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.

IIIYear-IISemester

L	T	P	C
4	0	0	3

MICROPROCESSORSANDMICROCONTROLLERS

UNIT-I:

8086 ARCHITECTURE: Main features, pin diagram/description, 8086 microprocessor family, 8086 internalarchitecture, bus interfacing unit, execution unit, interrupts and interrupt responses, 8086 system timing, minimummodeand maximum modeconfiguration.

UNIT-II:

8086PROGRAMMING:Programdevelopmentsteps,instructions,addressingmodes,assemblerdirectives,writingsimpleprograms with anassembler, assemblylanguageprogram developmenttools.

UNIT-III:

8086INTERFACING:Semiconductormemoriesinterfacing(RAM,ROM),8254softwareprogrammabletimer/counter, Intel 8259 programmable interrupt controller, software and hardware interrupt applications, Intel8237a DMA controller, Intel 8255 programmable peripheral interface, keyboard interfacing, alphanumeric displays(LED,7-segmentdisplay,multiplexed7-segmentdisplay,LCD),Intel8279programmablekeyboard/displaycontroller,steppermotor, A/Dand D/Aconverters.

UNIT-IV:

80386AND80486MICROPROCESSORS: Introduction,programmingconcepts,specialpurposeregisters,memoryorganization,movingtoprotectedmode,virtualmode,memorypagingmechanism,architecturaldifferencesbetween 80386 and 80486 microprocessors.

UNIT-V:

Intel8051MICROCONTROLLER: Architecture,hardwareconcepts,input/outputportsandcircuits,externalmemory,counters/timers, serial datainput/output, interrupts.
Assembly language programming: Instructions, addressing modes, simple programs.Interfacing:keyboard,displays(LED,7-segmentdisplayunit),A/Dand D/Aconverters.

.

UNIT-VI:

PIC MICROCONTROLLER: Introduction, characteristics of PIC microcontroller, PIC microcontroller families,memory organization, parallel and serial input and output, timers,Interrupts, PIC 16F877 architecture, instructionsetofthePIC 16F877.

TextBooks:

1. MicroprocessorsandInterfacing–Programming andHardwarebyDouglasVHall,SSSPRao,TataMcGrawHillEducation PrivateLimited, 3rdEdition.
2. The8051Microcontroller&EmbeddedSystemsUsingAssemblyandCbyKennethJ.Ayala,DhananjayV.Gadre,CengageLearninbg,IndiaEdition.

References:

1. TheIntelMicroprocessors-Architecture,Programming,and InterfacingbyBarryB.Brey,Pearson,Eighth Edition-2012.
2. MicroprocessorsandMicrocontrollers-Architecture,ProgrammingandSystemDesignbyKrishnaKant,PHILearningPrivateLimited, Second Edition, 2014.
3. MicroprocessorsandMicrocontrollersbyN.SenthilKumar,M.SaravananandS.Jeevananthan, OxfordUniversityPress, SeventhImpression 2013

IIIYear-II Semester

L	T	P	C
4	0	0	3

MICROWAVEENGINEERING

OBJECTIVES

Thestudentwill

- Understandfundamentalcharacteristicsofwaveguidesand Microstriplinesthroughelectromagneticfieldanalysis.
- Understandthebasicpropertiesofwaveguidecomponentsand Ferritematerialscomposition
- Understandthefunction,design,andintegrationofthemajormicrowavecomponentsoscillators,poweramplifier.
- UnderstandaMicrowave testbenchsetupformeasurements.

UNITI

MICROWAVETRANSMISSIONLINES: Introduction,MicrowaveSpectrumandBands,ApplicationsofMicrowaves. Rectangular Waveguides – TE/TM mode analysis, Expressions for Fields, Characteristic Equation andCut-offFrequencies,FilterCharacteristics,DominantandDegenerateModes,SketchesofTEandTMmodefieldsin the cross-section, Mode Characteristics – Phase and Group Velocities, Wavelengths and Impedance Relations;PowerTransmissionandPower LossesinRectangularGuide,ImpossibilityofTEMmode.RelatedProblems.

UNITII

CIRCULAR WAVEGUIDES: Introduction, Nature of Fields, Characteristic Equation, Dominant and DegenerateModes.

CavityResonators–

Introduction,RectangularandCylindricalCavities,DominantModesandResonantFrequencies,QfactorandCouplingCoefficients,Excitationtechniques-waveguidesandcavities,RelatedProblems.

MICROSTRIPLINES– Introduction,ZoRelations,EffectiveDielectricConstant,Losses,Qfactor.

UNITIII

MICROWAVE TUBES : Limitations and Losses of conventional tubes at microwave frequencies. Re-entrantCavities,Microwave tubes – O type and M type classifications. O-type tubes :2 Cavity Klystrons – Structure,Velocity Modulation Process and Applegate Diagram, Bunching Process and Small Signal Theory – Expressions foro/p Power and Efficiency, Applications, Reflex Klystrons – Structure, Applegate Diagram and Principle of working,Mathematical Theory of Bunching, Power Output, Efficiency, Electronic Admittance; Oscillating Modes and o/pCharacteristics,Electronicand MechanicalTuning, Applications, Related Problems.

UNIT-IV

HELIXTWTS: Significance,TypesandCharacteristicsofSlowWaveStructures;StructureofTWTandSuppressionofOscillations,NatureofthefourPropagation Constants(Qualitativetreatment).

M-typeTubes

Introduction, Cross-field effects, Magnetrons – Different Types, 8-Cavity Cylindrical Travelling Wave Magnetron – HullCut-offCondition,ModesofResonanceand PI-ModeOperation,SeparationofPI-Mode,o/pcharacteristics.

UNITV

WAVEGUIDE COMPONENTS AND APPLICATIONS - I : Coupling Mechanisms – Probe, Loop, Aperturetypes.WaveguideDiscontinuities– Waveguideirises,Tuning ScrewsandPosts, MatchedLoads.WaveguideAttenuators – Resistive Card, Rotary Vane types; Waveguide Phase Shifters – Dielectric, Rotary Vane types.Scattering Matrix– Significance, Formulation and Properties. S-Matrix Calculations for – 2 port Junction, E-planeand H-plane Tees, Magic Tee, Hybrid Ring; Directional Couplers – 2Hole, Bethe Hole types, Ferrite Components–FaradayRotation, S-MatrixCalculations forGyrator,Isolator,Circulator,RelatedProblems.

UNITVI

MICROWAVESOLIDSTATEDEVICES: Introduction,Classification,Applications.TEDs–Introduction,Gunn Diode – Principle, RWH Theory, Characteristics, Basic Modes of Operation, Oscillation Modes. AvalancheTransit Time Devices – Introduction, IMPATT and TRAPATT Diodes – Principle of Operation and Characteristics.**MICROWAVE MEASUREMENTS:** Description of Microwave Bench – Different Blocks and their Features,Precautions; Microwave Power Measurement – Bolometer Method. Measurement of Attenuation, Frequency, Q-factor,Phaseshift, VSWR,ImpedanceMeasurement.

TEXTBOOKS:

1. MicrowaveDevicesandCircuits–SamuelY. Liao,PHI,3rdEdition,1994.
2.FoundationsforMicrowaveEngineering–R.E.Collin,IEEEPress,JohnWiley,2ndEdition,2002.

REFERENCES:

1. MicrowavePrinciples– HerbertJ.Reich,J.G.Skalnik,P.F.OrdungandH.L.Krauss,CBSPublishersandDistributors,NewDelhi,2004
2. MicrowaveEngineering-AnnapurnaDas andSisirK.Das,McGrawHillEducation,3rd Edition.
3. MicrowaveandRadarEngineering-M.Kulkarni,UmeshPublications,3rd Edition.
4. MicrowaveEngineering–GSNRaju,IKInternational
5. MicrowaveandRadar Engineering–GSasibhushanaRaoPearson

OUTCOMES:Aftergoingthrough thiscoursethestudentwillbeableto

- Designdifferentmodesinwaveguidestructures
- CalculateS-matrixforvariouswaveguidecomponentsandsplittingthemicrowaveenergyinadesireddirection
- DistinguishbetweenMicrowavetubes andSolidStateDevices,calculationofefficiencyofdevices.
- Measurevariousmicrowaveparametersusinga Microwavetestbench

IIIYear-II Semester

L	T	P	C
4	0	0	3

VLSIDESIGN

Objectives:

Themainobjectivesofthiscourseare:

- BasiccharacteristicsofMOStransistorandexaminesvariouspossibilitiesforconfiguringinvertercircuitsandaspects oflatch-upareconsidered.
- Designprocessesareaidedby simpleconceptssuchasstickandsymbolicdiagramsbutthekey elementisasetofdesign rules, whichareexplained clearly.
- BasiccircuitconceptsareintroducedforMOSprocesseswecansetoutapproximatecircuitparameterswhich greatlyeasethedesign process.

Syllabus:

UNIT-I:

Introduction and Basic ElectricalPropertiesofMOS Circuits: Introduction toIC technology,Fabricationprocess: nMOS, pMOS and CMOS. I_{ds} versus V_{ds} Relationships, Aspects of MOS transistor Threshold Voltage,MOS transistor Trans, Output Conductance and Figure of Merit. nMOS Inverter, Pull-up to Pull-down Ratio fornMOS inverter driven by another nMOS inverter, and through one or more pass transistors. Alternative forms ofpull-up, The CMOS Inverter, Latch-up in CMOS circuits, Bi-CMOS Inverter, Comparison between CMOS andBiCMOStechnology.

(TextBook-1)

UNIT-II:

MOS and Bi-CMOS Circuit Design Processes: MOS Layers, Stick Diagrams, Design Rules and Layout, Generalobservations on the Design rules, 2µm Double Metal, Double Poly, CMOS/BiCMOS rules, 1.2µm Double Metal,Double Poly CMOS rules, Layout Diagrams of NAND and NOR gates and CMOS inverter, Symbolic Diagrams-Translationto Mask Form.

(TextBook-1)

UNIT-III:

Basic Circuit Concepts: Sheet Resistance, Sheet Resistance concept applied to MOS transistors and Inverters, AreaCapacitance of Layers, Standard unit of capacitance, Some area Capacitance Calculations, The Delay Unit, InverterDelays,Drivinglargecapacitiveloads,Propagation Delays, WiringCapacitances, Choiceoflayers.

Scaling of MOS Circuits: Scaling models and scaling factors, Scaling factors for device parameters, Limitations ofscaling, Limits due to sub threshold currents, Limits on logic levels and supply voltage due to noise and currentdensity.Switch logic, Gatelogic.

(TextBook-1)

UNIT-IV:

Chip Input and Output circuits: ESD Protection, Input Circuits, Output Circuits and L(di/dt) Noise, On-ChipclockGeneration and Distribution.

DesignforTestability:FaulttypesandModels,Controllability andObservability,AdHocTestableDesignTechniques,ScanBasedTechniquesandBuilt-InSelfTest techniques.

(TextBook-2)

UNIT-V:

FPGA Design: FPGA design flow, Basic FPGA architecture, FPGA Technologies, FPGA families- Altera Flex8000FPGA,Altera Flex10FPGA,XilinxXC4000seriesFPGA,XilinxSpartanXL FPGA,XilinxSpartanIIFPGAs,XilinxVertexFPGA.Casestudies: FPGA Implementation ofHalfadderandfull adder.

Introductiontosynthesis: Logicsynthesis,RTLsynthesis,HighlevelSynthesis.

(ReferenceTextBook-1)

UNIT-VI:

Introduction to Low Power VLSI Design: Introduction to Deep submicron digital IC design**,** Low Power CMOSLogic Circuits: Over view of power consumption, Low –power design through voltage scaling, Estimation andoptimisation of switching activity, Reduction of switching capacitance. Interconnect Design, Power Grid and ClockDesign.

(TextBook-2)

TextBooks:

1. EssentialsofVLSICircuitsandSystems-KamranEshraghian,DouglasandA.PucknellandSholehEshraghian,Prentice-Hall ofIndiaPrivate Limited, 2005 Edition.
2. CMOSDigitalIntegratedCircuitsAnalysisandDesign-Sung-MoKang, YusufLeblebici,TataMcGraw-HillEducation, 2003.

References:

1. AdvancedDigitalDesignwiththeVerilogHDL,MichaelD.Ciletti,XilinxDesignSeries,PearsonEducation
2. AnalysisandDesignofDigitalIntegratedCircuitsinDeepsubmicronTechnology,3’rdedition,DavidHodges.

Outcomes:

Attheendof thiscoursethestudentcanableto:

- UnderstandthepropertiesofMOSactivedevicesandsimplecircuitsconfiguredwhenusingthemandthereasonforsuchencumbrances asratiorules bywhichcircuits can beinterconnected in silicon.
- KnowthreesetsofdesignruleswithwhichnMOSand CMOSdesignsmaybe fabricated.
- Understandthescalingfactorsdeterminingthe characteristicsandperformanceofMOScircuitsinsilicon.

IIIYear-II Semester

L	T	P	C
4	0	0	3

DIGITALSIGNALPROCESSING

OBJECTIVES

Thestudent will beableto

- AnalyzetheDiscreteTimeSignalsandSystems
- Knowtheimportanceof FFT algorithmforcomputationofDiscrete FourierTransform
- Understandthevariousimplementationsofdigitalfilterstructures
- LearntheFIRandIIRFilterdesignprocedures
- Knowtheneed ofMultirateProcessing
- LearntheconceptsofDSPProcessors

UNIT IINTRODUCTION: Introduction to Digital Signal Processing: Discrete time signals & sequences,Classification of Discrete time systems ,stability of LTI systems,Invertability, Response of LTI systems toarbitrary inputs. Solution of Linear constant coefficient difference equations. Frequency domain representation ofdiscrete time signals and systems.Review of Z-transforms, solution of difference equations using Z-transforms,Systemfunction.

UNIT IIDISCRETE FOURIER SERIES & FOURIER TRANSFORMS: Properties of discrete Fourier series,DFS representation of periodic sequences, Discrete Fourier transforms: Properties of DFT, linear filtering methodsbased on DFT, Fast Fourier transforms (FFT) - Radix-2 decimation in time and decimation in frequency FFTAlgorithms,InverseFFT.

UNIT III.DESIGN OF IIR DIGITAL FILTERS& REALIZATIONS: Analog filter approximations – Butterworth and Chebyshev, Design of IIR Digital filters from analog filters, Design Examples, Analog and Digitalfrequencytransformations. BasicstructuresofIIRsystems, Transposedforms.

UNITIV DESIGNOFFIRDIGITAL FILTERS&REALIZATIONS:
Characteristics of FIR Digital Filters,frequency response. Design of FIR Digital Filters using Window TechniquesandFrequencySampling technique, Comparisonof IIR & FIR filters.

BasicstructuresofFIRsystems,***Latticestructures,Lattice-ladderstructures***

UNITVMULTIRATEDIGITALSIGNALPROCESSING: Introduction,Decimation,InterpolationSampling rate conversion ,Implementation of sampling rate converters***, Applications – Sub-band Coding of SpeechSignals,ImplementationofDigitalFilter Banks,Trans-multiplexers.***

UNIT VIINTRODUCTION TO DSP PROCESSORS: Introduction to programmable DSPs: Multiplier andMultiplier Accumulator, Modified bus structures and memory access schemes in P-DSPs ,Multiple Access Memory,Multiportedmemory,VLIW architecture, Pipelining,Specialaddressingmodes,On-ChipPeripherals.
Architecture of TMS320C5X: Introduction, Bus Structure, Central Arithmetic Logic Unit, Auxiliary Register ALU,Index Register, Block Move Address Register, Parallel Logic Unit, Memory mapped registers, program controller,someflags in thestatusregisters, On-chip memory,On-chipperipherals.

TEXTBOOKS:

1. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, DimitrisG.Manolakis,PearsonEducation / PHI, 2007.
2. DiscreteTimeSignal Processing– A.V.OppenheimandR.W.Schaffer, PHI
3. DigitalSignalProcessors– Architecture,ProgrammingandApplications,,B.Venkataramani,M.Bhaskar,TATAMcGraw Hill, 2002
4. DigitalSignalProcessing–KRajaRajeswari, I.K. InternationalPublishingHouse

ReferenceBooks:

1. DigitalSignalProcessing:AndreasAntoniou,TATAMcGrawHill,2006
2. DigitalSignalProcessing:MHHayes,Schaum'sOutlines,TATAMc-GrawHill,2007.
3. DSPPrimer-C.BrittonRorabaugh,TataMcGrawHill,2005.
4. Fundamentalsof DigitalSignalProcessingusingMatlab–RobertJ.Schilling,Sandra L.Harris,Thomson,2007.
5. DigitalSignalProcessing–Alan V.Oppenheim,RonaldW.Schafer,PHIEd.,2006
6. DigitalSignalProcessing–Rameshbabu,SciTechpublications

OUTCOMES

After goingthroughthiscoursethestudentwillbe ableto

- Applythedifference equationsconcept intheanayziationofDiscretetimesystems
- UsetheFFTalgorithmforsolvingtheDFTof a givensignal
- DesignaDigitalfilter(FIR&IIR)fromthegivenspecifications
- RealizetheFIRand IIRstructuresfromthedesigneddigitalfilter.
- UsetheMultirateProcessingconceptsinvariousapplications(eg:Designofphaseshifters,Interfacingofdigitalsystems…)
- Applythesignalprocessingconceptson DSPProcessor.

BIO-MEDICAL ENGINEERING(OPENELECTIVE)

UNIT-I:

INTRODUCTIONTOBIOMEDICALINSTRUMENTATION: AgeofBiomedicalEngineering,Development of Biomedical Instrumentation, Man Instrumentation System, Components of the Man-InstrumentSystem, Physiological System of the Body, Problems Encountered in Measuring a Living System, Sources ofBioelectric Potentials, Muscle, Bioelectric Potentials, Sources of Bioelectric Potentials, Resting and ActionPotentials,PropagationofActionPotential,BioelectricPotentials-ECG,EEGandEMG,EnvokedResponses.

UNIT-II:

ELECTRODES AND TRANSDUCERS: Introduction, Electrode Theory, Biopotential Electrodes, ExamplesofElectrodes,BasicTransducerPrinciples,BiochemicalTransducers,TheTransducerandTransductionPrinciples, Active Transducers, Passive Transducers, Transducers for Biomedical Applications, Pulse Sensors,RespirationSensor, Transducers with Digital Output.

UNIT-III:

CARDIOVASCULAR SYSTEM AND MEASUREMENTS: The Heart and Cardiovascular System, ElectroCardiography, Blood Pressure Measurement, Measurement of Blood Flow and Cardiac Output, Measurement ofHeartSound, Plethysmography.

MEASUREMENTSINTHERESPIRATORYSYSTEM: ThePhysiologyofThe RespiratorySystem,TestsandInstrumentationforTheMechanicsofBreathing,RespiratoryTherapyEquipment.

UNIT-IV:

PATIENTCAREANDMONITORING: ElementsofIntensive-CareMonitoring,PatientMonitoringDisplays, Diagnosis, Calibration and Repair ability of Patient-Monitoring Equipment, Other Instrumentation forMonitoring Patients, Organization of the Hospitalfor Patient-Care Monitoring, Pacemakers, Defibrillators,RadioFrequencyApplications ofTherapeuticuse.

THERAPEUTICANDPROSTHETICDEVICES: AudiometersandHearingAids, Myoelectric Arm, Laparoscope, Ophthalmology Instruments, Anatomy of Vision,Electrophysiological Tests,Ophthalmoscope,TonometerforEyePressureMeasurement,Diathermy,ClinicalLaboratoryInstruments,Biomaterials,Stimulators.

UNIT-V:

DIAGNOSTIC TECHNIQUES AND BIO-TELEMETRY: Principles of Ultrasonic Measurement, UltrasonicImaging,UltrasonicApplicationsofTherapeuticUses,UltrasonicDiagnosis,X-RayandRadio-IsotopeInstrumentations,CATScan,EmissionComputerizedTomography,MRI,IntroductiontoBiotelemetry,Physiological Parameters Adaptable to Biotelemetry, The Components of Biotelemetry System, ImplantableUnits,TelemetryforECGMeasurementsduring Exercise, Telemetryfor EmergencyPatient Monitoring

UNIT-VI:

MONITORS,RECORDERSANDSHOCKHAZARDS: BiopotentialAmplifiers,Monitors,Recorders,Shock Hazards and Prevention, Physiological Effects and Electrical Current, Shock Hazards from ElectricalEquipment,Methods ofAccident Prevention,IsolatedPowerDistribution System.

TextBooks:

1. "Bio-MedicalElectronicsand Instrumentation", OnkarN.Pandey,RakeshKumar,KatsonBooks.
2. "Bio-MedicalInstrumentation",Cromewell,Wiebell,Pfeiffer

References:

1. "IntroductiontoBio-MedicalEquipmentTechnology",4th Edition,JosephJ.Carr,JohnM.Brown,PearsonPublications.
2. "HandBookofBio-MedicalInstrumentation",Khandapur.McGrawHill

IIIYear-IISemester	L	T	P	C
	0	0	3	2

MICROPROCESSORSANDMICROCONTROLLERSLAB

LISTOFEXPERIMENTS

PART-A:(Minimumof 5Experimentshastobeperformed)
8086AssemblyLanguageProgrammingusingAssemblerDirectives

15. Sorting.
16. Multibyteaddition/subtraction
17. Sumofsquares/cubesofagivenn-numbers
18. Additionofn-BCDnumbers
19. Factorialofgivenn-numbers
20. MultiplicationandDivisionoperations
21. Stackoperations
22. BCDtoSevensegmentdisplaycodes

PART- B:(Minimum of 3 Experiments has to be performed)8086Interfacing

1. Hardware/SoftwareInterruptApplication
2. A/DInterfacethroughIntel8255
3. D/AInterfacethroughIntel8255
4. KeyboardandDisplayInterfacethroughIntel8279
5. GenerationofwaveformsusingIntel8253/8254

PART- C: (Minimum of 3 Experiments has to be performed)8051Assembly LanguagePrograms

1. Findingnumberof1’sandnumberof0’sin a given 8-bitnumber
2. Additionofevennumbersfrom a givenarray
3. Ascending/ Descendingorder
4. Averageofn-numbers

PART-D:(Minimum of 3 Experiments has to be performed)8051Interfacing

1. SwitchesandLEDs
2. 7-Segmentdisplay(multiplexed)
3. StepperMotorInterface
4. TrafficLightController

EquipmentRequired:

1. RegulatedPowersupplies
2. Analog/DigitalStorageOscilloscopes
3. 8086Microprocessorkits
4. 8051microcontrollerkits
5. ADCmodule
6. DACmodule
7. Steppermotormodule
8. Keyboardmodule
9. LED,7-SegemtUnits
10. DigitalMultimeters
11. ROM/RAMInterfacemodule
12. BreadBoard etc.

IIIYear-II Semester

L	T	P	C
0	0	3	2

VLSILABORATORY

Note: Thestudentsarerequiredtodesigntheschematicdiagramsusing CMOSlogicandtodrawthelayoutdiagramsto performthefollowingexperiments using130nm technologywith the IndustrystandardEDATools.

ListofExperiments:

i. Designand ImplementationofanUniversalGates
ii. Designand Implementationofan Inverter
iii. Designand ImplementationofFullAdder
iv. Designand ImplementationofFullSubtractor
v. Designand ImplementationofDecoder
vi. DesignandImplementationofRS-Latch
vii. Designand ImplementationofD-Latch
viii. DesignandImplementationasynchronouscounter
ix. Designand ImplementationofstaticRAMcell
x. Design andImplementationof8bitDACusingR-2Rlatternetwork

SoftwareRequired:

i. MentorGraphicsSoftware/Equivalent IndustryStandardSoftware.
ii. Personalcomputersystem withnecessarysoftwaretorun theprogramsand toimplement.

IIIYear-II Semester

DIGITALCOMMUNICATIONSLAB

1. Timedivisionmultiplexing.
2. Pulsecodemodulation.
3. Differentialpulsecodemodulation.
4. Deltamodulation.
5. Frequencyshiftkeying.
6. Phaseshiftkeying.
7. Differentialphaseshiftkeying.
8. Companding
9. SourceEncoderandDecoder
10. LinearBlockCode-EncoderandDecoder
11. BinaryCyclicCode–Encoder andDecoder
12. ConvolutionCode–Encoder andDecoder

EquipmentrequiredforLaboratories:

1.RPS – 0 – 30 V
2. CRO– 0 – 20 M Hz.
3. FunctionGenerators–0–1MHz
4. RFGenerators – 0– 1000 MHz./0 – 100M Hz.
5. Multimeters
6. LabExperimentalkitsforDigitalCommunication
7. Components