisconsidered.
- VHDLfundamentalswerediscussedtomodelingthedigitalsystemdesignblocks.
- VHDLcompilers,simulatorsandsynthesistoolsaredescribed,whichareusedtoverify digitalsystemsinatechnology-independentfashion.
- Design andimplementationofcombinationaland sequentialdigitallogiccircuitsisexplained.

Syllabus:

UNIT-I

Digital Logic Families and Interfacing: Introduction to logic families, CMOS logic, CMOS steady state anddynamicelectricalbehavior,CMOSlogicfamilies.Bipolarlogic,transistor-transistorlogic,TTLfamilies,CMOS/TTLinterfacing,lowvoltageCMOS logic and interfacing, Emittercoupled logic.

(Textbook-1)

UNIT-II

Introduction to VHDL: Design flow, program structure, levels of abstraction, Elements of VHDL: Data types, dataobjects, operators and identifiers. Packages, Libraries and Bindings, Subprograms. VHDL Programming usingstructuraland dataflowmodeling.

(Textbook-2)

UNIT-III

BehavioralModeling:Processstatement,variableassignmentstatement,signalassignmentstatement,waitstatement , if statement, case statement ,null statement, loop statement, exit statement, next statement ,assertionstatement, more on signal assignment statement ,Inertial Delay Model, Transport Delay Model ,Creating SignalWaveforms, Signal Drivers , Other Sequential Statements , Multiple Processes. Logic Synthesis, Inside a logicSynthesizer.

(Textbook-2)

UNIT-IV

CombinationalLogicDesign:BinaryAdder-Subtractor,RippleAdder,LookAheadCarryGenerator,ALU,Decoders, encoders, multiplexers and demultiplexers,parity circuits, comparators, Barrel Shifter, Simple Floating-PointEncoder,DualPriority Encoder,Designconsiderations oftheabove combinationallogiccircuits withrelevantDigitalICs, modelingofaboveICsusing VHDL.

(Textbook-1)

UNIT-V

Sequential Logic Design: SSI Latches and flip flops, Ring Counter, Johnson Counter, Design of Modulus NSynchronous Counters, Shift Registers, Universal Shift Registers, Design considerations of the above sequentiallogiccircuits with relevantDigitalICs, modelingofaboveICsusingVHDL**.**

(Textbook-1)

UNIT-VI:

SynchronousandAsynchronousSequentialCircuits: Basicdesignsteps:Statediagram,statetable,stateassignment,choiceofflipflopsandderivationofnextstateandoutputexpressions,timingdiagram.Stateassignment problem: One hot encoding. Mealy and Moore type FSM for serial adder, VHDL code for the serialadder. Analysis of Asynchronous circuits, State Reduction, State Assignment. A complete design example: Thevendingmachinecontroller.

(**Referencetextbook-1)**

TextBooks:

1. DigitalDesignPrinciples&Practices–JohnF.Wakerly,PHI/PearsonEducationAsia,3rdEd.,2005.
2. VHDLPrimer–J.Bhasker,PearsonEducation/PHI,3rdEdition.

References:

1.FundamentalsofDigitalLogicwithVHDLDesign-StephenBrown,ZvonkoVranesic,McGrawHill,3rd Edition.

Outcomes:

Attheendof thiscoursethestudentcanableto:

- Understandthestructureofcommerciallyavailabledigitalintegratedcircuitfamilies.
- Learnthe IEEEStandard1076HardwareDescriptionLanguage(VHDL).
- Modelcomplexdigitalsystemsatseverallevelsofabstractions,behavioral,structural,simulation,synthesisandrapid system prototyping.
- Analyzeanddesignbasicdigitalcircuitswithcombinatorialandsequential logiccircuitsusingVHDL.

IIIYear-I Semester

L	T	P	C
4	0	0	3

DIGITALCOMMUNICATIONS

CourseObjectives:

1.Understanddifferent pulse digital modulation techniques and their comparision2.Familiarizevariousdigitalmodulationtechniquesandcalculationoftheirerrorprobabilities

3. Understandthe conceptofentropyanddifferentsourcecodingtechniques

4. Familirizewithblockcodes,cycliccodesand convolutionalcodes

UNITI

PULSEDIGITALMODULATION: Elementsofdigitalcommunicationsystems,advantagesofdigitalcommunication systems, Elements of PCM: Sampling, Quantization & Coding, Quantization error, Companding inPCM systems. Differential PCM systems (DPCM). Delta modulation, its draw backs, adaptive delta modulation,comparisonofPCM andDM systems,noisein PCM and DM systems.

UNITII

DIGITALMODULATIONTECHNIQUES: Introduction,ASK,FSK,PSK,DPSK,DEPSK,QPSK,M-ary PSK,ASK,FSK,similarityofBFSKandBPSK.

UNITIII

DATA TRANSMISSION : Base band signal receiver, probability of error, the optimum filter, matched filter,probability of error using matched filter, coherent reception, non-coherent detection of FSK, calculation of errorprobabilityofASK,BPSK, BFSK,QPSK.

UNITIV

INFORMATION THEORY: Discrete messages, concept of amount of information and its properties. Averageinformation,Entropyanditsproperties.Informationrate, Mutualinformation andits properties.

UNITV

SOURCECODING: Introductions,Advantages,Shannon'stheorem,Shanon-Fanocoding,Huffmancoding,efficiencycalculations,channelcapacityofdiscreteandanalogChannels,capacityofaGaussianchannel,bandwidth–S/Ntradeoff.

UNITVI

LINEAR BLOCK CODES: Introduction, Matrix description of Linear Block codes, Error detection and errorcorrection capabilities of Linear block codes, Hamming codes, Binary cyclic codes, Algebraic structure, encoding,syndrome calculation, BCHCodes.

CONVOLUTIONCODES: Introduction,encodingofconvolutioncodes,timedomainapproach,transformdomainapproach.Graphical approach:state, treeand trellisdiagram decodingusingViterbialgorithm.

TEXTBOOKS:

1. Digitalcommunications-SimonHaykin,JohnWiley,2005

2. PrinciplesofCommunicationSystems–H.TaubandD.Schilling,TMH,2003

REFERENCES:

1. DigitalandAnalogCommunicationSystems-SamShanmugam,JohnWiley,2005.
2. DigitalCommunications–JohnProakis,TMH,1983.CommunicationSystemsAnalog&Digital–Singh&Sapre,TMH, 2004.
3. ModernAnalogandDigitalCommunication–B.P.Lathi,Oxfordreprint,3rdedition,2004.

CourseOutcomes:

Afterundergoingthecoursestudents will beableto:

1. Determinetheperformanceofdifferentwaveformcodingtechniquesforthegenerationanddigitalrepresentationofthesignals.
2. Determinetheprobabilityoferrorforvariousdigital modulation schemes
3. Analyzedifferentsourcecodingtechniques
4. Computeandanalyzedifferenterrorcontrolcodingschemesforthereliabletransmissionofdigitalinformationoverthechannel.

IIIYear-ISemester

L	T	P	C
4	0	0	3

ANTENNAANDWAVEPROPAGATION

OBJECTIVES

Thestudent will beableto

- understandtheapplicationsoftheelectromagnetic wavesinfreespace.
- introducetheworkingprinciples ofvarioustypes ofantennas
- discussthemajorapplicationsofantennaswithanemphasisonhowantennasareemployedtomeetelectronicsystem requirements.
- understandtheconceptsofradiowavepropagationintheatmosphere.

UNITI

ANTENNAFUNDAMENTALS: Introduction,RadiationMechanism–singlewire,2wire,dipoles,CurrentDistribution on a thin wire antenna.Antenna Parameters - Radiation Patterns, Patterns in Principal Planes, MainLobe and Side Lobes, Beamwidths, Polarization, Beam Area, Radiation Intensity, Beam Efficiency, Directivity,GainandResolution,AntennaApertures,Aperture Efficiency,EffectiveHeight, illustratedProblems.

UNITII

THIN LINEAR WIRE ANTENNAS: Retarded Potentials, Radiation from Small Electric Dipole, Quarter waveMonopoleandHalfwaveDipole–CurrentDistributions,EvaluationofFieldComponents,PowerRadiated,Radiation Resistance, Beamwidths, Directivity, Effective Area and Effective Height. Natural current distributions,fields and patterns of Thin Linear Center-fed Antennas of different lengths, Radiation Resistance at a point which isnot current maximum. Antenna Theorems – Applicability and Proofs for equivalence of directional characteristics,Loop Antennas: Small Loops - Field Components, Comparison of far fields of small loop and short dipole, Conceptofshort magneticdipole,Dand $R_r$relations forsmall loops.

UNITIII

ANTENNA ARRAYS : 2 element arrays – different cases, Principle of Pattern Multiplication, N element UniformLinear Arrays – Broadside, End-fire Arrays, EFA with Increased Directivity, Derivation of their characteristics andcomparison; Concept of Scanning Arrays. Directivity Relations (no derivations).Related Problems. BinomialArrays, Effects of Uniform and Non-uniform Amplitude Distributions, Design Relations. Arrays with ParasiticElements,Yagi-UdaArrays,FoldedDipolesand theircharacteristics.

UNITIV

NON-RESONANT RADIATORS : Introduction, Traveling wave radiators – basic concepts, Long wire antennas – field strength calculations and patterns, Microstrip Antennas-Introduction, Features, Advantages and Limitations,RectangularPatchAntennas–
GeometryandParameters,Impactofdifferentparametersoncharacteristics.BroadbandAntennas:HelicalAntennas–Significance,Geometry,basicproperties;Designconsiderationsformonofilarhelical antennas inAxial ModeandNormal Modes (Qualitative Treatment).

UNITV

VHF,UHFANDMICROWAVEANTENNAS: ReflectorAntennas:FlatSheetandCornerReflectors.Paraboloidal Reflectors – Geometry, characteristics, types of feeds, F/D Ratio, Spill Over, Back Lobes, ApertureBlocking,Off-setFeeds,Cassegrain Feeds.

Horn Antennas– Types, Optimum Horns, Design Characteristics of Pyramidal Horns; Lens Antennas – Geometry,Features, Dielectric Lenses and Zoning, Applications, Antenna Measurements – Patterns Required, Set Up, DistanceCriterion,DirectivityandGain Measurements(Comparison, Absoluteand3-AntennaMethods).

UNITVI

WAVE PROPAGATION : Concepts of Propagation – frequency ranges and types of propagations.Ground WavePropagation–Characteristics,Parameters,WaveTilt,FlatandSphericalEarthConsiderations.SkyWavePropagation – Formation of Ionospheric Layers and their Characteristics, Mechanism of Reflection and Refraction,Critical Frequency, MUF and Skip Distance – Calculations for flat and spherical earth cases, Optimum Frequency,LUHF,Virtual Height,IonosphericAbnormalities,IonosphericAbsorption.

FundamentalEquationforFree-SpacePropagation,BasicTransmission LossCalculations.SpaceWavePropagation – Mechanism, LOS and Radio Horizon. Tropospheric Wave Propagation – Radius of Curvature of path, EffectiveEarth'sRadius,EffectofEarth'sCurvature,FieldStrengthCalculations,M-curvesandDuctPropagation,TroposphericScattering.

TEXTBOOKS

1. Antennasfor AllApplications–JohnD.KrausandRonaldJ.Marhefka,3rd Edition,TMH,2003.
2. ElectromagneticWavesandRadiatingSystems–E.C.JordanandK.G.Balmain,PHI,2ndEdition,2000.

REFERENCES

1. AntennaTheory-C.A. Balanis, John Wileyand Sons, 2ndEdition, 2001.
2. AntennasandWavePropagation–K.D.Prasad,SatyaPrakashan,TechIndiaPublications,NewDelhi,2001.
3. TransmissionandPropagation–
   E.V.D.GlazierandH.R.L.Lamont,TheServicesTextBookofRadio,vol.5,StandardPublishers Distributors, Delhi.
4. ElectronicandRadio Engineering–F.E. Terman,McGraw-Hill,4thEdition,1955.
5. Antennas–JohnD.Kraus,McGraw-Hill,2nd Edition,1988.

OUTCOMES

After goingthroughthiscoursethestudentwillbe ableto

- Identifybasicantennaparameters.
- Designandanalyzewireantennas,loopantennas,reflectorantennas,lensantennas,hornantennasandmicrostripantennas
- Quantifythefields radiated byvarious typesofantennas
- Design andanalyzeantennaarrays
- Analyzeantennameasurementstoassessantenna'sperformance
- Identifythecharacteristicsofradiowavepropagation

IIIYear-I Semester

L	T	P	C
0	0	3	2

PULSE&DIGITALCIRCUITSLAB

1. Linearwaveshaping.

2. NonLinearwaveshaping–Clippers.

3. NonLinearwaveshaping–Clampers.

4. Transistorasaswitch.

5. StudyofLogicGates &Someapplications.

6. StudyofFlip-Flops&someapplications.

7. SamplingGates.

8. AstableMultivibrator.

9. MonostableMultivibrator.

10. BistableMultivibrator.

11. SchmittTrigger.

12. UJTRelaxationOscillator.

13. Bootstrapsweepcircuit.

EquipmentrequiredforLaboratory:1.

RPS -0 – 30 V

2. CRO-0– 20 MHz.

3. FunctionGenerators-0–1MHz

4. Components

5. MultiMeters

IIIYear-I Semester

L	T	P	C
0	0	3	2

LICAPPLICATIONS LAB

MinimumTwelveExperimentstobeconducted:

1. StudyofOPAMPs–IC741,IC555,IC565,IC566,IC1496–functioning,parametersand Specifications.
2. OPAMPApplications–Adder,Subtractor,ComparatorCircuits.
3. IntegratorandDifferentiatorCircuitsusingIC741.
4. ActiveFilterApplications– LPF,HPF(firstorder)
5. ActiveFilterApplications–BPF,BandReject(Wideband)and NotchFilters.
6. IC741OscillatorCircuits–PhaseShiftandWienBridgeOscillators.
7. FunctionGeneratorusingOPAMPs.
8. IC555Timer–MonostableOperationCircuit.
9. IC555Timer– AstableOperationCircuit.
10. SchmittTriggerCircuits –usingIC741and IC555.
11. IC565– PLLApplications.
12. IC566–VCOApplications.
13. VoltageRegulatorusingIC723.
14. ThreeTerminalVoltageRegulators–7805,7809, 7912.

EquipmentrequiredforLaboratories:

1. RPS
2. CRO
3. FunctionGenerator
4. MultiMeters
5. ICTrainerKits(Optional)
6. BreadBoards
7. Components:-IC741,IC555,IC565,IC1496,IC723,7805,7809,7912 andother essentialcomponents.
8. AnalogIC Tester

IIIYear-I Semester	**L**	**T**	**P**	**C**
		0	**0**	**3**	**2**

DICALABORATORY

Note: The students are required to design and draw the internal logical structure of the following Digital IntegratedCircuits and to develop VHDL/Verilog HDL Source code, perform simulation using relevant simulator and analyzetheobtained simulation results usingnecessarysynthesizer.

All the experiments are required to verify and implement the logical operations on the latest FPGA Hardware in theLaboratory.

ListofExperiments:(MinimumofTenExperimentshastobeperformed)

1. RealizationofLogicGates
2. DesignofFull Adderusing3modelingsystems
3. 3to8 Decoder-74138
4. 8to3Encoder(withandwithoutparity)
5. 8x 1Multiplexer-74151and2x 4De-multiplexer-74155
6. 4-Bitcomparator-7485
7. DFlip-Flop-7474
8. Decadecounter-7490
9. Shiftregisters-7495
10. 8-bitserialin-paralleloutandparallelin-serialout
11. Fast In &FastOut(FIFO)
12. MAC(Multiplier&Accumulator)
13. ALUDesign.

Equipment/Softwarerequired:

1. Xilinx Vivadosoftware/Equivalent IndustryStandardSoftware
2. XilinxHardware/Equivalenthardware
3. Personalcomputersystemwithnecessarysoftwaretoruntheprogramsand Implement.