Website: www.jntuh.ac.in
E Mail: pa2registrar@jntuap.ac.in

Phone: Off: +91-40-32422253
Res: +91-40-32517275
Fax: +91-40-23158665

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
(Established by Andhra Pradesh Legislative Act. No. 30 of 2008)
Kukatpally, Hyderabad – 500 085, Telangana State (India)

Lr.No.D1/960/2015 Date: 12.11.2015

DR. N.YADAIAH
B.E (OUCE), M. Tech (IIT KGP), Ph.D.(JNTU)
SMIEEE, FIE, FIETE, MSSI, MISTE
Professor of Electrical & Electronics Engineering &
REGISTRAR

To,
The Principal,
Vidya Jyothi Institute of Technology,
Aziznagar Gate, C.B. Post,
Hyderabad,

Sir,

Sub:- JNT University Hyderabad-Academic & Planning – Nominations for Academic Council, Governing Body and Board of Studies members for various Departments offered by Vidya Jyothi Institute of Technology, Aziznagar Gate, C.B. Post, Hyderabad,

Ref:- 1. Your Lrs. No. Nil, dated 30.09.2015
2. Note Orders of the Vice-Chancellor dated 03.11.2015

***

With reference to your letters 1st cited, I am by direction to inform you that the following faculty members of the University are nominated to constitute the following bodies mentioned below for a period of two years as per the UGC guidelines as desired by you:

I Academic Council (Three members)

S.No	Name of the University Nominee
1	Dr.K.Rama Mohana Rao, Director, BICS, JNTUH
2	Dr.B.Balu Naik, Director, UGC-HRDC, JNTUH
3	Dr.A. Prabhu Kumar, Director, SMS, JNTUH

II. Governing Body (One member) ?

S.No	Name of the University Nominee
1	Dr.M.Anji Reddy, Director, R&D

II. Board of Studies (One nominee for each department)

S.No	Name of the Department	Courses	Name of the University Nominee
1	Civil	B.Tech/M.Tech	Dr.V.Venkateswara Reddy
2	EEE	B.Tech/M.Tech	Dr.G.Narasaiah Sreenivas
3	Mech. Engineering	B.Tech/M.Tech	Dr.K.V.Sharma
4	ECE	B.Tech/M.Tech	Dr.P.Chandrasekhar Reddy
5	CSE	B.Tech/M.Tech	Dr.S.Vishwanadha Raju

Contd..2

6	English	B.Tech	Dr.V.Parvathi
7	Mathematics	B.Tech, M.Tech and MBA	Dr.M.A.[redacted].Srinivas
8	Physics	B.Tech	Dr.P.Madhusudhana Rao
9	Chemistry	B.Tech	Dr.A.Jaya Shree
10	Environmental Studies	B.Tech	Dr.Ch.Sasikala
11	MBA	MBA & B.Tech	Dr.Sindhu

Yours faithfully,

REGISTRAR

Copy to the individuals concerned
Copy to PA to VC/Rector/Registrar for information

Vidya Jyothi Institute of Technology

Minutes of the 3rd Board of studies (ECE) meeting held on 24th May 2016 at 10.00 A.M in Board Room

The following members were present in the meeting.

1. Dr M V Krishna Rao, Chairman
2. Dr Chandra Sekhar Reddy, Member
3. Dr K S Rao, Member
4. Dr Kishan Rao, Member
5. Dr.Chandra Sekhar, Member
6. Mr. Ch Satyanarayana,Member
7. Mr. N.Venkatesh, Member
8. Mr M Rajendra Prasad, Member
9. Mr Ravi Kishore, Member
10. Mr Shaik Maznu, Member
11. Ms O Jaya Madhhuri, Member
12. Dr.Usha Sree, Invitee
13. Dr.Hari Krishna, Invitee

Item No. 1: Approval of 2nd Year B.Tech (ECE) Syllabi

The Chairperson of Board of Studies (BoS) presented the syllabi of B.Tech II Year (ECE-I & II Semesters). Detailed and elaborate discussions were held regarding each and every topic of the syllabi of various papers related to both the Semesters - II/I and II/II as Table-I.

Table. 1

S.No.	Subject	
	II/I Semester	
1	Electronic Devices and Circuits	3
2	Signals and Systems	4
3	Switching Theory and Logic Design	3
4	Electronic Measurements & Instruments	3
5	Probability Theory and Stochastic	4
6	Electronic Devices and Circuits Lab	2
7	Basic Simulation Lab	2
	II/II Semester	
1	Electronic Circuit Analysis	4

Head of the Department
Department of Electronics and Communication E
Vidya Jyothi Institute of Technology
Hyderabad-500 075

2	Pulse and Digital Circuits	4
3	Electromagnetic Theory and Transmission Lines	4
4	Digital System Design	3
5	ECA Lab	2
6	PDC Lab	2

It has been decided to discuss and finalize the syllabi and course structure of III & IV year subjects in the next meeting.

After discussing various aspects of the syllabi the committee passed the following resolution.

Resolution (1): The members after thorough discussion approved the syllabi of all the course mentioned in Table: 1 and the details of the syllabi are as per *Annexure: 1.*

Noted and Approved

Item No. 2: Approval of 2nd Year I Sem. B.Tech (EEE) & B.Tech (CSE & IT) Syllabi

The Chairperson of Board of Studies (BoS) presented the 2nd Year I Sem. B.Tech (EEE) and 2nd Year I Sem. B.Tech (CSE & IT) Syllabi to the Board.

Table. 2

S.No.	Subject	Credits	Branches
	II/I Semester		
1	Electronic Devices and Circuits	3	EEE, CSE & IT
2	Electronic Devices and Circuits Lab	2	EEE
3	Electronic Devices and Circuits/ Digital Logic Design Lab	2	CSE & IT

Resolution (2): The members after thorough discussion approved the syllabi of all the course mentioned in Table: 2 and the details of the syllabi are as per *Annexure: 1.*

Noted and Approved

Item No. 3: Approval of M.Tech. (I year II semester) Syllabi

The Chairperson of Board of Studies (BoS) presented the syllabi of all the subjects of M.Tech (VLSDID & ES) programmes. As decided earlier, for this semester also it is decided to follow JNTU syllabus of M.Tech (VLSID & ES) for all the subjects.

Resolution (3): The members after thorough discussion approved the I year II semester syllabi of M.Tech(VLSISD) & M.Tech(ES) as per *JNTUH syllabus.*

Noted and Approved.

Item No. 4: To approve the Panel of examiners

The Chairperson emphasized the necessity of Panel of Examiners. Their services shall be utilized in the preparation of End-Semester Question paper(s), Evaluation of End-Semester Examination Answer Scripts and that they will be paid with remuneration as per the recommendations of College Finance Committee.

Resolution (4): The BoS Chairman is authorized to prepare the Panel of examiners for both B.Tech II Year I&II Semesters. and both M.Tech programmes.

Noted and Approved.

Sl. No	Name of the Member	Designation	Signature
1	Dr M V Krishna Rao	Chairman	
2	Dr Chandra Sekhar Reddy	Member	
3	Dr K S Rao	Member	
4	Dr Kishan Rao	Member	
5	Dr.Chandra Sekhar	Member	
6	Mr. Ch Satyanarayana	Member	
7	Mr. N.Venkatesh	Member	
8	Mr M Rajendra Prasad	Member	

Head of the Department
Department of Electronics and Communication Engg.
Sidhartha Institute of Engineering
Hyderabad-500051

9	Mr Ravi Kishore	Member	
10	Mr Shaik Mazmu	Member	
11	Ms O Jaya Madhhuri	Member	
12	Dr. V. Usha Sree	Invitee	
13	Dr. K. Hari Krishna	Invitee	24/5/16

Head of the Department
Department of Computer Science & Application Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUE OF TECHNOLOGY
(AUTONOMOUS)

II YEAR I SEMESTER ECE COURSE STRUCTURE

S.No.	Subject Code	Subject Name	L	T	P	Credits
1	BS	Mathematics – IV	3	1	0	3
2	PC1	Electronic Devices and Circuits	3	1	0	3
3	PC2	Signals and Systems	4	0	0	4
4	PC3	Switching Theory and Logic Design	3	0	0	3
5	PC4	Electronic Measurements & Instruments	3	0	0	3
6	PC5	Probability Theory and Stochastic Processes	4	0	0	4
7	PC6	Electronic Devices and Circuits Lab	0	0	3	2
8	PC7	Basic Simulation Lab	0	0	3	2
9	MC1	Mandatory Course	2	0	0	
		Total	22	2	6	24

II YEAR II SEMESTER ECE COURSE STRUCTURE

S.No.	Subject Code	Subject Name	L	T	P	Credits
1	ES1	Principles of Electrical Engineering	3	1	0	3
2	PC9	Electronic Circuit Analysis	4	0	0	4
3	PC10	Pulse and Digital Circuits	4	0	0	4
4	PC11	Electromagnetic Theory and Transmission Lines	4	0	0	4
5	PC12	Digital System Design	3	1	0	3
6	PC13	ECA Lab	0	0	3	2
7	PC14	PDC Lab	0	0	3	2
8	BS	Environmental Science	2	0	0	2
9	MC2	Mandatory Course	2	0	0	
		Total	22	2	6	24

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE I-Sem

L	T	P	C
3	1	0	3

MATHEMATICS-IV
(SPECIAL FUNCTIONS AND FUNCTIONS OF A COMPLEX VARIABLE)

Pre Requisites: Nil

Course Objectives:

1. Series solutions for Legendre and Bessel differential equations, analyzing the properties of Legendre polynomials and Bessel polynomials.
2. Differentiation and Integration of complex valued functions.
3. Evaluation of integrals using Cauchy's integral formula.
4. Taylor's series, Maclaurin's series and Laurent's series expansions of complex functions.
5. Evaluation of integrals using residue theorem.
6. Transform a given function from z - plane to w – plane.
7. Identify the transformations like translation, magnification, rotation and reflection and inversion.
8. Properties of bilinear transformations.
9. Spherical and Cylindrical coordinates.

UNIT-I

Special Functions-I

Introduction to series solution of differential equations. Legendre's Differential equation, General solution of Legendre's equation, Legendre's polynomials and their Properties: Rodrigue's formula – Recurrence relations, generating function of Legendre's polynomials – Orthogonality.

UNIT-II

Special Functions-II

Bessel's Differential equation, Bessel functions properties: – Recurrence relations, Orthogonality, Generating function, Trigonometric expansions involving Bessel functions.

UNIT-III

Complex Functions –Differentiation and Integration

Complex functions and its representation on argand plane, Concepts of limit Continuity, Differentiability, Analyticity, Cauchy-Riemann conditions, Harmonic functions– Milne – Thompson method, complex potential functions, stream functions and velocity functions.

Complex integration

Line integral evaluation along a path, Cauchy's integral theorem, Cauchy's integral formula – Generalized integral formula

UNIT-IV

Complex Power series and contour Integration

Radius of convergence –Expansion in Taylor's series, Maclaurin's series and Laurent's series. Singular point –Isolated singular point – pole of order m – essential singularity. Residue – Evaluation of residue by formula and by Laurent's series – Residue theorem.

Evaluation of integrals of the type:

(a) $\int_0^{2\pi} f(\cos\theta, \sin\theta)\, d\theta$ (b) Improper real integrals $\int_{-\infty}^{\infty} f(x)\, dx$

UNIT-V

Conformal mapping

Transformation of z-plane to w-plane by a function, Conformal transformation. Standard Transformations-Translation; Magnification and rotation; inversion and reflection, Transformations like e^z, log z, z^2, and bilinear transformation. Properties of Bilinear transformation, determination of bilinear transformation when mappings of 3 points are given.

Spherical and Cylindrical coordinates

Introduction to spherical and cylindrical coordinates.

COURSE OUTCOMES:

After going through this course the student will be able to:

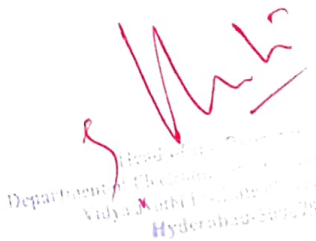
1. Identify Bessel equation and Legendre equation and solve them under special conditions with the help of series solutions method. Also recurrence relations and orthogonality properties of Bessel and Legendre polynomials.
2. Analyze the complex functions with reference to their analyticity, Integration using Cauchy's integral theorem,
3. To find the Taylor's and Laurent series
4. To solve Real Definite Integrals using Cauchy's Residue Theorem.

TEXT BOOKS

1. Advanced Engineering Mathematics by Kreyszig, John Wiley & Sons.
2. Higher Engineering Mathematics by Dr. B.S. Grewal, Khanna Publishers.

REFERENCES

1. Complex Variables Principles and Problem Sessions By A.K.Kapoor, World Scientific Publishers
2. Engineering Mathematics-III by T.K.V.Iyengar and B.Krishna Gandhi Etc
3. A Text Book Of Engineering Mathematics by N P Bali, Manesh Goyal
4. Mathematics for Engineers and Scientists, Alan Jeffrey, 6th Edit. 2013, Chapman & Hall/CRC
5. Advanced Engineering Mathematics, Michael Greenberg, Second Edition. Person Education
6. Mathematics For Engineers By K.B.Datta And M.A S.Srinivas,Cengage Publications



VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE I-Sem

L	T	P	C
3	1	0	3

ELECTRONIC DEVICES AND CIRCUITS

Course Objectives:
This is a fundamental course, basic knowledge of which is required by all the circuit branch engineers. This course focuses:

1. To familiarize the student with the principle of operation, analysis and design of Junction diode, BJT and FET transistors and amplifier circuits.
2. To understand diode as rectifier. To study basic principle of filter circuits and various types.

UNIT -I: P-N Junction Diode:
Qualitative Theory of P-N Junction, P-N Junction as a Diode, Diode Equation, Volt-Ampere Characteristics, Temperature dependence of VI characteristic, Ideal versus Practical -- Resistance levels (Static and Dynamic), Transition and Diffusion Capacitances, Diode Equivalent Circuits, Load Line Analysis, Breakdown Mechanisms in Semiconductor Diodes, Zener Diode Characteristics.
Special Purpose Electronic Devices: Principle of Operation and Characteristics of Tunnel Diode (with the help of Energy Band Diagram), Varactor Diode, SCR and Semiconductor Photo Diode, UJT and Characteristics

UNIT-II: Rectifiers and Filters:
The P-N junction as a Rectifier, Half wave Rectifier, Full wave Rectifier, Bridge Rectifier, Harmonic components in a Rectifier Circuit, Inductor Filters, Capacitor Filters, L- Section Filters, π- Section Filters, Comparison of Filters, Voltage Regulation using Zener Diode.

UNIT-III: Bipolar Junction Transistor:
The Junction Transistor, BJT Symbol, Transistor Current Components, Transistor Construction, BJT Operation, Common Base, Common Emitter and Common Collector Configurations, Comparison of CB, CE, and CC Amplifier Configurations, Transistor as an Amplifier, Limits of Operation , BJT Specifications,
BJT Small Signal Model: BJT Hybrid model, Determination of h-parameters from Transistor Characteristics, Analysis of a Transistor Amplifier Circuit using h- Parameters.

UNIT-IV: Transistor Biasing and Stabilization:
Operating Point, The DC and AC Load lines, Need for Biasing, Fixed Bias, Collector Feedback Bias, Emitter Feedback Bias, Collector - Emitter Feedback Bias, Voltage Divider Bias, Bias Stability, Stabilization Factors, Stabilization against variations in V_{be} and β, Bias Compensation using Diodes and Transistors, Thermal Runaway, Thermal Stability,

UNIT-V: Field Effect Transistor and Biasing:
Field Effect Transistor: The Junction Field Effect Transistor (Construction, principle of operation, symbol) – Pinch-off Voltage - Volt-Ampere characteristics, FET as Voltage Variable Resistor, The JFET Small Signal Model, MOSFET (Construction, principle of operation, symbol), MOSFET Characteristics in Enhancement and Depletion modes. Biasing FET, Comparison of BJT and FET.

COURSE OUTCOMES:

1. After going through this course the student will be able to:
2. Understand and Analyze the different types of diodes, operation and its characteristics Design and analyze the DC bias circuitry of BJT and FET Design biasing circuits using diodes and transistors.
3. To analyze and design diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.

Head of the Department
Department of Electronics and Communication Engg
Vidya Jyothi Institute of Technology
Hyderabad-500075

TEXT BOOKS:

1. Millman's Electronic Devices and Circuits – J. Millman, C.C.Halkias, and Satyabrata Jit, 2 Ed.,1998, TMH.
2. Electronic Devices and Circuits – Mohammad Rashid, Cengage Learing, 2013
3. Electronic Devices and Circuits – David A. Bell, 5 Ed, Oxford

REFERENCES:

1. Integrated Electronics – J. Millman and Christos C. Halkias, 1991 Ed., 2008, TMH.
2. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, 9 Ed., 2006, PEI/PHI.
3. Electronic Devices and Circuits – B. P. Singh, Rekha Singh, Pearson, 2Ed, 2013.
4. Electronic Devices and Circuits - K. Lal Kishore, 2 Ed., 2005, BSP.
5. Electronic Devices and Circuits – Anil K. Maini, Varsha Agarwal, 1 Ed., 2009, Wiley India Pvt. Ltd.
6. Electronic Devices and Circuits – S.Salivahanan, N.Suresh Kumar, A.Vallavaraj, 2 Ed., 2008, TMH.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE I-Sem

L	T	P	C
4	0	0	4

SIGNALS AND SYSTEMS

Course Objectives:

This is a core subject, basic knowledge of which is required by all the engineers.
This course focuses on:

1. To get an in-depth knowledge about signals, systems and analysis of the same using various transforms.

UNIT-I: Signal Analysis and Fourier Series

Signal Analysis: Introduction to signals, types of signals, operations on signals. Analogy between Vectors and Signals, Orthogonal Signal Space, Signal approximation using Orthogonal functions, Mean Square Error, Closed or complete set of orthogonal functions, Orthogonality in Complex functions.

Fourier Series: Representation of Fourier series, Continuous time periodic signals, Dirichlet's conditions, Trigonometric Fourier Series and Exponential Fourier Series, Properties of Fourier Series, Complex Fourier spectrum.

UNIT-II: Fourier Transforms and Sampling

Fourier Transforms: Deriving Fourier Transform from Fourier series, Fourier Transform of arbitrary signal, Fourier Transform of standard signals, Fourier Transform of Periodic Signals, Properties of Fourier Transform, Fourier Transforms involving Impulse function and Signum function.

Sampling: Sampling theorem – Graphical and analytical proof for Band Limited Signals, Types of Sampling - Impulse Sampling, Natural and Flat top Sampling, Reconstruction of signal from its samples, Effect of under sampling – Aliasing, Introduction to Band Pass sampling.

UNIT-III: Signal Transmission through Linear Systems:

Introduction to systems, types of systems, Linear System, Impulse response, Response of a Linear System, Linear Time Invariant (LTI) System, Linear Time Variant (LTV) System, Transfer function of a LTI system, Filter characteristics of Linear Systems, Distortion less transmission through a system, Signal bandwidth, System bandwidth, Ideal LPF, HPF and BPF characteristics, Causality and Paley-Wiener criterion for Physical realization, Relationship between Bandwidth and Rise time.

UNIT-IV: Convolution and Correlation of Signals:

Concept of convolution in Time domain and Frequency domain, Graphical representation of Convolution, Convolution property of Fourier Transforms, Cross Correlation and Auto Correlation of functions, Properties of Correlation function, Energy density spectrum, Parseval's Theorem, Power density spectrum, Relation between Auto Correlation function and Energy/Power spectral density function,
Relation between Convolution and Correlation, Detection of periodic signals in the presence of Noise by Correlation, Extraction of signal from noise by filtering.

UNIT-V: Laplace Transforms and Z-Transforms

Laplace Transforms: Review of Laplace Transforms (L.T), Partial fraction expansion, Inverse Laplace Transform, Concept of Region of Convergence (ROC) for Laplace Transforms, Constraints on ROC for various classes of signals, Properties of L.T, Relation between L.T and F.T of a signal, Laplace Transform of certain signals using waveform synthesis.

Z–Transforms: Fundamental difference between Continuous and Discrete time signals, Discrete time signal representation using Complex exponential and Sinusoidal components, Periodicity of Discrete time signal using complex exponential signal, Concept of Z- Transform of a Discrete Sequence, Distinction between Laplace, Fourier and Z Transforms, Region of Convergence in Z-Transform, Constraints on ROC for various classes of signals, Inverse Z-transform, Properties of Z-transforms.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500 075

COURSE OUTCOMES:

After going through this course the student will be able to:

1. Represent any arbitrary signals in terms of complete sets of orthogonal functions and understands the principles of impulse functions, step function and signum function.

2. Express periodic signals in terms of Fourier series and express the spectrum and express the arbitrary signal (discrete) as Fourier transform to draw the spectrum.
3. Understands the principle of linear system, filter characteristics of a system and its bandwidth, the concepts of auto correlation and cross correlation and power Density Spectrum.
4. Can design a system for sampling a signal.
5. For a given system, response can be obtained using Laplace transform, properties and ROC of L.T.
6. Study the continuous and discrete signal relation and relation between F.T., L.T. & Z.T, properties, ROC of Z Transform.

TEXT BOOKS:

1. Signals, Systems & Communications - B.P. Lathi, 2013, BSP.
2. Signals and Systems - A.V. Oppenheim, A.S. Willsky and S.H. Nawab, 2 Ed., PHI.
3. Signals and Systems-P. Ramesh Babu, R.Anadanatarajan, Scitech pub,4th Edition

REFERENCES:

1. Signals & Systems – Sanjay Sharma,6th Revised Edition
2. Signals & Systems - Simon Haykin and Van Veen, Wiley, 2 Ed.
3. Signals and Signals – Iyer and K. Satya Prasad, Cengage Learning
4. Signals and Systems – A.Rama Krishna Rao – 2008, TMH.
5. Introduction to Signal and System Analysis – K.Gopalan 2009, Cengage Learning.
6. Fundamentals of Signals and Systems - Michel J. Robert, 2008, MGH International Edition.
7. Signals, Systems and Transforms - C. L. Philips, J.M.Parr and Eve A.Riskin, 3 Ed., 2004, PE.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE I-Sem

L	T	P	C
3	1	0	3

SWITCHING THEORY AND LOGIC DESIGN

Prerequisite Subject : None

Course Objectives:

This course provides in-depth knowledge of switching theory and the design techniques of digital circuits, which is the basis for design of any digital circuit. The main objectives are:

1. To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.
2. To understand common forms of number representation in digital electronic circuits and to be able to convert between different representations.
3. To implement simple logical operations using combinational logic circuits
4. To design combinational logic circuits, sequential logic circuits.
5. To impart to student the concepts of sequential circuits, enabling them to analyze sequential systems in terms of state machines.
6. To implement synchronous state machines using flip-flops.

UNIT-I: Number System and Boolean Algebra And Switching Functions:

Review of number systems, Complements of Numbers, Codes- Binary Codes, Binary Coded Decimal Code and its Properties, Unit Distance Codes, Error Detecting and Correcting Codes.

Boolean Algebra: Basic Theorems and Properties, Switching Functions, Canonical and Standard Form, Algebraic Simplification of Digital Logic Gates, Properties of XOR Gates, Universal Gates, Multilevel NAND/NOR realizations.

UNIT-II: Minimization and Design of Combinational Circuits:

Introduction, The Minimization of switching function using theorem, The Karnaaugh Map Method-Up to Five Variable Maps, Don't Care Map Entries, Tabular Method, VEM method, Design of Combinational Logic: Adders, Subtractors, comparators, Multiplexers, Demultiplexers, Decoders, Encoders and Code converters, Hazards and Hazard Free Relations.

UNIT-III: Sequential Machines Fundamentals and Applications:

Introduction: Basic Architectural Distinctions between Combinational and Sequential circuits, The Binary Cell, Fundamentals of Sequential Machine Operation, Latches, Flip Flops: SR, JK, Race Around Condition in JK, JK Master Slave, D and T Type Flip Flops, Excitation Table of all Flip Flops, Design of a Clocked Flip-Flop , Timing and Triggering Consideration, Clock Skew, Conversion from one type of Flip-Flop to another.

Registers and Counters: Shift Registers, Data Transmission in Shift Registers, Operation of Shift Registers, Shift Register Configuration, Bidirectional Shift Registers, Applications of Shift Registers, Design and Operation of Ring and Twisted Ring Counter, Operation Of Asynchronous And Synchronous Counters.

UNIT-IV: Sequential Circuits-I:

Introduction, State Diagram, Analysis of Synchronous Sequential Circuits, Approaches to the Design of Synchronous Sequential Finite State Machines, Synthesis of Synchronous Sequential Circuits, Serial Binary Adder, Sequence Detector, Parity-bit Generator, Design of Asynchronous Counters, Design of Synchronous Modulo N –Counters.

UNIT-V: Sequential Circuits-II:

Finite state machine-capabilities and limitations, Mealy and Moore models-minimization of completely specified and incompletely specified sequential machines, Partition techniques and Merger chart methods-concept of minimal cover table.

Algorithmic State Machines: Salient features of the ASM chart-Simple examples-System design using data path and control subsystems-control implementations-examples of Weighing machine and Binary multiplier.

COURSE OUTCOMES:

After going through this course the student will be able to:

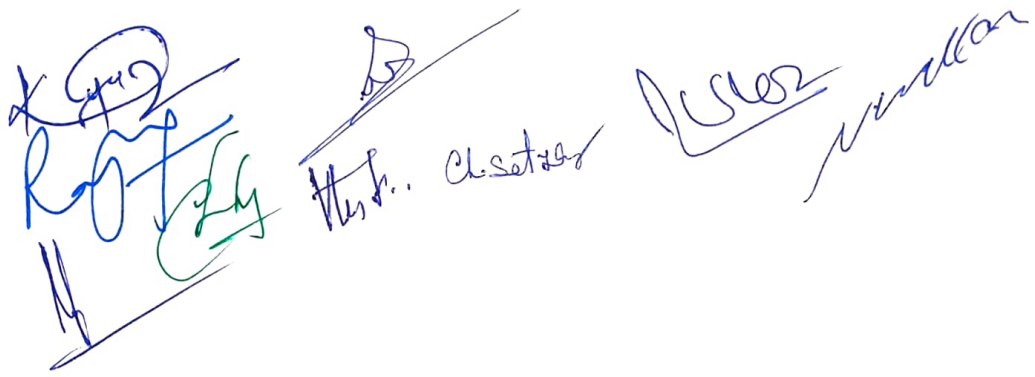
1. Manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, Gray and BCD.
2. Manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions.
3. Design and analyze small combinational circuits and to use standard combinational functions/building blocks to build larger more complex circuits.
4. Design and analyze small sequential circuits and devices and to use standard sequential functions/building blocks to build larger more complex circuits.

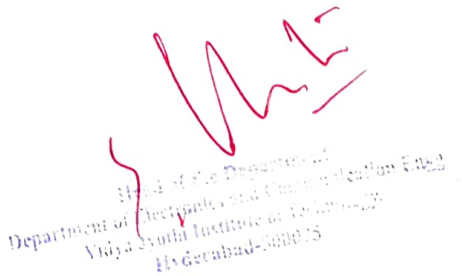
TEXT BOOKS:

1. Switching and Finite Automata Theory- Zvi Kohavi & Niraj K. Jha, 3rdEdition, Cambridge.
2. Digital Design-Morris Mano, Machael Cilette, Pearson Education, 2013.
3. Switching Theory and Logic Design – A Anand Kumar, PHI,2013.

REFERENCES:

1. Digital Design- Morris Mano, PHI, 3rd Edition.
2. Introduction to Switching Theory and Logic Design – Fredriac J. Hill, Gerald R. Peterson, 3rd Ed,John Wiley & Sons Inc.
3. Digital Fundamentals – A Systems Approach – Thomas L. Floyd, Pearson, 2013.
4. Digital Logic Design - Ye Brian and HoldsWorth, Elsevier
5. Fundamentals of Logic Design- Charles H. Roth, Cengage LEanring, 5th, Edition, 2004.
6. DigitalLogic Applications and Design- John M. Yarbrough, Thomson Publications, 2006.
7. Digital Logic and State Machine Design – Comer, 3rd, Oxford, 2013.





VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE I-Sem

L	T	P	C
3	1	0	3

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

Course Objectives:

1. To introduce the basic concepts related to the operation of electrical & electronic measuring instruments.
2. To understand operational and application aspects of CRO (normal and storage).
3. To analyze and apply various AC bridges for the measurements of various physical quantities minimizing errors by following proper precautions.
4. To study the principles behind various transducers and their applications in the measurement of various parameters in electrical and mechanical engineering fields.
5. To effectively integrate hardware and software for the design of computer controlled processes and/or systems.

UNIT - I:

Block Schemantics of Measuring Systems: Performance characteristics, Static characteristics, Accuracy, Precision, Resolution, Types of Errors, Gaussian Error, Root Sum Squares formula, Dynamic Characteristics, Repeatability, Reproducibility, Fidelity, Lag; Measuring Instruments: DC Voltmeters, D' Arsonval Movement, DC Current Meters, AC Voltmeters and Current Meters, Ohmmeters, Multimeters, Meter Protection, Extension of Range, True RMS Responding Voltmeters, Specifications of Instruments.

UNIT - II:

Signal Analyzers: AF, HF Wave Analyzers, Harmonic Distortion, Heterodyne wave Analyzers, Spectrum Analyzers, Power Analyzers, Capacitance-Voltage Meters, Oscillators. Signal Generators: AF, RF Signal Generators, Sweep Frequency Generators, Pulse and Square wave Generators, Function Generators, Arbitrary waveform Generator, Video Signal Generators, and Specifications.

UNIT - III:

Oscilloscopes: CRT, Block Schematic of CRO, Time Base Circuits, Lissajous Figures, CRO Probes, High Frequency CRO Considerations, Delay lines, Applications: Measurement of Time, Period and Frequency Specifications.

Special Purpose Oscilloscopes: Dual Trace, Dual Beam CROs, Sampling Oscilloscopes, Storage Oscilloscopes, Digital Storage CROs.

UNIT - IV:

Transuducers: Classification, Strain Gauges, Bounded, unbounded; Force and Displacement Transducers, Resistance Thermometers, Hotwire Anemometers, LVDT, Thermocouples, Synchros, Special Resistance Thermometers, Digital Temperature sensing system, Piezoelectric Transducers, Variable Capacitance Transducers, Magneto Strictive Transducers.

UNIT - V:

Bridges: Wheat Stone Bridge, Kelvin Bridge, and Maxwell Bridge.

Measurement of Physical Parameters: Flow Measurement, Displacement Meters, Liquid level Measurement, Measurement of Humidity and Moisture, Velocity, Force, Pressure - High Pressure, Vacuum level, Temperature - Measurements, Data Acquisition Systems.

Prof. [illegible]
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500 075

Course Outcomes:

Upon a successful completion of this course, the student will be able to:

- Describe the fundamental concepts and principles of instrumentation.
- Explain the operations of the various instruments required in measurements.
- Apply the measurement techniques for different types of tests.

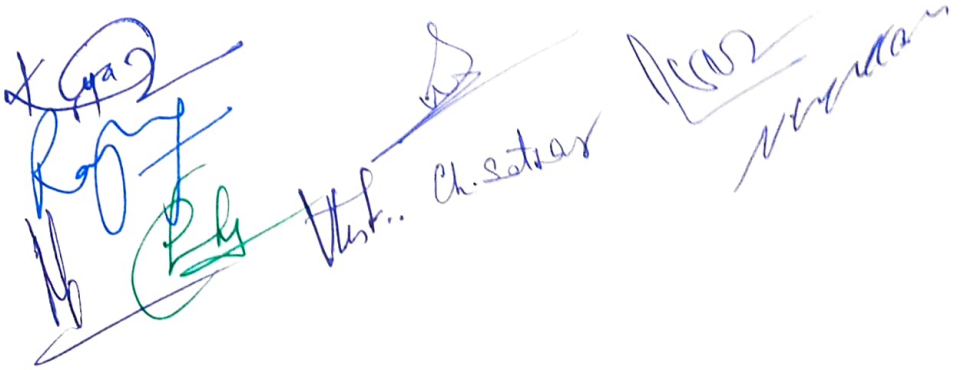
- To select specific instrument for specific measurement function.
- Understand principle of operation, working of different electronic instruments like digital multi meter, vector voltmeter.
- Learners will apply knowledge of different oscilloscopes like CRO, DSO.
- Students will understand functioning, specification, and applications of signal analysing instruments.

TEXTBOOKS:

1. Electronic instrumentation: H.S.Kalsi - TMH, 2nd Edition 2004.
2. Modern Electronic Instrumentation and Measurement Techniques: A.D. Helbincs, W.D. Cooper: PHI, 5th Edition, 2003.

REFERENCES:

1. Electronic Instrumentation and Measurements - David A. Bell, Oxford Uiv. Press, 1997.
2. Electronic Measurements and Instrumentation: B. M. Oliver, J. M. Cage TMH Reprint.
3. Measurement Systems - Emest O. Doebelin and Dhanesh N Manik, 6th Ed., TMH.
4. Electronic Measurements and Instrumentations by K. Lal Kishore, Pearson Education - 2010.
5. Industrial Instrumentation: T. R. Padmanabham Spiriger 2009.



VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE I-Sem

L	T	P	C
4	0	0	4

PROBABILITY THEORY AND STOCHASTIC PROCESS

PREREQUISITES: A Course on engineering mathematics containing elementary probability theory, ordinary and partial differential equations and linear algebra.

Course Objectives:

The primary objective of this course is:

1. To provide mathematical background and sufficient experience so that the student can read, write, and understand sentences in the language of probability theory, as well as solve probabilistic problems in signal processing and Communication Engineering.
2. To introduce students to the basic methodology of "probabilistic thinking" and to apply it to problems.
3. To understand basic concepts of probability theory and random variables, how to deal with multiple random variables, Conditional probability and conditional expectation, joint distribution and density functions.
4. Statistical Independence and mean square estimation.
5. To understand the difference between time averages and statistical averages.
6. Analysis of random process and application to the signal processing in the communication system.
7. To teach students how to apply sums and integrals to compute probabilities, means, and expectations.

UNIT- I : Probability

Probability Introduced through Sets and Relative Frequency, Experiments and Sample Spaces, Discrete and Continuous Sample Spaces, Events, Probability Definitions and Axioms, Mathematical Model of Experiments, Probability as a Relative Frequency, Joint Probability, Conditional Probability, Total Probability, Bayes' Theorem, Independent Events, Bernoulli's trials.

Random Variable:

Definition of a Random Variable, Types of Random Variables, Conditions for a Function to be a Random Variable, Continuous, Discrete and Mixed Random Variables .

UNIT II :Distribution & Density Functions And Operations On One Random Variable:

Distribution and Density functions, and their Properties- Binomial, Poisson, Uniform, Exponential Gaussian, Rayleigh and Conditional Distribution, Methods of defining Conditional Event, Conditional Density function and its properties, problems.

Operations On One Random Variable-Expectation:

Introduction, Expected Value of a Random Variable, Function of a Random Variable ,Moments about the Origin, Central Moments, Variance and Skew, , Chebychev's Inequality, Characteristic Function, Moment Generating Function, Transformations of a Random Variable: Monotonic Transformations for a Continuous Random Variable, Non monotonic Transformations of Continuous Random Variable, Transformation of a Discrete Random Variable.

UNIT III: Multiple Random Variables And Operations On Multiple Random Variables:

Vector Random Variables, Joint Distribution Function and its Properties, Joint density Function and its Properties, Marginal Distribution and density Functions and its Properties, Conditional Distribution and Density – Point Conditioning and Interval conditioning, Statistical Independence, Sum of Two Random Variables, Sum of Several Random Variables, Central Limit Theorem, (Proof not expected). Unequal Distribution, Equal Distributions.

Operations On Multiple Random Variables:

Expected Value of a Function of Random Variables, Joint Moments about the Origin, Joint Central Moments, Joint Characteristic Functions, Jointly Gaussian Random Variables: Two Random Variables case, N Random Variable case, Properties, Transformations of Multiple Random Variables, Linear Transformations of Gaussian Random Variables.

UNIT IV: Stochastic Processes- Temporal Characteristics:
The Stochastic Process Concept, Classification of Processes, Deterministic and Nondeterministic Processes, Distribution and Density Functions, Concept of Stationarity and Statistical Independence. First-Order Stationary Processes, Second-Order and Wide-Sense Stationary, Nth Order and Strict-Sense Stationary, Time Averages and Ergodicity, Mean-Ergodic Processes, Correlation-Ergodic Processes, Autocorrelation Function and Its Properties, Cross-Correlation Function and its Properties, Covariance and Its Properties, Linear system Response: Mean and Mean-squared value, Autocorrelation, Cross-Correlation Functions. Gaussian Random Processes, Poisson Random Process .

UNIT V: Stochastic Processes – Spectral Characteristics:
Power Spectrum and its Properties, Relationship between Power Spectrum and Autocorrelation Function, Cross-Power Density Spectrum and its Properties, Relationship between Cross-Power Spectrum and Cross-Correlation Function.
Spectral Characteristics Of System Response: Power Density Spectrum of Response, Cross-Power Spectral Density of Input and Output of a Linear System.

COURSE OUTCOMES:
After going through this course the student will be able to:
1. Demonstrate knowledge in
   - Probability theory
   - Single and multiple random variables
   - Random processes and their characteristics
2. Analyze operations on single and multiple random variables and processes.
3. Will be able to compute:
   - Simple probabilities using an appropriate sample space.
   - Expectations from probability density functions
   - Least -square & maximum likelihood estimators for engineering problems.
   - Mean and covariance functions for simple random processes.
4. Design solutions for complex engineering problems involving random processes.

TEXT BOOKS

1. Probability, Random Variables & Random Signal Principles - Peyton Z. Peebles, TMH, 4th Edition, 2001.TMH.
2. Probability, Random Variables and Stochastic Processes – Athanasios Papoulis and S. Unnikrishna Pillai, PHI, 4th Edition, 2002.

REFERENCES

1. Probability and random processes with stochastic processes- Mallikarjuna Reddy, Cengae Learning
2. Probability and Random Processes with Application to Signal Processing – Henry Stark and John W.Woods, Pearson Education, 3rd Edition.
3. Probability Methods of Signal and System Analysis. George R. Cooper, Clave D. MC Gillem, Oxford,3rd Edition, 1999.
4. Statistical Theory of Communication - S.P. Eugene Xavier, New Age Publications, 2003
5. Theory of Probability and Stochastic Processes- Pradip Kumar Gosh, University Press

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE/EEE I-Sem

L	T	P	C
0	0	3	2

ELECTRONIC DEVICES AND CIRCUITS LAB
(ECE & EEE)

PART A: (Only for Viva-voce Examination)

Electronic Workshop Practice (In 3 Lab Sessions):

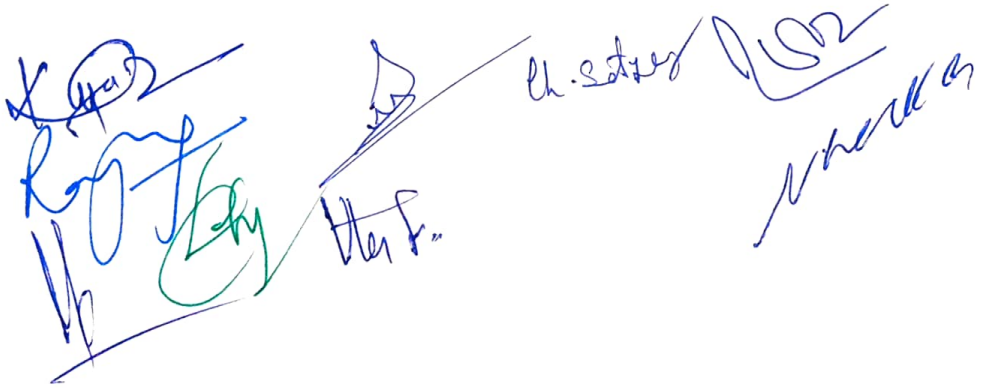
1. Identification, Specifications, Testing of R, L, C Components (Color Codes), Potentiometers, Switches (SPDT, DPDT, and DIP), Coils, Gang Condensers, Relays, Bread Boards, PCB's
2. Identification, Specifications and Testing of Active Devices, Diodes, BJT's, Low power JFET's, MOSFET's, Power Transistors, LED's, LCD's, SCR, UJT.
3. Study and operation of
    a. Multimeters (Analog and Digital)
    b. Function Generator
    c. Regulated Power Supplies
    d. CRO.

PART B: (For Laboratory Examination – Minimum of 10 experiments)

1. Forward & Reverse Bias Characteristics of PN Junction Diode.
2. Zener diode characteristics and Zener as voltage Regulator.
3. Half Wave Rectifier with & without filters.
4. Full Wave Rectifier with & without filters.
5. Input & Output Characteristics of Transistor in CB Configuration and h-parameter calculations.
6. Input & Output Characteristics of Transistor in CE Configuration and h-parameter calculations.
7. FET characteristics.
8. Lissajous patterns using CRO
9. Frequency Response of CC Amplifier.
10. Frequency Response of CE Amplifier.
11. Frequency Response of Common Source FET amplifier .
12. SCR characteristics.
13. UJT Characteristics

Equipment required for Laboratories:

1. Regulated Power supplies (RPS) -0-30 V
2. CRO's -0-20 MHz.
3. Function Generators -0-1 MHz.
4. Multimeters
5. Decade Resistance Boxes/Rheostats
6. Decade Capacitance Boxes
7. Ammeters (Analog or Digital) -0-20 μA, 0-50μA, 0-100μA, 0-200μA, 0-10 mA.
8. Voltmeters (Analog or Digital) -0-50V, 0-100V, 0-250V
9. Electronic Components -Resistors, Capacitors, BJTs,



VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. CSE I-Sem

L	T	P	C
0	0	3	2

EDC & DLD LAB
(CSE & IT)

Minimum 6 experiments from each part.

PART A:

List of Experiments (EDC)

1. Forward & Reverse Bias Characteristics of PN Junction Diode.
2. Zener diode characteristics and Zener as voltage Regulator.
3. Half Wave Rectifier with & without filters.
4. Full Wave Rectifier with & without filters.
5. Input & Output Characteristics of Transistor in CB Configuration and h-parameter calculations.
6. Input & Output Characteristics of Transistor in CE Configuration and h-parameter calculations.
7. FET characteristics.
8. UJT Characteristics

PART B:

List of Experiments (DLD)

1. Verify the functionality of logic gates & Filiflops
2. Verification of De-Morgan's laws
3. Implementation and verification of full adder and full subtractor using logic gates.
4. Implementation and verification of 4X1 multiplexer& Demultiplexer using logic gates.
5. Implementation and verification of 2X4 Decoder and 1X4 De-multiplexer using logic gates.
6. Implementation of given function and verification using IC 74LS151 (8X1 multiplexer).
7. To design and verify the 4-bit ripple counter & decade counter
8. Verify the functionality of 4-bit magnitude comparator using IC 74LS85.
9. Verify the functionality of Universal Shift Register IC 74LS194/195

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE I-Sem

L	T	P	C
0	0	3	2

BASIC SIMULATION LAB

Minimum number of experiments: 15

1. Basic operations on Matrices
2. Generation of various signals and sequences (Periodic and Aperiodic), such as Unit Impulse, Unit step, square, saw tooth, Triangular, Sinusoidal, Ramp, Sinc.
3. Operations on Signals and Sequences such as Addition, multiplication, scaling, Shifting, Folding, computation of Energy and average power.
4. Finding the Even and Odd parts of Signal/sequence and Real and imaginary parts of signal.
5. Convolution between signals and sequences.
6. Auto correlation and cross correlation between signals and sequences.
7. Verification of Linearity and Time Invariance Properties of a given continuous/Discrete system.
8. Computation of unit sample, unit step and sinusoidal responses of the given LTI system and verifying its physical reliability and stability properties.
9. Gibbs Phenomenon.
10. Finding the Fourier Transform of a given signal and plotting its magnitude and phase spectrum.
11. Waveform synthesis using Laplace Transform.
12. Locating the Zeros and Poles and plotting the Pole-Zero maps in S plane and Z-plane for the given transfer function.
13. Generation of Guassian noise (Real and complex), Computation of its mean, M.S. value and its Skew, Kurtosis, and PSD, probability distribution function.
14. Sampling Theorem Verification.
15. Removal of noise by Autocorrelation / Cross correlation.
16. Extraction of Periodic signal masked by noise using correlation.
17. Verification of Weiner-Khinchine Relations.
18. Checking a Random Process for Stationary in Wide sense.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

L	T	P	C
3	1	0	3

PRINCIPLES OF ELECTRICAL ENGINEERING

Course Objectives:
This course introduces the basic concepts of transient analysis of the circuits, the basic two-port network parameters and the design analysis of the filters and attenuators and their use in the circuit theory. The emphasis of this course is laid on the basic operation of DC machines and transformers which includes DC generators and motors, Single-Phase transformers.

UNIT - I:
Transient Analysis (First and Second Order Circuits): Transient response of RL, RC Series, RLC Circuits for DC excitations, Initial Conditions, Solution using Differential Equations approach and Laplace Transform Method

UNIT - II:
Two Port Networks: Impedance Parameters, Admittance Parameters, Hybrid Parameters, Transmission (ABCD) Parameters, Conversion of one of Parameter to another, Conditions for Reciprocity and Symmetry, Inter Connection of Two Port networks in series, Parallel and Cascaded configurations, Image Parameters, Illustration problems

UNIT - III:
Filters and Symmetrical Attenuators: Classification of Filters, Filter Network, Classification of Pass band and Stop Band, Characteristic Impedance in the Pass and Stop bands, Constant-k Low Pass Filter, High Pass Filter, m-derived T-Section, Band Pass Filter and Band Elimination filter, Illustrative problems, Symmetrical Attenuators - T-Type Attenuator, p-Type Attenuator, Brided T-Type Attenuator, Lattice Attenuator

UNIT - IV:
DC Machines: Principle Of Operation Of DC Machines, EMF equation, Types of Generators, Magnetisation and Load Characteristics of DC Generators, DC Motors, Types of DC Motors, Characteristics of DC Motors, Losses and Efficiency, Swinburne's Test, Speed control of DC Shunt Motor, Flux and Armature Voltage control methods.

UNIT - V:
Transformers and Their Performance: Principle of Operation of Single Phase Transformer, Types, Constructional Features, Phasor Diagram on No Load and Load, Equivalent Circuit, Losses and Efficiency of Transformer and Regulation, OC and SC test(Simple Problems), Synchros, Stepper Motors.

COURSE OUTCOMES:
After going through this course the student gets a thorough knowledge on transient analysis of circuits, filters, attenuators, the operation of DC machines and transformers, with which he/she can be able to apply the above conceptual thins to real-world problems and applications.

TEXT BOOKS:
1. Electrical Circuits - A. Chakrabarthy, Dhanipat Rai & Sons.
2. Basic Concepts of Electrical Engineering - PS Subramanyam, BS Publications.

REFERENCE BOOKS:
1. Engineering Circuits Analysis - William Hayt and Jack E. Kemmerly, Mc Graw Hill Company, 7th Edition.
2. Basic Electrical Engineering - S.N. Singh PUI
3. Electrical Circuits - David A. Bell, Oxford Printing Press.
4. Electrical Circuit Analysis - K.S. Suresh Kumar, Pearson Education.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

L	T	P	C
4	0	0	4

ELECTRONIC CIRCUIT ANALYSIS

Course Objectives:

1. To introduce circuit realizations with components such as diodes, BJTs and transistors studied earlier.
2. To give understanding of various types of amplifier circuits such as small signal, cascaded, large signal and tuned amplifiers.
3. To familiarize the Concept of feedback in amplifiers so as to differentiate between negative and positive feedback.

UNIT – I:

Single Stage and Multi Stage Amplifiers

Single Stage Amplifiers: Classification of Amplifiers – Distortion in amplifiers, Analysis of CE, CC, and CB Amplifiers and CE Amplifier with emitter resistance, Miller's Theorem and its dual.

Multi Stage Amplifiers: Analysis of Cascaded RC Coupled amplifiers, Cascode amplifier, Darlington pair, and Different coupling schemes used in amplifiers- RC Coupled amplifiers, Transformer Coupled amplifiers and Direct Coupled amplifiers.

UNIT – II:

BJT Amplifiers and FET Amplifiers

BJT Amplifiers: Logarithms, Decibels, General frequency considerations, Frequency response of BJT amplifier – Analysis at low and high frequencies, effect of coupling and bypass capacitors, The Hybrid- pi (π) – Common Emitter transistor model, CE short circuit current gain, current gain with resistive load, Single stage CE transistor amplifier response, Gain-bandwidth product, Equivalent Circuit of Emitter Follower at higher frequencies.

FET Amplifiers: Basic Concepts, Analysis of CS, CD, CG JFET Amplifiers, Common Source Amplifier with Source resistance.

UNIT –III:

Feedback Amplifiers And Oscillators

Feedback Amplifiers: Classification of amplifiers, Concepts of feedback, Classification of feedback amplifiers, General characteristics of negative feedback amplifiers, Effect of Feedback on Amplifier characteristics, Voltage series, Voltage shunt, Current series and Current shunt Feedback configurations – Simple problems.

Oscillators: Classification of oscillators, Condition for oscillations, RC-phase shift and Wien-bridge oscillators. Generalized analysis of LC oscillators- Hartley and Colpitts Oscillators, Crystal Oscillator, stability of oscillators

UNIT – IV:

Large Signal Amplifiers:

Classification of Power Amplifiers, Class A Power Amplifier, Maximum Value of Efficiency of Class – A Amplifier, Transformer Coupled Amplifier, Class B Power Amplifier, Efficiency of Class B Amplifier, Push Pull and Complimentary Symmetry Class B and Class AB Power Amplifiers – Principle of operation of class – C Amplifier, Distortion in power amplifiers, Transistor Power Dissipation, Heat Sinks.

UNIT – V:

Tuned Amplifiers

Introduction, Q-Factor, Small Signal Tuned Amplifiers with coupling techniques, Effect of Cascading single Tuned amplifiers on Bandwidth, Effect of Cascading Double Tuned amplifiers on Bandwidth, Stagger Tuned Amplifiers, Stability of Tuned amplifiers

COURSE OUTCOMES:

After going through this course the student will be able to:

1. Design and analyze small signal amplifier circuits applying the biasing techniques learnt earlier.

2. Cascade different amplifier configurations to obtain the required overall specifications like Gain, Bandwidth, Input and Output interfacing Impedances.
3. Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications.
4. Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations.

TEXT BOOKS:

1. Integrated Electronics, Jacob Millman, Christos C Halkias, TMH
2. Electronic Devices and Circuits, David A. Bell – 5th Edition, Oxford.
3. Electronic Devices and Circuits, S. Salivahanan, N.Suresh Kumar, A Vallvaraj, 2nd Edition, TMH.

REFERENCES:

1. Introductory Electronic Devices and Circuits (Conventional flow version) – Robert T. Paynter, 7th Edition, 2009, PEI.
2. Microelectronic Circuits – Sedra / Smith – 5th Edition – Oxford, 2009
3. Electronic Circuit Analysis – K. Lal Kishore, BS Publications, 2004.
4. Electronic Devices and Circuits, Anil.K. Maini, Varsha Agrawal, 1st Edition, WILEY.
5. Electronic Devices and Circuit Theory, Robert L.Boylestad, Louis Nashelsky, 9th Edition, Pearson Education.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

L	T	P	C
4	0	0	4

PULSE AND DIGITAL CIRCUITS

Course Objectives

1. To understand the concepts of wave shaping and switching characteristics of diodes and transistors .
2. To analyze clippers and clampers.
3. To analyze and design different types of multivibrators and
4. To analyze time base generators, sampling gates
5. To analyze and design various digital circuits.

UNIT - I

Linear Wave Shaping

High pass, low pass RC circuits, their response for sinusoidal, step, pulse, square, and ramp inputs. High pass RC circuit as differentiator and Low pass RC circuit as integrator, attenuators, RL and RLC circuits and their response for step input, Ringing circuit.

UNIT II

Non-Linear Wave Shaping

Diode clippers, Transistor clippers, clipping at two independent levels, Emitter coupled clipper, Comparators, applications of voltage comparators, clamping operation, Clamping circuit theorem, clamping circuits taking source and diode resistances into account , practical clamping circuits, effect of diode characteristics on clamping voltage, synchronized clampers.

UNIT III

Switching Characteristics of Devices

Diode as a switch, piece wise linear characteristics of diode, Diode Switching Times, temperature variation of saturation parameters, design of transistor as a switch, transistor-switching times, and transistor in saturation.

Sampling Gates

Basic operating principles of sampling gates, Unidirectional diode gate, Bi-directional sampling gates using transistors, Reduction of pedestal in gate circuit, four diode sampling gate, an alternate form of four diode gate, Applications of sampling gates.

UNIT IV

Multivibrators

Analysis and design of Bistable, Monostable, Astable Multivibrators and Schmitt trigger using transistors.

Time Base Generators

General features of a time base signal, methods of generating time base waveform, Miller and Bootstrap time base generators – basic principles, Transistor miller time base generator, Transistor Bootstrap time base generator, Current time base generators, methods of linearity improvements.

UNIT V

Synchronization and Frequency Division

Principles of Synchronization, Frequency division in sweep circuit, Astable relaxation circuits, Monostable relaxation circuits.

Logic Families:

Realization of Logic Gates (OR, AND, NOT) Using Diodes & Transistors, DCTL, RTL, DTL, TTL, ECL logic families ,Characteristics of Logic families and comparison of logic families

COURSE OUTCOMES:

After going through this course the student will be able to:

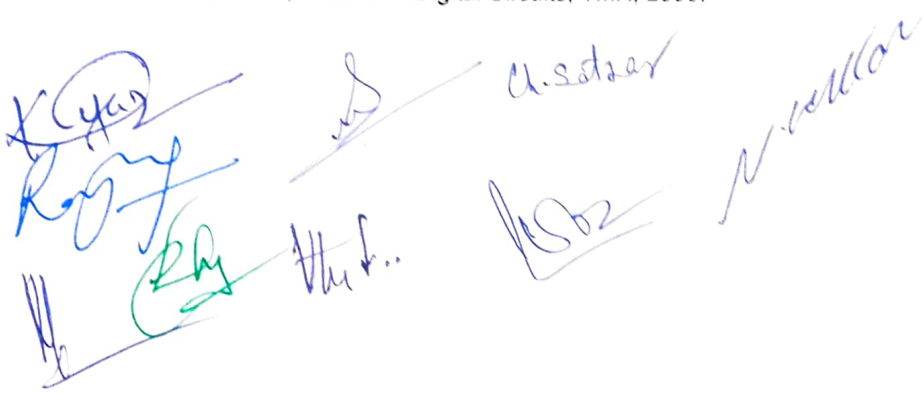
1. Understand the applications of diode as integrator, differentiator, clippers, clampler circuits.
2. Learn various switching devices such as diode, transistor, SCR.
3. Difference between logic gates and sampling gates.
4. Design mutivibrators for various applications, synchronization techniques and sweep circuits.
5. Realizing logic gates using diodes and transistors.

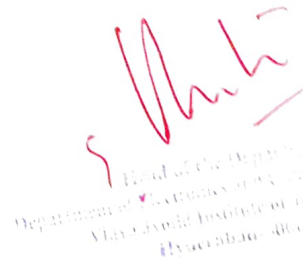
TEXT BOOKS:

1. Jacob Millman, Herbert Taub and Mothiki S. Prakash Rao, Millman's Pulse, Digital and Switching Waveforms, Tata McGraw-Hill,3rd Edition, 2008.
2. David A. Bell, Solid state pulse circuits, PHI, 4TH Edition, 2002

REFERENCES:

1. .A.Anand Kumar, Pulse and Digital Circuits, 2005, PHI.
2. Motheki S. Prakash Rao, Pulse and Digital Circuits, TMH, 2006.





VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

L	T	P	C
4	0	0	4

ELECTROMAGENETIC THEORY AND TRANSMISSION LINES

Course Objectives:

1. To introduce the student to the fundamental theory and concept of electromagnetic waves and transmission lines, and their practical applications.
2. To study the propagation, reflection, and transmission of plane waves in bounded unbounded media.

UNIT - I:

Electrostatics:

Coulomb's Law, Electric Field Intensity - Fields due to Different Charge Distributions, Electric Flux Density, Gauss Law and Applications, Electric Potential, Relations Between E and V, Maxwell's Two Equations for Electrostatic Fields, Energy Density, Illustrative Problems, Convection and Conduction Current, Dielectric Constant, Iotropic and Homogeneous Dielectrics, Continuity Equation, Relaxation Time, Poisson's and Laplace's Equations; Capacitance - Parallel plate, Coaxial, Spherical Capacitors, Illustrative Problems.

UNIT - II:

Magnetostatics:

Biot - Savart's 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 Magnetic Fields, Ampere's Force Law, Inductance and Magnetic Energy, Illustrative Problem.

Maxwell's Equations (Time Varying Fields): Faraday's Law and Transformer EMF, Inconsistency of Ampere's Law 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.

UNIT - III:

EM Wave Characteristics - I: Wave Equations for Conducting and Perfect Dielectric Media, Uniform Plane Waves - Definition, All Relations Between E & H, Sinusoidal Variations, Wave Propagation in Lossless and Conducting Media, Conductors & Dielectrics - Characterization, Wave Propagation in Good Conductors and Good Dielectrics, Polarization, Illustrative Problems.

EM Wave Characteristics - II: Reflection and Refraction of Plane Waves - Normal and Oblique Incidence for both perfect Conductor and perfect Dielectric, Brewster Angle, Critical Angle and Total Internal Reflection, Surface Impedance, Poynting Vector and Poynting Theorem - Applications, Power Loss in a Plane Conductor., Illustrative Problems.

UNIT - IV:

Transmission Lines - I: Types, Parameters, Transmission Line Equations, Primary & Secondary Constants, Expressions for Characteristics Impedence, Propagation Constant, Phase and Group Velocities, Infinite Line Concepts, Losslessness/Low Loss Characterization, Distortion - Condition for Distortionlessness and Minimum Attenuation, Loading - Types of Loading, Illustrative Problems.

UNIT - V:

Transmission Lines - II: Input Impedance Relations, SC and OC Lines, Reflection Coefficient, VSWR. UHF Lines as Circuits Elements; ?/4, ?/2, ?/8 Lines - Impedance Transformations, Significance of Zmin and Zmax, Smith Chart - Configuration and Applications, Single and Double Stub Matching, Illustrative Problems.

COURSE OUTCOMES:

After going through this course the student will be able to:

1. Study time varying Maxwell's equations and their applications in electromagnetic problems.
2. Determine the relationship between time varying electric and magnetic fields and electromotive force.

3. Analyze basic transmissions line parameters in phasor domain.
4. Use Maxwells equations to describe the propagation of electromagnetic waves in vaccum.
5. Show how waves propagate in Dielectrics and lossy media.
6. Demonstrate the reflection and refraction of waves at boundaries.

TEXT BOOKS:

1. Elements of Electromagnetics - Matthew N. O. Sadiku, 4th., Oxford Univ. Press.
2. Electromagnetic Waves and Radiating Systems - E.C. Jordan and K. G. Balmain, 2nd Ed., 2000, PHI.
3. Transmission Lines and Networks - Umesh Sinha, Satya prakashan, 2001, (Tech. India Publications), New Delhi.

REFERENCES :

1. Engineering Electromagnetics - Nathan Ida, 2ndEd., 2005, Springer (India) Pvt. Ltd., New Delhi.
2. Engineering Electromagnetics - William H. Hay Jr. and John A. Buck, 7thEd., 2006, TMH.
3. Electromagnetics Fields Theory and Transmission Lines - G. Dashibhushana Rao, Wiley India, 2013.
4. Networks, Lines and Fields - John D. Ryder, 2ndEd., 1999, PHI.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

L	T	P	C
3	1	0	3

DIGITAL SYSTEM DESIGN

Course Objectives:

This course teaches:

- Designing digital circuits, behaviour and RTL modelling of digital circuits using verilog HDL, verifying these Models and synthesizing RTL models to standard cell libraries and FPGAs.
- Students aim practical experience by designing, modelling, implementing and verifying several digital circuits.

This course aims to provide students with the understanding of the different technologies related to HDLs, construct, compile and execute Verilog HDL programs using provided software tools. Design digital components and circuits that are testable, reusable, and synthesizable.

UNIT - I:

Introduction to VerilLog HDL: Verilog as HDL, Levels of Design Description, Concurrency, Simulation and Synthesis, Function Verification, System Tasks, Programming Language Interface, Module, Simulation and Synthesis Tools

Language Constructs and Conventions: Introduction, Keywords, Identifiers, White Space, Characters, Comments, Numbers, Strings, Logic Values, Strengths, Data Types, Scalars and Vectors, Parameters, Operators.

UNIT - II:

Gate Level Modelling: Introduction, AND Gate Primitive, Module Structure, Other Gate Primitives, Illustrative Examples, Tristate Gates, Array of Instances of Primitives, Design of Flip-Flops with Gate Primitives, Delay, Strengths and Construction Resolution, Net Types, Design of Basic Circuit.

Modelling at Dataflow Level: Introduction, Continuous Assignment Structure, Delays and Continuous Assignments, Assignment to Vector, Operators.

UNIT - III:

Behavioural Modelling: Introduction, Operations and Assignments, Functional Bifurcation, 'Initial' Construct, Assignments with Delays, 'Wait' Construct, Multiple Always Block, Designs at Behavioural Level, Blocking and Non-Blocking Assignments, The 'Case' Statement, Simulation Flow, 'If' an 'if-Else' Constructs, 'Assign- De-Assign' Constructs, 'Repeat' Construct, for loop, 'The Disable' Construct, 'While Loop', Forever Loop, Parallel Blocks, Force-Release, Construct, Event.

UNIT - IV:

Switch Level Modeling: Basic Transistor Switches, CMOS Switches, Bi Directional Gates, Time Delays with Switch Primitives, Instantiation with 'Strengths' and 'Delays' Strength Contention with Trireg Nets.

System Tasks, Functions and Compiler Directives: Parameters, Path Delays, Module Parameters. System Tasks and Functions, File Based Tasks and Functions, Computer Directives, Hierarchical Access, User Defined Primitives.

UNIT - V:

Sequential Circuit Description: Sequential Models - Feedback Model, Capacitive Model, Implicit Model, Basic Memory Components, Functional Register, Static Machine Coding, Sequential Synthesis.

Components Test and Verification: Test Bench - Combinational Circuits Testing, Sequential Circuit Testing, Test Bench Techiniques, Desin Verification, Assertion Verification.

Course Outcomes:

By the end of this course, students should be able to:

- Describe Verilog hardware description, languages(HDL).
- Design digital circuits.
- Write Behavioural models of digital circuits.
- Write Register Transfer Level (RTL) models of Digital Circuits.
- Verify Behavioural and RTL models.

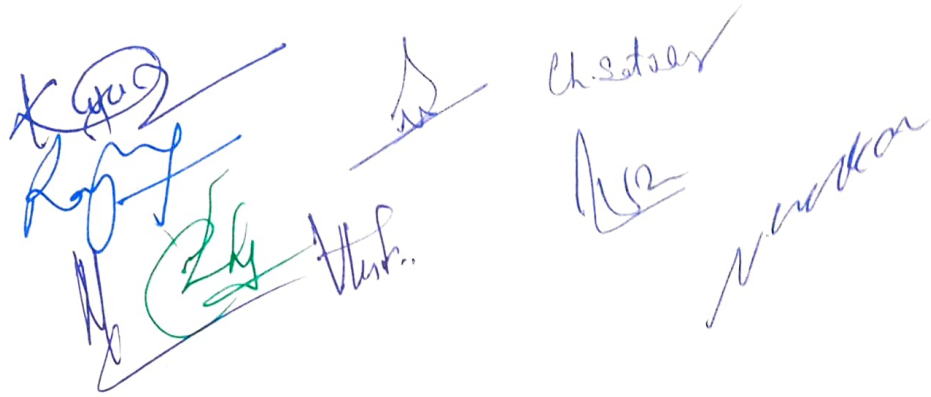
- Describe standard cell libraries and FPGAs
- Synthesize RTL models to standard cell libraries and FPGAs
- Implement RTL models on FPGAs and Testin and Verification

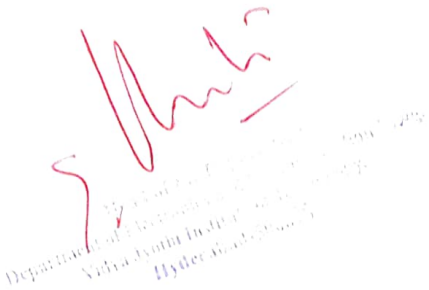
TEXT BOOKS:

1. T.R. Padmanabhan, B Bala Tripura Sundari, Design through Verilog HDL, Wiley 2009.
2. Zainalabdien Navabi, Verliog Digital System Design,TMH, 2nd Edition.

REFERENCE BOOKS:

1. Fundamentals of Digital Logic with Verilog Design - Stephen Brown, Zvonkoc Vranesic, TMH, 2nd Edition.
2. Advanced Digital Logic Design using Verilog, State Machines & Synthesis for FPGA - Sunggu Lee, Cengage Learning, 2012.
3. Verilog HDL - Samir Palnitkar, 2nd Edition, Pearson Education, 2009.
4. Advanced Digital Design with Verilog HDL - Michel D. Ciletti, PHI,2009.





VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

L	T	P	C
0	0	3	2

ELECTRONIC CIRCUITS ANALYSIS LAB

SOFTWARE (Minimum eight experiments to be conducted)

1. Common Emitter Amplifier
2. Common Emitter Amplifier
3. Common Source Amplifier
4. Two Stage RC Coupled Amplifier
5. Current Shunt And Voltage Series Feedback Amplifier
6. Cascode Amplifier
7. Wien Bridge Oscillator Using Transistors
8. RC Phase Shift Oscillator Using Transistors
9. Class A Power Amplifier (Transformer Less)
10. Class B Complementary Symmetry Amplifier
11. Common Base (BJT)/ Common Gate (JFET) Amplifier

HARDWARE (Minimum five experiments to be conducted)

1. Class A Power Amplifier (With Transformer Load)
2. Class C Power Amplifier
3. Single Tuned Voltage Amplifier
4. Hartley & Colpitt's Oscillators
5. Darlington Pair
6. MOS Amplifier

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

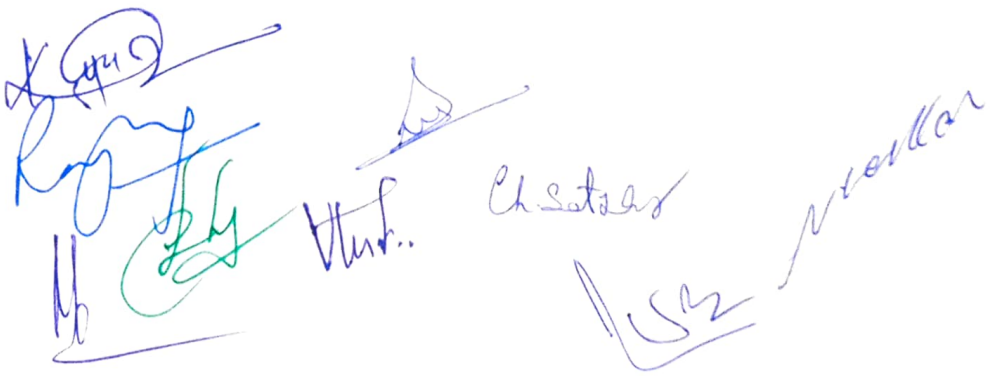
L	T	P	C
0	0	3	2

PULSE AND DIGITAL CIRCUITS LAB

Minimum eight experiments to be conducted.

List of Experiments:

2. Linear Wave Shaping
   a. RC Low Pass Circuit for different time constants
   b. RC High Pass Circuit for different time constants
3. Non-linear wave shaping
   a. Transfer characteristics and response of Clippers:
      i) Shunt and Series Clippers.
      ii) Clipping at two independent levels.
   b. The steady state output waveform of clampers for a square wave input
      i) Positive Clampers.
      ii) Negative Clampers.
4. Switching characteristics of transistor
5. Design a Bistable Multivibrator and draw its waveforms
6. Design an Astable Multivibrator and draw its waveforms
7. Design a Monostable Multivibrater and draw its waveforms
8. Response of Schmitt Trigger circuit for loop gain less than and greater one
9. UJT relaxation oscillator
10. The output – voltage waveform of Boot strap sweep circuit
11. The output – voltage waveform of Miller sweep circuit



VIDYA JYOTHI INSTITUTE OF TECHNOLOGY HYDERABAD

II Year B.Tech. ECE II-Sem

L	T	P	C
2	0	0	2

ENVIRONMENTAL SCIENCE

Course Objectives:

1. Understanding the importance of ecological balance for sustainable development.
2. Understanding the impacts of developmental activities and mitigation measures.
3. Understanding the environmental policies and regulations.

UNIT - I

Ecosystems :

Definition, Scope and Importance ecosystem. Classification, Structure and function of an ecosystem, Food chains, food webs and ecological pyramids. Energy flow in the ecosystem, Biogeochemical cycles, Bioaccumulation, ecosystem value, services and carrying capacity, Field visits.

UNIT - II

Natural Resources :

Classification of Resources: Living and Non - Living resources, water resources: use and over utilization of surface and ground water, floods and droughts, Dams: benefits and problem, Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources, Land resources: Forest resources, Energy resources: growing energy needs, renewable energy source, case studies.

UNIT - III

Biodiversity and its conservation :

Introduction - Definition: genetic, species and ecosystem diversity. Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values -Biodiversity at global, National and local levels. - . India as a mega diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts; Conservation of biodiversity: In-situ and Exsitu conservation. National biodiversity act.

UNIT - IV

Environmental Pollution and Control Technologies:

Environmental Pollution & Control: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and industrial pollution, Ambient air quality standards. Water pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid Waste management composition and characteristics of e - Waste and its management. Pollution control technologies: Wastewater Treatment methods: Primary, Secondary and Tertiary.

Overview of air pollution control technologies, Concept of bioremediation. Global Environmental Problems and Global Efforts: Climate change and impacts on human environment. Ozone depletion and Ozone depleting substances (ODS). Deforestation and desertification. International conventions / Protocols: Earth summit, Kyoto protocol and Mentreal Protocol.

UNIT - V

Environmental Policy, Legislation & EIA:

Environmental Protection act, Legal aspects Air Act- 1981, Water Act, Forest Act, Municipal solid waste management and handling rules, biomedical waste management and handling rules, hazardous waste management and handling rules. EIA: EIA structure, methods of baseline data acquisition. Overview on Impacts of air, water, biological and Socio - economical aspects. Strategies for risk assessment, Concepts of Environmental Management Plan(EMP). Towards Sustainable Future: Concept of Sustainable Development, Population and its explosion, Crazy Consumerism, Environmental Education, Urban Sprawl Human Health, Environmental Ethics, Concept of Green Building, Ecological foot print, Life Cycle Assessment(LCA), Low carbon life style.

COURSE OUTCOMES

After going through this course the student will be able to:

1. The Engineering graduate will understand / evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn help in sustainable development.

TEXT BOOKS:

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission.
2. Environmental Studies by R. Rajagopalan, Oxford University Press.

REFERENCES:

1. Textbook of Environmental Sciences and Technology by M. Anji Reddy, BS Publication.
2. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
3. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela . 2008 PHI Learning Pvt Ltd.
4. Environmental Science by Daniel B. Botkin & Edwards A. Keller, Wiley INDIA edition.
5. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers

Vidya Jyothi Institute of Technology

(An Autonomous Institution)

(Accredited by NBA, Approved by AICTE New Delhi & Permanently Affiliated to JNTUH)
Aziznagar Gate, C.B. Post, Hyderabad-500 075

Dr. P. Venugopal Reddy
Ph. D, F.A.P.A.Sc., F.T.S.A.Sc.,
DIRECTOR

e-mail : director@vjit.ac.in
Ph. No: 9848212388
Hyderabad

Ref: VJIT/Dir.ofc/28/2016-17

Date: 07.03.2017.

OFFICE ORDER

As the Head of the Department and Board of Studies Chairman of ECE, has left the college and new Professors have joined the department, it has been decided by the administration of the college to reconstitut the Board of Studies in ECE, with effect from the Academic year 2017-18.

The list of members of the reconstituted Board of Studies in ECE is,

1.	Dr. Harikrishna Kamatham, Professor & Head, ECE, VJIT	Chairman
2.	Dr. P. Chandra Sekhar Reddy, Professor, JNTUH	University Nominee
3.	Dr. K S Rao, Director, Anurag Group of Institutions	Member
4.	Dr. G. Laxmi Narayana, Principal, Anurag College of Engg., Aushapur.	Member
5.	Dr. P. Chandra Sekhar, Dept., of ECE, Osmania University	Member
6.	Mr. Ch. Satyanarayana, Scientist G, RCI, Hyderabad	Member
7.	Mr. N. Venkatesh, Sr. Vice-President, Redpine Signals, Hyderbad	Member
8.	Dr. V. Usha Sree, Professor, ECE, VJIT	Member
9.	Dr. K. Vasanth, Professor, ECE, VJIT	Member
10.	Mr. M Rajendra Prasad, Assoc. Professor, ECE, VJIT	Member
11.	Mrs. A. Jaya Lakshmi, Assoc. Professor, ECE, VJIT	Member
12.	Mrs. O. Jaya Madhuri, Assoc. Professor, ECE, VJIT	Member
13.	Dr. Z. Nain, Professor, ECE, VJIT	Special Invitee
14.	Dr. P. Ganesan, Professor, ECE, VJIT	special Invitee

- The above Board will frame the syllabi, course structure and all other academic related matters of bot B.Tech & M.Tech courses.
- The above members of the Board of Studies in Electronics and Communication Engineering shall hol the office for a period of two years with effect from the date of issue if this order.
- The members attending the meeting of the Board of Studies are eligible for T.A. and D.A. as per th rules of the Institutions in force.
- The members are also requested to intimate this office in case if any change in their address an designation.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

(Prof. P.Venugopal Reddy)

Copy to all members

BOARD OF STUDIES

DEPARTMENT OF E.C.E

Held on 7-April- 2017

Vidya Jyothi Institute of Technology

Minutes of the Board of studies of Dept. of Electronics and Communication Engineering meeting held on 7th April 2017

at 12.00 P.M in Board Room

The following members were present in the meeting.

S.No	Name of the Member	Designation	Signature
1	Dr. Harikrishna Kamatham, Professor & Head ECE, VJIT.	Chairman	
2	Dr. P. Chandra Sekhar Reddy, Assoc. Professor, JNTUH.	University Nominee	
3	Dr. K S Rao, Director, Anurag Group of Institutions.	Member	
4	Dr. G. Laxmi Narayana, Principal, Anurag College of Engg., Aushapur.	Member	
5	Dr. P. Chandra Sekhar, Dept. of ECE, Osmania University	Member	
6	Mr. Ch. Satyanarayana, Scientist G, RCI, Hyderabad.	Member	
7	Mr. N. Venkatesh, Sr. Vice – President, Redpine Signals, Hyderabad.	Member	
8	Dr. V. Usha Shree, Professor, ECE, VJIT.	Member	
9	Dr. K. Vasanth, Professor, ECE, VJIT.	Member	
10.	Mr. M Rajendra Prasad, Assoc. Professor, ECE, VJIT.	Member	
11.	Mrs. A. Jaya Lakshmi, Assoc. Professor, ECE, VJIT.	Member	
12.	Mrs. O. Jaya Madhuri, Assoc. Professor, ECE, VJIT.	Member	
13.	Dr. Z. Nain, Professor, ECE, VJIT.	Special Invitee	
14.	Dr. P. Ganesan, Professor, ECE, VJIT.	Special Invitee	

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Aziznagar-500075

Item No. 1: Presentation of 3rd Year I Semester B.Tech Syllabi

a). The Chairman presented the syllabi of three subjects of B.Tech III Year I Semester viz.:

1. Analog Communications
2. Linear & Digital IC Applications
3. Control Systems Engineering

b). The Chairman also presented the syllabi of Professional and Open Electives to be offered during III year I semester. The titles of the subjects are;

Professional Elective - 1

1. Computer Organization and Architecture
2. Soft Computing
3. Biomedical Instrumentation

Open Elective - 1

1. Introduction to Microcontrollers & Applications
2. Basic Electronics & Instrumentation

c). Thirdly, the Chairman presented the syllabi of Labs of III year I semester. The Labs are:

1. Analog Communications Lab
2. Linear & Digital IC Applications Lab

Item No. 2: Presentation of 3rd Year II Semester B.Tech Syllabi

a). The Chairman presented the syllabi of three subjects of B.Tech III Year II Semester viz.:

1. VLSI Design
2. Digital Signal Processing
3. Microprocessors and Microcontrollers

b). The Chairman also presented the syllabi of Professional and Open Electives to be offered during III year II semester. These are:

Professional Elective - 2

1. Optical Communications
2. Programming in MATLAB
3. Satellite & Wireless Communication

Open Elective - 2

1. Fundamentals of Embedded Systems
2. Principles of Communications

c). Finally, the Chairman also presented the syllabi of III year II semester Labs.

Laboratories

1. Microprocessors and Microcontrollers Lab
2. Digital Signal Processing & e-CAD Lab

Item No. 3: Presentation of 4th Year I Semester B.Tech Laboratories.

The Chairman presented the syllabi of Labs to be offered during IV year I semester

1. Embedded System Design Lab
2. Microwave & Digital Communications Lab

Item No. 4: Discussion regarding the Panel of examiners

The Chairman emphasized the necessity of Panel of Examiners. Their services will be utilized in the preparation of End-Semester Question paper(s), Evaluation of End-Semester Examination Answer Scripts. They will be paid remuneration as per the recommendations of College Finance Committee.

Resolutions

After discussing various aspects of the syllabi the committee passed the following resolution.

Resolution (1): The members after thorough discussion approved the syllabi of III – I, III – II theory and labs as per the subject titles in Annexure – I, and IV – I Labs as per Annexure -IV.

Noted and Approved.

Resolution (2): The BoS Chairman is authorized to prepare the Panel of examiners for both B.Tech III Year I &II Semesters and IV –I Labs.

Noted and Approved.

Signatures of the Members Present:

1. 2. 3.

4. 5. 6.

7. 8. 9.

10. 11. 12.

13. 14.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

ANNEXURE-I

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE STRUCTURE FOR B.TECH III YEAR

III B.Tech I Sem ECE:

S.No.	Subject Code	Subject Name	Lectures			Credits
			L	T	P	
1	PC	Analog Communications	4	0	0	3
2	PC	Linear & Digital IC Applications	3	1	0	4
3	ES	Control Systems Engineering	3	1	0	3
4	PE1	**Professional Elective – 1:**	4	0	0	3
		1. Computer Organization and Architecture				
		2. Soft Computing				
		3. Biomedical Instrumentation				
5	OE1	**Open Elective – 1:**	4	0	0	3
		1. Introduction to Microcontrollers & Applications				
		2. Basic Electronics & Instrumentation				
6	PC	Analog Communications Lab	0	0	3	2
7	PC	Linear & Digital IC Applications Lab	0	0	3	2
8	BS	Advanced English Language & Communication Skills Lab	0	0	3	2
9	T&P	Training & Placement Subject - I	2	0	0	2
	Total		**20**	**2**	**9**	**24**

III B.Tech II Sem ECE:

S.No.	Subject Code	Subject Name	Lectures			Credits
			L	T	P	
1	PC	VLSI Design	3	1	0	3
2	PC	Digital Signal Processing	3	1	0	3
3	PC	Microprocessors and Microcontrollers	4	0	0	3
4	BS	Managerial Economics and Financial Analysis	4	0	0	3
5	PE2	**Professional Elective – 2:**	4	0	0	3
		1. Optical Communications				
		2. Programming in MATLAB				
		3. Satellite & Wireless Communications				
6	OE2	**Open Elective – 2:**	4	0	0	3
		1. Fundamentals of Embedded Systems				
		2. Principles of Communications				
7	PC	Microprocessors and Microcontrollers Lab	0	0	3	2
8	PC	Digital Signal Processing & e-CAD Lab	0	0	3	2
9	T&P	Training & Placement Subject - II	2	0	0	2
	Total		**24**	**2**	**6**	**24**

Head of the Department
Department of Electronics & Communication Engg.
Vasavi College of Engineering
Hyderabad-500 031

ANNEXURE-II

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

ANALOG COMMUNICATIONS

Pre Requisites

- Signals and Systems
- Electronic Devices And Circuits
- Probability Theory and Stochastic Process

Course objectives

In this course it is aimed to introduce to the students with

- To illustrate the types of communication systems and need for Modulation.
- To enumerate the time and frequency domain analysis of basic modulation schemes and their importance.
- To analyze the effect of noise on different modulation techniques.
- To understand the Characteristics of Receiver and its types.

UNIT-I

Amplitude Modulation: Introduction to communication system - Need for modulation - Amplitude Modulation - Time - frequency domain description- power relations. Generation of AM waves - Detection of AM Waves -Double side band suppressed carrier modulators - time -frequency domain description - Generation of DSBSC Waves - Balanced Modulators. Coherent detection of DSB - SC Modulated waves.

UNIT-II

SSB Modulation: Frequency domain description - Frequency discrimination - Generation of AM SSB Modulated Wave - Time domain description- Demodulation of SSB - Waves Vestigial side band modulation: Frequency description – Generation- Time domain description, Envelope detection - Comparison of AM Techniques - Applications.

UNIT-III

Angle Modulation Concepts: Basic concepts -FM: Single tone frequency modulation, Spectrum Analysis of Sinusoidal FM Wave - Narrow band FM - Wide band FM - Constant Average Power - Transmission bandwidth of FM - Wave Generation of FM Waves- direct indirect Method - Detection of FM Waves - FM transmitter block diagram -Comparison of FM & AM.

UNIT-IV

Noise: Noise - Analog noises - Resistive noise (thermal) - shot noise - extraterrestrial noise - white noise - Narrow band noise - arbitrary noise sources - modeling of noise sources- average noise bandwidth - effective noise temperature - average noise figures -cascaded networks. Noise in DSB& SSB System – AM System - Angle Modulation System - Threshold effect - noise triangle -Pre-emphasis - De-emphasis.

UNIT-V

Receivers: Radio Receiver - Receiver Types - RF section - Characteristics - Frequency changing and tracking - Intermediate frequency –AGC - FM Receiver - Comparison with AM Receiver - Amplitude limiting.

Pulse Modulation: Types of Pulse modulation, PAM- PWM: Generation & demodulation of PWM, PPM, Generation and demodulation of PPM, Time Division Multiplexing.

TEXT BOOKS

1. Principles of Communication Systems – H Taub& D. Schilling, GautamSahe. TMH, 2007 3rd Edition
2. Principles of Communication Systems - Simon Haykin. John Wiley, 2r" Edition,.

REFERENCES

1. Electronics & Communication System - George Kennedy and Bernard Davis, 4th Edition TMH 2009
2. Analog Communications- KN Hari Bhat & Ganesh Rao, Pearson Publications, 2nd Edition 2008.
3. Communication Systems Second Edition - R.P. Singh. SP Sapre, TMH, 2007
4. Communication Systems - B.P Lathi, BS Publication, 2006

Course Outcomes

At the end of the course the student should be able to

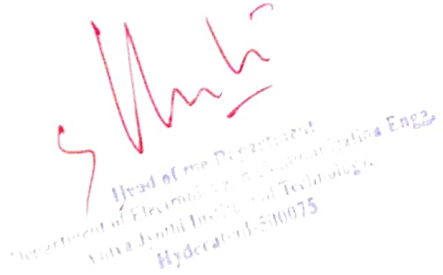
CO1: Understand the importance of probability theory and the properties of Fourier Transformfor the Analysis of Analog Communication Systems.

CO2: Interpret the Time and Frequency domain analysis of different analog modulation schemes.

CO3: Analyze the given communication system for computing the transmission bandwidth, Power requirement based on the used modulation schemes.

CO4: Design and Utilize different modulation and demodulation schemes used in Real time.

CO5: Differentiate the various divergent noise and its effects on analog modulation schemes, also the various types of receiver characteristics.



VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

LINEAR AND DIGITAL IC APPLICATIONS

Pre Requisites

- Switching Theory and logic Design
- Pulse and Digital Circuits
- Electrical Circuits

Course Objectives

In this course it is aimed to introduce to the students with

- To introduce the basic building blocks of linear integrated circuits & its applications.
- To elaborate the theory of ADC and DAC with its specifications.
- To explain and develop the applications of Timers (555), PLL (565) and Voltage regulators (78XX, 79XX).
- To relate the various Logic families.
- To summarize the combinational and sequential logic circuits using 74XX IC's.

UNIT-I

Operational Amplifier: Introduction, Classification of IC's, IC chip size and circuit complexity, Ideal and Practical Op-Amp, Op-Amp Characteristics, DC and AC Characteristics, Features of 741 Op-Amp

Applications of Op-Amp: Inverting, Non-Inverting, Differential modes, Instrumentation, Sample and Hold Circuit, AC Amplifier, Differentiator and Integrator, Comparator, Schmitt Trigger, waveform Generators - Triangular, Saw tooth, Square wave.

UNIT-II

Active filters: Introduction to Active Filters, Characteristics of Band pass, Band rejects and All Pass Filters, Analysis of 1st order LPF & HPF Butterworth Filters,

D to A and A to D Converters: Introduction, Basic DAC techniques, Different types of DACs-Weighted resistor DAC, R-2R ladder DAC, Inverted R-2R DAC, Different Types of ADCs - Parallel Comparator Type ADC, Counter Type ADC, Successive Approximation ADC and Dual Slope ADC, DAC and ADC Specifications

UNIT-III

Timer and Phase Locked Loops: IC555 Timer - Functional Diagram, Monostable and Astable Operations, Applications. IC565 PLL - Block Schematic, Description of Individual Blocks, VCO Applications.

Voltage regulator: Introduction to Voltage Regulators, Features & Internal Operation of 723 Regulator, Three Terminal Voltage Regulators (78XX,79XX).

UNIT-IV

Digital Integrated Circuits: Comparison of Various Logic Families, TTL Logic ,CMOS Logic TTL Driving CMOS & CMOS Driving TTL, Combinational Logic ICs - Specifications and Applications of TTL-74XX Series ICs - Code Converters, Decoders, Demultiplexers, LED & LCD decoders with drivers , Encoder, Multiplexer, Demultiplexer, Parallel Binary Adder/ Subtractor, Magnitude Comparators.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

UNIT-V

Sequential Logic IC's and Memories: 74XX Series IC's - All Types of Flip-flops, Conversion between Flip-flops Synchronous Counters, Decade Counters, Shift Registers, Applications of Shift Registers

TEXT BOOKS

1. D. Roy Choudhury, Shail B. Jain (2012), Linear Integrated Circuit, 4th edition, New Age International Pvt. Ltd.,
2. Floyd, Jain (2009), Digital Fundamentals, 8th edition, Pearson Education

REFERENCES

1. Ramakant A. Gayakwad, (2012), OP-AMP and Linear Integrated Circuits, 4th edition,.
2. Sergio Franco (1997), Design with Operational Amplifiers and AnalogIntegrated Circuits, McGraw Hill.
3. Gray, Meyer (1995), Analysis and Design of Analog Integrated Circuits, Wiley International.
4. John F. Wakerly (2007), Digital Design Principles and practices, Prentice Hall / Pearson Education.

Course Outcomes

At the end of the course the student should be able to

CO1: Ability to elucidate the characteristics of ideal and practical operational amplifier

CO2: Apply knowledge of mathematics to analyze operational amplifier in inverting and non-inverting configuration modes and develop the applications of IC 741.

CO3: Examine and infer the functionality of 555 timer and 565 PLL Integrated circuits.

CO4: Interpret the concepts and features of Analog to Digital and Digital to Analog converter in Integrated circuits form.

CO5: Evaluate the various Combinational and sequential logic using 74XX Digital Integrated circuits.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

CONTROL SYSTEMS ENGINEERING

Pre Requisites

- Signals & Systems
- Mathematics-I

Course Objective

In this course it is aimed to introduce to the students with

- To introduce the basic concepts of control theory on systems.
- To obtain the basic knowledge on mathematical modelling of systems.
- To contrast the time & frequency domain analysis of control systems.
- To state the effects of stability on Analog systems.
- To understand the modelling of nonlinear control systems using space state approach.

UNIT-I

Introduction: Concepts of Control Systems- Open Loop and closed loop control systems and their differences- Different examples of control systems- Classification of control systems, Feed-Back Characteristics, Effects of feedback. Mathematical models – Differential equations, Impulse Response and transfer functions - Translational and Rotational mechanical systems

Transfer Function Representation: Transfer Function Representation- Block diagram representation of systems -Block diagram algebra – Representation of System by Signal flow graph - Reduction using mason's gain formula.

UNIT-II

Time Response Analysis: Standard test signals - Time response of first order systems – Characteristic Equation of Feedback control systems, Transient response of second order systems - Time domain specifications – Steady state response - Steady state errors and error constants – Effects of Proportional derivative, proportional integral systems, PID Controller

UNIT-III

Stability Analysis in S-Domain: The concept of stability – Routh's stability criterion – qualitative stability and conditional stability – limitations of Routh's stability **Root Locus Technique**: The root locus concept - construction of root loci-effects of adding poles and zeros to G(s)H(s) on the root loci.

UNIT-IV

Frequency Response Analysis: Introduction, Frequency domain specifications-Bode diagrams-Determination of Frequency domain specifications and transfer function from the Bode Diagram-Phase margin and Gain margin-Stability Analysis from Bode Plots. Polar Plots, concept of Nyquist Stability Criterion. Introduction to Compensation techniques

UNIT-V

State Space Analysis Of Continuous Systems: Concepts of state, state variables and state model, derivation of state models from block diagrams, Diagonalization- Solving the Time

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

invariant state Equations- State Transition Matrix and it's Properties – Concepts of Controllability and Observability

TEXT BOOKS

1. Automatic Control Systems 8th edition – B. C. Kuo 2003– John wiley and son's.,
2. Control Systems Engineering – I. J. Nagrath and M. Gopal, New Age International (P) Limited, Publishers, 2nd edition.

REFERENCES

1. Control Systems 2nd Edition, A. Anand Kumar- Prentice Hall of India Pvt. Ltd.,
2. Control Systems Engineering,-Palani 2nd Edition Mcgraw Hill Education
3. Control Systems by N.K.Sinha, New Age International (P) Limited Publishers, 3rd Edition.
4. Control Systems Engg. by NISE 3rd Edition – John wiley
5. "Modelling& Control Of Dynamic Systems" by Narciso F. Macia George J. Thaler, Thomson Publishers.

Course Outcomes

At the end of the course the student should be able to

CO1: Demonstrate and understand the fundamentals of control systems.

CO2: Determine and use models of physical systems in different forms suitable for use in the analysis and design of control systems.

CO3: Relate the time and frequency-domain responses of first and second-order systems to step and sinusoidal inputs.

CO4: Examine the stability of a closed-loop control system

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

COMPUTER ORGANIZATION AND ARCHITECTURE

(Professional Elective-I)

Pre Requisites

- Switching theory & Logic Design

Course Objectives

In this course it is aimed to introduce to the students with

- To understand the basic structure and operation of a digital computer.
- To Interpret the various memory system and input / output organization involved in system design
- To illustrate the basics of Basic Computer design
- To explain the various features of Microprogrammed control, arithmetic operations and the process involved in Multiprocessor for system design.

UNIT-I

Structure Of Computers: Computer types, functional units, basic operational concepts, Von Neumann architecture, bus structures, software, performance, multiprocessors and multicomputer, data representation, fixed and floating point and error detecting codes.

Register Transfer and Micro Operations: Register transfer language, register transfer, bus and memory transfers, arithmetic micro operations, shift micro operations, arithmetic logic shift unit

UNIT-II

Basic Computer Organization and Design: Instruction codes, computer registers, computer instructions, instruction cycle, timing and control, memory reference instructions, input, output and interrupt.

Central Processing Unit: stack organization, instruction formats, addressing modes, data tra nsfer and manipulation, program control, reduced instruction set computer (RISC).

UNIT-III

Micro Programmed Control: Control memory, address sequencing, micro program example, and design of control unit.

Computer Arithmetic: Addition and subtraction, multiplication and division algorithms, floating point arithmetic operation, decimal arithmetic unit, and decimal arithmetic operations.

UNIT-IV

The Memory System: Basic concepts, semiconductor RAM types of read only memory (ROM), cache memory, performance considerations, virtual memory, secondary storage raid, direct memory access (DMA).

UNIT-V

Multiprocessors: Characteristics of multiprocessors, interconnection structures, inter Processor arbitration, inter processor communication and synchronization, cache Coherence, shared memory multiprocessors.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

TEXT BOOKS

1.M. Moris Mano (2006), Computer System Architecture, 3rd edition, Pearson/PHI, India
2.Carl Hamacher, Zvonks Vranesic, SafeaZaky (2002), Computer Organization, 5th edition, McGraw Hill, New Delhi, India.

REFERENCES

1.William Stallings (2010), Computer Organization and Architecture- designing for performance, 8th edition, Prentice Hall, New Jersy.
2.Andrew S. Tanenbaum (2006), Structured Computer Organization, 5th edition, Pearson Education Inc, New Jersey.
3.Sivarama P. Dandamudi (2003), Fundamentals of Computer Organization and Design, Spri nger Int. Edition, USA.

Course Outcomes

At the end of the course the student should be able to

CO1: Recall the structure and organization involved in digital computer design.
CO2: Identify the different memory and input- output system involved in system design.
CO3: Understand the basics of computer organization and its design on program control and computer arithmetic operations.
CO4: Comprehend the various details of multiprocessor in computer design

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

SOFT COMPUTING
(Professional Elective-I)

Pre Requisite

- Switching Theory and Logic Design

Course Objectives

In this course it is aimed to introduce to the students with

- To familiarize with various soft computing frameworks for engineering applications.
- To introduce the ideas of different neural networks and to provide the mathematical model of various networks.
- To illustrate and analyze the concepts of fuzzy logic involved in various systems
- To interpret the various stages involved in optimization of engineering problems using Genetic Algorithm.

UNIT-I

Introduction: Introduction of soft computing - soft computing vs. hard computing- Soft computing techniques- Hybrid Systems-Applications of soft computing.

Biological Neural Network-Neuron- Nerve structure and synapse- Artificial Neuron and its model- - Neural network architecture- single layer and multilayer feed forward networks- Supervised and unsupervised Learning- activation functions-Basic Terminologies of ANNs.

UNIT-II

Artificial Neural Networks: McCulloch Pitts neuron model- Hebb net – Perception - Adaline and Madaline- Radial Basis Function Network- Pattern Association – Hetero Associative neural network – Auto associative net - Hopfield networks – Kohonen's self-organization maps – Counter propagation – Back propagation neural network.

UNIT-III

Introduction to Fuzzy Logic: Introduction to Classical and Fuzzy sets – fuzzy set operations- fuzzy relations – Membership functions Fuzzification- inference and defuzzification – Fuzzy to crisp conversion – fuzzy rules – fuzzy approximate reasoning.

UNIT-IV

Fuzzy Logic Control System: Introduction to fuzzy logic modeling and control- Fuzzy logic controller — Fuzzy knowledge and rule bases- Fuzzy decision making logic – design of fuzzy logic controller – Fuzzy based Temperature controller –Fuzzy modeling and control schemes for nonlinear systems

UNIT-V

Genetic Algorithm: Introduction —Biological Background-Basic Operators and Terminologies in GAs —- Fitness Computations, Encoding, Selection, Cross over, Mutation - – Simple GA -Generational cycle – General Genetic Algorithm – Convergence of GA – Constraints in GA – Classification of Genetic Algorithm –Applications and limitations of GA - Simple problems.

Head of the Department of Electronics and Communication Engg. Vidya Jyothi Institute of Technology, Hyderabad-500075

TEXT BOOKS

1. J.S.R.Jang, C.T.Sun and E.Mizutani, Neuro-Fuzzy and Soft Computing, PHI, 2004, Pearson Education.
2. LaureneFausett, Fundamentals of Neural Networks, Prentice Hall, Englewood cliffs.N.J.
3. Timothy J.Ross, Fuzzy logic with Engineering Applications; McGraw Hill, 1997.
4. Goldberg, D.E "Genetic Algorithms: Search, Optimization and Machine Learning", Addison Wesley, N.Y, 1989.
5. S.N. Sivanandan and S.N. Deepa, Principles of Soft Computing, Wiley India, 2007. ISBN: 10: 81-265-1075-7

REFERENCES

1. Klir G.J. and Yuan B.B, Fuzzy sets and fuzzy logic, Prentice Hall of India, 1997. 2. Kosko.B, "Neural Networks and Fuzzy systems", PHI, 1992.
2. Driankov D., Helledorn H., M.Reinframe, "An Introduction to Fuzzy Control", Narosa Publishing Co., 1996.
3. S. Rajasekaran and G.A.V.Pai, Neural Networks, Fuzzy Logic and Genetic Algorithms, PHI, 2003. 2. Timothy J.Ross, Fuzzy Logic with Engineering Applications, McGraw-Hill, 1997.

Course Outcomes

At the end of the course the student should be able to

CO1: Learn about soft computing techniques and their applications
CO2: Analyze various neural network architectures
CO3: Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems
CO4: Analyze and apply genetic algorithms to combinatorial optimization
CO5: Assess and compare solutions by various soft computing approaches for a given problem.
CO6: Efficiently utilize existing software tools to solve real time problems using a soft computing approach

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

BIOMEDICAL INSTRUMENTATION

(Professional Elective-I)

Pre Requisites

- Electronic Measurement and Instrumentation
- Pulse and Digital Circuits

Course Objectives

In this course it is aimed to introduce to the students with

- To explain the need for biomedical instrumentation and difficulties involved in Living system measurement.
- To identify the electrode theory on living system and the responses from it.
- To illustrate the various measurements involved in human cardiovascular and respiratory system.
- To interpret the technique involved in Bio telemetry.

UNIT-I

Introduction: The age of Biomedical Engineering, Development of Biomedical Instrumentation, Man–Instrumentation system, Components, Physiological system of the body, Problem encountered in measuring a living system. Transducers & Electrodes: The Transducers & Transduction principles, Active transducers, Passive Transducers, Transducer for Biomedical Applications.

UNIT-II

Sources of Bioelectric potentials: Resting & Action potentials, propagation of active potential, The Bioelectric potentials-ECG, EEG, EMG, and Invoked responses Electrodes: Electrode theory, Biopotential Electrodes–Microelectrodes Body surface electrodes, Needle Electrodes, Biochemical Transducers, Reference electrodes, PH electrodes, Blood Gas electrodes.

UNIT-III

Cardiovascular Measurements: Electrocardiography – ECG amplifiers, Electrodes & leads, ECG recorders - Three channel, Vector Cardiographs, ECG system for stress testing, Continuous ECG recording (Holter recording), Blood pressure measurement, Blood flow measurement, Heart sound measurements. Patient Care & Monitoring- Elements of Intensive Care monitoring, patient monitoring displays, Diagnosis, Calibration & Reparability of patient monitoring equipment, pacemakers & Defibrillators.

UNIT-IV

Measurements in Respiratory system: Physiology of respiratory system Measurement of breathing mechanics- Spiro meter, Respiratory Therapy equipment's: Inhalators ventilators & Respirators, Humidifiers, Nebulizers & Aspirators. Diagnostic Techniques: Ultrasonic Diagnosis Echocardiography, Echo Encephalography, Ophthalmic scans, X-Ray & Radio-isotope Instrumentation, Computerized Axial Tomography Scanners

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT-V

Bio Telemetry: The components of Biotelemetry system Implantable units, Telemetry for ECG measurements during exercise, for Emergency patient monitoring. Physiological Effects of Electric Current Safety of Medical Electronic Equipments, Shock hazards from Electrical equipment and prevention against them.

TEXT BOOKS

1. Cormwell / "Biomedical Instrumentation and Measurements"/ Prentice Hall (India).

REFERENCES

1. Khandpur R.S./ "Biomedical Instrumentation"/ Tata McGraw-Hill.
2. Tompkins / "Biomedical DSP: C Language Examples and Laboratory Experiments for the IBM PC"/ Prentice Hall (India).

Course Outcomes

At the end of the course the student should be able to

CO1: Summarize the requirement of biomedical instrumentation and adversity involved in human measurement.

CO2: Utilize the concept of electrode and its responses used in real time.

CO3: Outline the divergent responses involved in cardiovascular and respiratory system.

CO4: Compare the various process involved in bio telemetry.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

INTRODUCTION TO MICROCONTROLLERS AND APPLICATIONS

(Open Elective – I)

Course Objectives:

In this course it is aimed to introduce to the students with

- To describe the architecture of 8051 with its special function registers.
- To develop and analyze the programming concepts of 8051.
- To understand the various interfacing techniques pertaining to system design.
- To express and infer advanced architectures using ARM Controllers.

UNIT-I

Overview Microcontroller: Microprocessors & microcontrollers- Comparison -Types – Selection criteria – Architecture – resources – Memory (RAM, ROM, DMA)- Watch dog timer, PWM – Buses- power down modes – EPROM – Interrupts- Serial communication

UNIT-II

8051 Family Microcontrollers: Architecture- 8051 microcontroller – Pins- Ports- Registers- Special function registers (SFR's) - Memory Organization- Counters and Timers.

UNIT-III

Programming the Microcontrollers : Addressing modes- Instruction Formats- Instruction set- Data transfer -Bit-manipulation – Arithmetic – Logical – Program flow control – Interrupt control flow – Simple Programs illustrating instruction set.

UNIT-IV

Systems Design and Interfacing Methods: Switch- Matrix Keypad – LED -7 Segment – LCD – Serial Interface – RS232- Parallel interface – IEEE1284 - IEEE 488 – ADC (0808) - DAC(0800) – Optical motor shaft encoders – Industrial control – Industrial process control system.

UNIT-V

ARM 32 Bit MCUs: Introduction to 16/32 Bit processors – ARM architecture and organization – ARM / Thumb programming model – ARM / Thumb instruction set – Development tools.

TEXT BOOKS

1. Microcontrollers Architecture, Programming, Interfacing and System Design – Raj Kamal, Pearson Education,2005.
2. The 8051 Microcontroller and Embedded Systems – Mazidi and Mazidi, PHI, 2000.

REFERENCES

1. Microcontrollers (Theory & Applications) – A.V. Deshmuk, WTMH, 2005.
2. 8051 Microcontrollers – Jenneth J Ayala,3rd , Cenage Learning, 2005.

Course Outcomes

At the end of the course the student should be able to

CO1: Interpret the internal organization of 8051 with its unique features.
CO2: Infer and give examples about the various addressing modes, instruction formats and instructions of 8051.
CO3: Construct the hardware and software interaction with each other using programming.
CO4: Summarize the features of the advanced architecture using ARM controller.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

BASIC ELECTRONICS AND INSTRUMENTATION

(Open Elective-I)

Course Objectives

In this course it is aimed to introduce to the students with

- To interpret the fundamental concepts of different Diodes, Bipolar junction transistor and Field Effect Transistors with its characteristics.
- To illustrate the basic concepts related to the operation of electrical & electronic measuring instruments.
- To classify the types of transducer with its methodology of data collection.
- To list the principles behind various bridges and methodology of physical entity measurement.

UNIT-I

Diodes: Breakdown Mechanisms in Semiconductor Diodes, Zener Diode Characteristics. Principle of Operation and Characteristics of Tunnel Diode (with the help of Energy Band Diagram), Varactor Diode, Semiconductor Photo Diode, UJT and its Characteristics, Schottky Diode.

Bipolar Junction Transistor: Construction- Operation- characteristics- configuration

UNIT-II

Field Effect Transistors: The Junction Field Effect Transistor (Construction, principle of operation, symbol) – Pinch-off Voltage - Volt-Ampere characteristics, FET as Voltage Variable Resistor, MOSFET (Construction, principle of operation, symbol), MOSFET Characteristics in Enhancement and Depletion modes. Biasing FET- Comparison of BJT and FET.

UNIT-III

Block Schematics of Measuring Systems: Performance characteristics, Static characteristics, Accuracy, Precision, Resolution, Types of Errors, Gaussian Error, Root Sum Squares formula, Dynamic Characteristics, Repeatability, Reproducibility, Fidelity, Lag; Measuring Instruments: DC Voltmeters, D' Arsonval Movement, DC Current Meters, AC Voltmeters and Current Meters, Ohmmeters, Multimeters, Meter Protection, Extension of Range, True RMS Responding Voltmeters, Specifications of Instruments.

UNIT-IV

Transuducers: Classification, Strain Gauges, Bounded, unbounded; Force and Displacement Transducers, Resistance Thermometers, Hotwire Anemometers, LVDT, Thermocouples, Synchros, Special Resistance Thermometers, Digital Temperature sensing system, Piezoelectric Transducers, Variable Capacitance Transducers, Magneto Strictive Transducers.

UNIT-V

Bridges: Wheat Stone Bridge, Kelvin Bridge, and Maxwell Bridge.

Measurement of Physical Parameters: Flow Measurement, Displacement Meters, Liquid level Measurement, Measurement of Humidity and Moisture, Velocity, Force, Pressure - High Pressure, Vacuum level, Temperature - Measurements, Data Acquisition Systems.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

TEXTBOOKS

1. Electronic instrumentation: H.S.Kalsi - TMH, 2nd Edition 2004.
2. Electrical and Electronic Measurement and Instrumentation:A.K.Sawhney-Dhanpat Rai & Sons, 4th Edition
3. Millman's Electronic Devices and Circuits – J. Millman, C.C.Halkias, and Satyabrata Jit, 2 Ed.,1998, TMH.

REFERENCES

1. Integrated Electronics – J. Millman and Christos C. Halkias, 1991 Ed., 2008, TMH.
2. Electronic Devices and Circuits – R.L. Boylestad and Louis Nashelsky, 9 Ed., 2006, PEI/PHI.
3. Electronic Instrumentation and Measurements - David A. Bell, Oxford Uiv. Press, 1997.
4. Electronic Measurements and Instrumentation: B. M. Oliver, J. M. Cage TMH Reprint.
5. Electronic Measurements and Instrumentations by K. Lal Kishore, Pearson Education – 2010.
6. Industrial Instrumentation: T. R. Padmanabham, Spriger 2009.

Course Outcomes

At the end of the course the student should be able to

CO1: Summarize the concepts of different semiconductor devices with its characteristics.
CO2: Describe the fundamental concepts and basic principle of meters.
CO3: Categorize different transducers and their working principles
CO4: Explain different bridges and understand how different physical parameters can be acquired.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

ANALOG COMMUNICATIONS LAB

Note: Minimum 12 Experiments have to be conducted

1. Amplitude Modulation & Demodulation
2. DSB-SC Modulator & Detector
3. SSB-SC Modulator & Detector
4. Frequency Modulation & Demodulation
5. Study of Spectrum analyser & analysis of AM & FM Signals
6. Pre-emphasis & De-emphasis
7. Time Division Multiplexing & Demultiplexing
8. Frequency Division Multiplexing & Demultiplexing
9. Verification of sampling theorem
10. Pulse Amplitude Modulation &Demodulation
11. Pulse Width Modulation &Demodulation
12. Pulse Position Modulation &Demodulation
13. Frequency Synthesizer
14. AGC Characteristics
15. PLL as FM Demodulator

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-I Sem

LINEAR & DIGITAL IC APPLICATIONS LAB

Note: Minimum 12 Experiments have to be conducted (six from each part)

Part – A: Linear IC Applications

1. OP AMP Applications-Adder, Subtractor, Comparator Circuits.
2. Integrator and Differentiator Circuits using IC741
3. Active Filter Applications- LPF, HPF [First Order]
4. IC741 Waveform Generators-Sine, Square wave and Triangular waves.
5. IC 555 Timer-Monostable and Astable Multivibrator Circuits
6. Schmitt Trigger Circuits - Using IC 741
7. Calculation of Capture Range & Lock Range Using IC 565 PLL
8. Voltage Regulator using IC 723.

Part – B: Digital IC Applications

1. Verification of all the logic gates
2. Verification of all Flip-Flops (SR,JK,D&T)
3. Verification of Full adder & Full Subtractor
4. Verification of 4X1 Multiplexer & Demultiplexer
5. Verification of 4-bit Magnitude comparator
6. Verification of2X4 Decoder
7. Verification of4-bit Decade counter
8. Verification of Universal Shift Register

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

ANNEXURE-III

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

VLSI DEISGN

Prerequisites

- Electronic devices &circuits
- Switching Theory and logic design

Course Objectives

In this course it is aimed to introduce to the students with

- To enumerate different steps involved in Integrated Circuits technology for MOS transistor and explain the primary and secondary effects of MOSFET and BICMOS.
- To outline the design process involved in VLSI design flow for design of MOS transistors.
- To interpret the alternate forms of CMOS gate circuits in combinational, sequential circuit and Data path Design.
- To Understand basic programmable logic devices and testing of CMOS circuits.

UNIT-I

Introduction: Introduction to IC Technology — MOS – PMOS – NMOS – CMOS - BiCMOS

Basic Electrical Properties: Electrical Properties- MOS- primary characteristics - threshold Voltage – Secondary characteristics- Ratioed Circuits- CMOS, BiCMOS Inverter – analysis-design- Pass transistors.

UNIT-II

VLSI Circuit Design Processes: VLSI Design Flow - MOS Layers - Stick Diagrams - Design rules - wires – Contacts – Transistors- Layout Diagrams – NMOS – PMOS - CMOS Inverters – Gates - Scaling of MOS circuits.

UNIT-III

Gate Level Design: Logic Gates – Transmission gate- Switch logic - Alternate gate circuits, Latches- Time delays - Driving large capacitive loads - Wiring capacitance, Fan — in, Fan — out, Choice of layers.

UNIT-IV

Data Path Subsystems: Subsystem Design – Shifters – Adders – ALU[s]- Multipliers- Parity generators- Comparators - Zero/One Detectors - Counters.

Array Subsystems: SRAM – DRAM –ROM - Serial Access Memories.

UNIT-V

Programmable Logic Devices: ROM – PLA - PAL-Design Approach - CPLDs – FPGA - Parameters influencing low power design.

CMOS Testing: CMOS Testing – Need - Test Principles- Design Strategies - Chip level Test Techniques.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

TEXT BOOKS

1. Essentials of VLSI Circuits and Systems — Kamran Eshraghian, EshraghianDougles and A. Pucknell, PHI, 2005 Edition.
2. CMOS VLSI Design — A Circuits and Systems Perspective, Neil H. E Weste, David Harris, Ayan Banerjee, 3rd Ed, Pearson, 2009.
3. Modern VLSI Design - Wayne Wolf, Pearson Education, 3rd Edition, 1997.

REFERENCES

1. CMOS logic circuit Design – John .P. Uyemura, Springer, 2007.
2. VLSI Design- K. Lal Kishore, V. S. V. Prabhakar, l.K International, 2009.
3. Introduction to VLSI — Mead & Convey, BS Publications 2010.
4. Fundamentals of Digital Logic with Verilog Design-Stephen Brown,ZvonkoVranesic,ThirdEdition,TMH

Course Outcomes

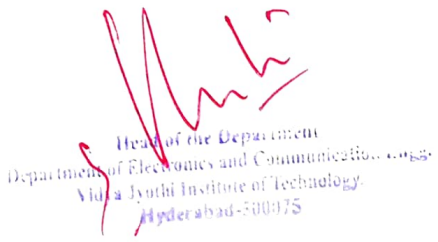
At the end of the course the student should be able to

CO1: Explain the fabrication process involved in Integrated Circuit Technology and label the effects of current and voltage in MOS transistors.

CO2: Summarize the divergent techniques involved in design of VLSI circuits using Design Rules.

CO3: List various Static and dynamic CMOS gate circuits involved in System design.

CO4: Illustrate the process involved in programmable logic design and testing methods.



VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

DIGITAL SIGNAL PROCESSING

Pre Requisite

- Signals and Systems
- Mathematics-I

Course objectives

In this course it is aimed to introduce to the students with

- To understand the basic concepts of discrete signals, systems, representations and its application using Z transform.
- To recite the relationship between the various Transforms applied on Discrete Time signals & systems.
- To illustrate Discrete Fourier transform (DFT) and analyze it for faster computation on time and frequency domains.
- To identify, express, design filters (FIR / IIR) and realize its structure
- To define the effects of limit cycle oscillations in feedback systems and apply the concepts of multirate signal processing on signals.

UNIT-I

Introduction to digital signal processing: Discrete time signals – Systems –classification – Analysis of Discrete Time invariant Systems- difference equations- Frequency domain representation.

Realization of Digital Filters: Application of Z-transforms, solution of difference equations of digital filters - system function - stability criterion - frequency response of stable systems

UNIT-II

Discrete Fourier Transform: DTFS- DTFT –DFT-Complexity calculation- Properties of DFT- linear convolution- Circular convolution- Sectioned convolution- Relation between DTFT, DFS, DFT and Z-Transform.

Fast Fourier Transform: Fast Fourier Transform (FFT), Radix-2 decimation-in-time and decimation-in-frequency FFT Algorithms, Inverse FFT- Convolution of sequences using FFT.

UNIT-III

IIR DIGITAL FILTERS: Analog filter approximations –Butterworth and Chebyshev- Design of IIR digital filters from analog filters- Impulse invariant technique – warping effect- bilinear transformation method - Spectral transformations, realization of IIR filters- direct, canonic, cascade and parallel forms.

UNIT-IV

FIR DIGITAL FILTERS: Characteristics of FIR Digital filters - frequency response – Gibbs Phenomenon- Design of FIR filters - window techniques – Frequency Sampling - Comparison of IIR and FIR filters, realization of FIR filters- direct& cascade forms

UNIT-V

FINITE WORD LENGTH EFFECTS: Quantization- Quantization error- Types- Limit cycles- Overflow oscillations -Scaling

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

MULTIRATE SIGNAL PROCESSING: Introduction - down sampling- Decimation – upsampling – Interpolation -Sampling Rate Conversion

TEXT BOOKS

1. Digital Signal Processing_Tarun Kumar Rawat,Oxford Publications-2015
2. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris G. Manolakis, Pearson Education / PHI, 2007.
3. Discrete Time Signal Processing – A.V.Oppenheim and R.W. Schaffer, PHI

REFERENCES

1. Digital Signal Processing: Andreas Antoniou, TATA McGraw Hill , 2006
2. Digital Signal Processing: Ashok Ambardar , Satya Prasad , Cenage Learning.
3. Fundamentals of Digital Signal Processing using Mat lab – Robert J. Schilling, Sandra L. Harris, Thomson, 2007.

Course Outcomes

At the end of the course the student should be able to

CO1: Define the different discrete time signals and show the methods of applying Z-transforms on Discrete Time Linear Time Invariant systems (DTLTI).

CO2: Able to compute the divergence between the transforms (DTFS/DTFT/DFT) and illustrate the effects of each on Discrete time signals.

CO3: Interpret the methodology of Discrete Fourier transform with its properties and methodology of faster computations.

CO4: List, Differentiate Design and implement the different methods involved in Filter design (FIR/IIR).

CO5: State the effects of different quantization noise on recursive systems and enumerate the role of multirate signal processing on discrete time signals.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

MICROPROCESSORS AND MICROCONTROLLERS

Pre Requisite

- Switching Theory and Logic Design

Course Objective

In this course it is aimed to introduce to the students with

- To describe and interpret the 8086 architecture with its internal features.
- To list and analyze the techniques involved in assembly language programming of 8086
- To design various interfacing Peripheral Integrated circuits with 8086 along with their applications.
- To illustrate the basic concepts of 8051 microcontroller and its features

UNIT-I

8086 Architecture: Introduction to 8085 microprocessor- 8086 architecture –Signal descriptions-Minimum- Maximum mode - timing diagrams - memory segmentation- programming model - interrupt structure.

UNIT-II

Assembly language programming using 8086: Instruction formats - addressing modes - instruction set - assembler directives - simple programs- Memory interfacing.

UNIT-III

Concepts, Modes and Interfacing of Peripheral IC's8086: 8255 PPI – 8257 DMA- 8251 USART- 8259 PIC

Interfacing of Peripheral Devices with 8086: Matrix Keyboard- Display- LED – LCD- stepper motor, DAC- ADC.

UNIT-IV

Introduction to microcontrollers: Overview of 8051 microcontroller - architecture – ports - memory organization - addressing modes - instruction set - simple programs.

UNIT-V

8051 real time control: Interrupts - timer/counter - serial communication- SFR's- programming

TEXT BOOKS

1. DV Hall, Microprocessors and interfacing, TMGH 2nd ed 2006.
2. Kenneth J Ayala, The 8051 microcontroller, 3rd ed, Cengage learning 2010.

REFERENCES

1. Advanced microprocessors and peripherals- A .K Ray and K.M .Bhurchandani TMH, 2nd ed,2006
2. The 8051 microcontrollers, architecture and programming and applications- K. Uma Rao,AndhePallavi,Pearson 2009

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

3. Micro computer system 8086/8088 family architecture,programming and design,- by Liu and GA Gibson,PHI 2nd ed
4. Microcontrollers and applications, Ajay V Deshmukh , TMGH 2005
5. The 8085 Microprocessor: Architecture ,programming and interfacing- K UdayKumar,BS Umashankar,2008,pearson.

Course Outcomes

At the end of the course the student should be able to

CO1: Memorize the internal organization of 8086

CO2: Apply the divergent techniques involved in assembly level language programming of 8086 for different data manipulation applications.

CO3: Summarize various interfacing integrated circuits for peripheral devices using 8086.

CO4: List and express the internal features of 8051 with its programming.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

OPTICAL COMMUNICATIONS

(Professional Elective-II)

Pre Requisite

- Analog Communications
- Electro Magnetic Waves & Transmission Lines

Course Objective

In this course it is aimed to introduce to the students with

- To explain the theory of optical fiber waveguides and the materials used for its construction.
- To interpret the signal degradation in optical fibers and its connectivity.
- To outline various types of signal sources and coupling required for optical fiber communications.
- To infer the theory behind photodetectors and performance of digital receivers.
- To relate the role of optic fibers in digital system communication with various multiplexing techniques involved in it.

UNIT-I

Introduction: Historical development, the general system, advantages of optical fiber communications.

Optical Fiber Wave Guides: Introduction, Ray theory transmission, Total Internal Reflection, Acceptance angle, Numerical Aperture, Skew rays. Cylindrical fiber - Modes, Mode coupling, Step Index fibers, Graded Index fibers. Single mode fibers- Cut off Wavelength, Mode Field Diameter, and Effective Refractive Index. Graded Index Fiber Structure. Fiber materials.

UNIT-II

Signal Degradation In Optical Fibers: Attenuation, Signal Distortion in Fibers, Characteristics of Single-Mode Fibers.

Optical Fiber Connection: Introduction, Fiber alignment and joint loss, Fiber Splicing, Optical fiber Connectors.

UNIT-III

Optical Sources: Topics from Semiconductor Physics, Light Emitting Diodes, Laser Diodes, Line Coding, Line Source Linearity, Reliability Considerations.

Power Launching and Coupling: Source to Fiber Power Launching, Launching Schemes for Coupling Improvement.

UNIT-IV

Photo Detectors: Physical principles of Photodiodes, Photo detector Noise, Detector response time, Avalanche Multiplication Noise, Structure for In GaAs APDs, Temperature Effect on Avalanche gain, Comparison of Photo detectors.

Optical Receiver Operation: Fundamental receiver operation, Digital receiver performance, Eye Diagrams, Analog receivers.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT-V

Optical Fiber Systems: Introduction, the Optical Transmitter circuit, the Optical Receiver circuit, System design considerations.

Digital Links: Point-to- point links.

Advanced Multiplexing Strategies: Optical time division multiplexing, subcarrier multiplexing, orthogonal frequency division multiplexing, wavelength division multiplexing.

TEXT BOOKS

1. Gerd Keiser (2010), Optical Fiber Communications, 4th edition, McGraw-Hill International Edition.
2. John M. Senior (2005), Optical Fiber Communications, 2nd edition, Prentice Hall of India, New Delhi.

RERFERENCES

1. D. K. Mynbaev, S. C. Gupta, Lowell L. Scheiner (2005), Fiber Optic Communications, Pearson Education, India.
2. S. C. Gupta (2005), Optical Fiber Communication and its Applications, Prentice Hall of India, New Delhi.

Course Outcomes

At the end of the course the student should be able to

CO1: Recognize the constructional materials of Optical fibers and its impact on communications.

CO2: Summarize the channel impairments (like losses and dispersion) that occur in an optical communications.

CO3: Compare the different signal sources used for optical communications with its methodology of coupling.

CO4: Illustrate the methodology and construction of photo detectors and the performance of digital receivers using optic fiber.

CO5: Contrast the communication performed in the optic fiber systems and recall the divergent multiplexing techniques involved in it.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

PROGRAMMING IN MATLAB

(Professional Elective-II)

Pre Requisite

- Programming in C
- Engineering Mathematics
- Probability Theory and Stochastic Process

Course Objective

In this course it is aimed to introduce to the students with

- To illustrate the various parameters for programming in MATLAB
- To elaborate the various loop and control statements involved in MATLAB Programming.
- To interpret the graphical representation, file handling and advanced commands of MATLAB.
- To Understand the need for Simulink in various domains of Electronics and Communication.

UNIT-I

Introduction to MATLAB: Menus & Tool bars, Variables - Matrices and Vectors - initializing vectors - Data types- Functions - User defined functions - passing arguments - writing data to a file-reading data from a file - using functions with vectors and matrices- cell arrays & structures - Strings - 2D strings-String comparing - Concatenation - Input and Output statements - Script files.

UNIT-II

Loops & Control Statements: Introduction; Relational & Logical operations - Example programs - Operator precedence - Control & Decision statements- IF - IF ELSE - NESTED IF ELSE - SWITCH - TRY & CATCH - FOR -WHILE - NESTED FOR - FOR with IF statements, MATLAB program organization, Debugging methods - Error trapping.

UNIT-III

PLOTS IN MATLAB & GUI: Basic 2D plots, Labels, Line style, Markers, plot, subplot, LOG, LOG-LOG, SEMILOG-POLAR-COMET, Grid axis, labeling, fplot, ezplot, ezpolar, polyval, exporting figures, HOLD, STEM, BAR, HIST, Interactive plotting, Basic Fitting Interface – Polyfit - 3D plots – Mesh - Contour - Example programs. GUI - Creation Fundamentals - Capturing mouse actions.

UNIT-IV

MISCELLANEOUS TOPICS: File & Directory management - Native Data Files - Data import & Export - Low Level File I/O - Directory management - FTP File Operations - Time Computations -Date & Time - Format Conversions - Date & Time Functions - Plot labels - Optimization - zero Finding - Minimization in one Dimension - Minimization in Higher Dimensions- Practical Issues. Differentiation & Integration using MATLAB, 1D & 2D Data Interpolation

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT-V

SIMULINK & APPLICATIONS: How to create & run Simulink, Simulink Designing - Using SIMULINK Generating an AM signal & 2nd order systems - Designing of FWR & HWR using Simulink - Creating a subsystem in Simulink. Applications Programs - Frequency response of FIR & IIR filters. Open Loop gain of OPAMP, I/P characteristics of BJT, PCM, DPCM.

TEXT BOOKS

1. RudraPratap, "Getting Started with MATLAB 6.0" ,1st Edition, Oxford University Press-2004.
2. Duane Hanselman ,BruceLittleField, "Mastering MATLAB 7" , Pearson Education Inc, 2005

REFERENCES

1. William J.Palm, "Introduction to MATLAB 6.0 for Engineers", Mc Graw Hill & Co, 2001
2. M.Herniter, "Programming in MATLAB", Thomson Learning, 2001
3. John OkyereAltla, "Electronics and circuit analysis using MATLAB" - CRC press, 1999
4. K.K.Sharma, "MATLAB Demustifyied" -Vikas Publishing House Pvt Ltd.

Course Outcomes

At the end of the course the student should be able to

CO1: Develop codes on various domains of Electronics and Communication Engineering

CO2: Handle the advanced commands in appropriate fields of engineering

CO3: Visualize the impact of parameters during simulation

CO4: Cater the industrial needs pertaining to the semiconductor technologies.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

SATELLITE AND WIRELESS COMMUNICATIONS

(Professional Elective-II)

Pre Requisite

- Signals and Systems
- Analog Communications

Course Objective

In this course it is aimed to introduce to the students with

- To explain the types of satellite communication and various orbital aspects involved in it.
- To illustrate the students with the knowledge of sub system design and validate the connectivity using link budget with the techniques in earth tracking.
- To compare the various types of wireless networks involved in communications .
- To interpret the various layers of wireless LAN, WAN standards.

UNIT-I

Introduction: Origin of satellite communication, Historical background, Basic concepts of satellite communications, Frequency allocations for satellite services, Applications, Indian scenario in communication satellites.

Orbital aspects of Satellite Communication: Introduction to geo-synchronous and geo-stationary satellites, Kepler's laws, locating the satellite with respect to the earth, sub-satellite point, look angles, mechanics of launching a synchronous satellite, Orbital effects in communication system performance

UNIT-II

Satellite sub-systems: Attitude and Orbit control systems, Telemetry, Tracking and command control system, Power supply system, Communication subsystems, Space craft antennas.

Satellite link design: Basic transmission theory - system noise temperature - G/T ratio, design of down link – uplink - satellite links - C/N - satellite data communication protocols - Nano satellites - micro satellites

UNIT-III

Earth station Technology: Transmitters – Receiver – Antennas - Tracking systems, Terrestrial interface.

Introduction to wireless communication: Mobile radio communication, Examples of wireless communication systems, Difference between wireless and fixed telephone networks, development of wireless networks, fixed network transmission hierarchy, traffic routing in wireless networks, wireless data services.

UNIT-IV

Mobile wireless communication systems: Evolution of 1G/2G/3G/4G – 2G cellular networks – CDMA- GSM - 3G wireless networks, wireless in local loop, wireless local area networks - Wi-Fi, Personal area networks- ZIGBEE – WMAN - Bluetooth.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

Wireless LAN: Historical overviews of the land industry, evolution of the wan industry, wireless home networking IEEE 802.11 the PHY layer, Mac layer wireless ATM, Hyperlink, Hyper Lan-2

UNIT-V

Wireless MAN: mechanism to support at mobile environment, communication in the infrastructure , iIS-95 CDMA forward channel, IS-95 CDMA risers channel, packet and frame formats in IS-95,IMT -20000

TEXT BOOKS

1. Satellite communications – Pratt, 2nd ed., 2006, wiley publications
2. Wireless Communications, Principles, Practice – Theodore, S. Rappaport, 2nd Ed., 2002, PHI
3. Mobile Cellular Communication – GottapuSasibhushana Rao, Pearson Education, 2012.

REFERENCES

1. Satellite communications- Dennis Roddy, 4 edition
2. Principles of Wireless Networks – KavehPahLaven and P. Krishna Murthy, 2002, PE.
3. Wireless Communication and Networking – William Stallings, 2003, PHI.
4. Wireless Communications and Networking – Vijay K. Gary, Elsevier.

Course Outcomes

At the end of the course the student should be able to

CO1: Understand the concepts and orbital aspects of satellite communication.

CO2: Summarize the aspects of subsystem design and its involvement in ground tracking with suitable link margins.

CO3: Outline the fundamentals and principles of wireless communications and networking.

CO4: Relate and contrast the different layers involved in data communication of WLAN and WWAN.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-IISem

FUNDAMENTALS OF EMBEDDED SYSTEMS

(Open Elective-II)

Course Objective

In this course it is aimed to introduce to the students with

- To understand the basics of an embedded system with its application area for implementation.
- To demonstrate the components required for the development of embedded systems.
- To infer the different development languages for designing an Embedded System applications.
- To interpret the requirements required for choosing RTOS, concepts and tools.
- To explain the different buses used for distributed embedded systems

UNIT-I

Introduction to Embedded Systems: Embedded Systems- Definition- Embedded Systems Vs General Computing-Systems – Evolution – Classification - Application Areas – Purpose – Characteristics - Quality Attributes.

UNIT-II

Typical Embedded System: Core of the Embedded System: General Purpose - Domain Specific Processors – ASICs - PLDs, Commercial Off The-Shelf Components (COTS), Memory: ROM, RAM, Memory according to the type of Interface, Memory Shadowing, Memory selection - Sensors and Actuators, Communication Interface: Onboard and External Communication Interfaces.

UNIT-III

Embedded Firmware: Embedded Firmware Design Approaches and Development Languages, Software, Getting Embedded Software into Target System , Debugging Techniques: Testing on Host Machine, Using Laboratory Tools, An example System.

UNIT-IV

RTOS Based Embedded System Design: Operating System Basics, Types of Operating Systems, Tasks, Process and Threads, Multiprocessing - Multitasking, Semaphores, Task Scheduling, Choose an RTOS - example RTOS like µC-OS (open source) - Embedded software Development Tools for Host and Target Machines.

UNIT-V

Distributed Embedded System Design: Distributed Embedded system - Embedded networking -RS 232 - RS485 - Inter-Integrated Circuit (I^2C) - Serial Peripheral Interface (SPI) - Universal Serial Bus (USB) - Controller Area Network (CAN)- Ethernet.

TEXTBOOKS

1. Introduction to Embedded Systems - Shibu K.V, Mc Graw Hill.
2. An Embedded Software Primer - Davia E. Simon, Pearson Education
3. 'Computer as Components-Principles of Embedded Computing system Design',WayneWolf,Elsevier(2nd Edition)

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

REFERENCES

1. Embedded Systems - Raj. Kamal, TMH.
2. Embedded System Design - Frank Vahid, Tony Givargis, John Wiley.
3. Embedded Systems - Lyla, Pearson, 2013

Course Outcomes

At the end of the course the student should be able to
CO1: Contrast the basics of embedded system with its application
CO2: Illustrate the components required for embedded system design.
CO3: Summarize the different development tool for embedded system
CO4: Relate the concepts of RTOS in real time programming
CO5: Outline the features of advanced buses for distributed data transfer in system design.

Head of the Department
Department of Electronics and Communication Engg
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

PRINCIPLES OF COMMUNICATIONS

(Open Elective-II)

Course Objective

In this course it is aimed to introduce to the students with

- To understand the basics of communication.
- Study different analog and digital modulation techniques involved in communication.
- To illustrate the different wired and wireless network fundamentals.
- To outline the basic concepts of satellite and optical communications involved in different digital systems.

Unit – I

Introduction: Communication Systems and types, Modulation, multiplexing, Electromagnetic spectrum, Gain, Attenuation and decibel.

Unit – II

Simple description on modulation: Analog Modulation – AM, FM, PM, Modulation – PAM, PWM, PCM, Digital Modulation Techniques – ASK, FSK, PSK, QPSK, Modulation and Demodulation Schemes.

Unit – III

Telecommunication Systems: Telephones - telephone systems - Telephony.
Networking and Local Area Networks: Network fundamentals, hardware, Ethernet LANs, Token Ring LAN.

Unit – IV

Satellite Communication: Satellite Orbits - satellite communication systems - Satellite sub systems - Ground station satellite Applications - Global positioning systems.
Optical Communication: Optical Principles - Optical communication systems - Fiber Optic cables - Optical Transmitters- Receivers - wavelength division multiplexing.

Unit – V

Multiple Access Techniques: FDMA, TDMA, CDMA, Packet Radio Techniques – ALOHA, Slotted ALOHA.
Cellular and Mobile Communications: Cellular telephone system, AMPS, GSM, CDMA, WCDMA.
Wireless Technologies: Wireless LAN - PANs – Bluetooth – ZigBee - Mesh Wireless Networks – Wimax – MANs - Infrared wireless – RFID - UWB.

Text Books:

1. Principle of Electronic Communication Systems, Louls E. Frenzol, 3e, Mc Graw Hill publications, 2008.
2. Introduction to Data Communications and Networking, Wayne Tomasi, Pearson Education, 2005.

REFERENCES

1. H.Taub,D L Schilling ,G Saha ,"Principles of Communication"3/e,2007.
2. B.P.Lathi,"Modern Analog And Digital Communication systems", 3/e, Oxford

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

University Press, 2007
3. Blake, "Electronic Communication Systems", Thomson Delmar Publications, 2002.
4. Martin S.Roden, "Analog and Digital Communication System", 3rd Edition, PHI, 2002.
5. B.Sklar,"Digital Communication Fundamentals and Applications"2/e Pearson Education 2007.

Course Outcomes

At the end of the course the student should be able to

CO1: Understanding the fundamentals of communications

CO2: Summarize the different modulation techniques involved in analog and digital Communication.

CO3: Identify the applications of various wired and wireless communications in real time.

CO4: Elaborate the fundamentals of satellite and optical communications.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

MICROPROCESSOR AND MICROCONTROLLERS LAB

Note: Minimum 12 Experiments have to be conducted

The following programs/experiments are written for assembler and execute the same with8086 and 8051 kits

1. Programs for 16 bit arithmetic operations for 8086 (using various addressing modes)
2. Program for sorting an array for 8086
3. Program for searching for a number or character in a string for 8086
4. Program for String manipulations for 8086
5. Program for digital clock design using 8086.
6. Interfacing ADC and DAC to 8086
7. Parallel communication between two microprocessors using 8255.
8. Serial communication between two microprocessor kits using 8251.
9. Interfacing to 8086 and programming to control stepper motor.
10. Programming using arithmetic, logical and bit manipulation instructions of 8051
11. Program and verify Timer/Counter in 8051.
12. Program and verify interrupt handling in 8051.
13. UART operation in 8051.
14. Communication between 8051 kit and PC.
15. Data transfer from peripheral to memory through DMA controller 8237/8257

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

III Year B.Tech. ECE-II Sem

DIGITAL SIGNAL PROCESSING & e-CAD LAB

Note: Minimum 12 Experiments have to be conducted (eight from each part)

Part-A: DSP Lab Experiments

1. Generation of Sinusoidal waveform / Signal based on recursive difference equations.
2. To Find DFT/IDFT of given DT signal
3. Implementation of FFT of given sequence
4. Determination of Power Spectrum of a give signal (s)
5. Implementation of LP & HP FIR filter for a given sequence
6. Implementation of LP& HP IIR filter for a given sequence
7. Generation of DTMF signals
8. Implementation of I/D sampling rate converters
9. Noise removal: Add noise above 3 KHz and then remove, interference suppression using 400 Hz tone.
10. Impulse response of first order and second order systems.

Part-B: e-CAD Lab Experiments

1. HDL code to realize all the logic gates
2. Design of the 2 to 4 decoder
3. Design of 8 to 3 encoder (without and with parity)
4. Design of 8 to 1 multiplexer& 1 to 8 Demultiplexer
5. Design of 4 bit binary to gray converter
6. Design of 4-bit comparator
7. Design of full adder using 3 modeling styles
8. Design of flip flops SR, D, JK, and T
9. Design of 4 bit binary, BCD counters (synchronous/asynchronous reset)
10. Finite state machine design

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

ANNEXURE-IV

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

EMBEDDED SYSTEM DESIGN LAB

Note: Minimum 10 Experiments have to be conducted

1. Blinking of LED : Hello World
2. Breath out 2 LEDs
3. Color Circle
4. ADC Potentiometer
5. Analog serial plotter
6. Interface to Accelerometer sensor using FRDM kit
7. Serial port communication using FRDM kit
8. Interface to touch sensor using FRDM kit
9. Radio frequency transmission operation using FRDM kit
10. LED intensity control using touch sensor using FRDM kit
11. Interface and plot LDR using FRDM kit
12. Interface and plot temperature sensor using FRDM kit

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

MICROWAVE ENGINEERING AND DIGITAL COMMUNICATIONS LAB

Note: Minimum 12 Experiments have to be conducted (Six from each part)

Part-A: Microwave Engineering Lab

1. Reflex klystron Characteristics
2. Gunn Diode Characteristics
3. Directional Coupler Characteristics
4. VSWR Measurements
5. Measurement of Waveguide parameters
6. Measurement of Impedance of given load
7. Measurement of scattering parameters of a Magic Tee
8. Measurement of scattering parameters of a Circulator
9. Attenuation measurement
10. Microwave frequency measurements

Part-B: Digital Communications Lab

1. PCM Generation & Detection
2. Differential Pulse Code Modulation
3. Delta Modulation
4. Time Division Multiplexing of 2 Band Limited Signals
5. Frequency Shift Keying: Generation & Detection
6. Phase Shift Keying: Generation & Detection
7. Amplitude Shift Keying: Generation & Detection
8. Study of The Spectral Characteristics of PAM, QAM
9. DPSK : Generation & Detection
10. QPSK : Generation & Detection

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

Item No: 1 Approval of III year B.Tech Syllabus.

The chairman of Board of Studies (BOS) ECE Dept presented the syllabus of the subject "IC Applications" for B.Tech III Year II Sem for EEE branch. Detailed and elaborated discussions were held regarding each and every topic of the syllabus as noted below.

S. No	Subject	Credits
1	I. C. Applications	3

After discussing various aspects of syllabus the committee passed the following resolution.

Resolution (1): The members after through discussion approved the syllabus for the course mentioned above. The detailed syllabus is as per annexure I.

Noted & Approved.

Item No: 2

The chairman BOS ECE Dept. presented the syllabus related to the "Microprocessors & Interfacing Devices lab" for B.Tech IV Year, I Sem. for EEE branch as detailed below.

S. No	Subject	Credits
1	Microprocessors & Interfacing Devices lab	2

Resolution (2): The members after through discussion approved the syllabus of Microprocessors & Interfacing Devices lab proposed to be included in the I Sem. of the IV Year EEE. The details of the syllabus are enclosed in annexure II.

Noted & Approved.

Signatures of the Members Present:

1. 2. D. VCS Reddy JNTUH 3.

4. 5. 6.

7. 8. 9.

10. 11. 12.

13. 14.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Vikas Institute of Technology.
Hyderabad-500075

Vidya Jyothi Institute of Technology

(An Autonomous Institution)

(Accredited by NBA, Approved By A.I.C.T.E., New Delhi, Permanently Affiliated to JNTU, Hyderabad)

(Aziz Nagar, C.B.Post, Hyderabad -500075)

III Year B.Tech. EEE II-Sem

L	T	P	C
3	1	0	3

IC APPLICATIONS (A16422)

UNIT - I:

Integrated Circuits: Classification, chip size and circuit complexity, Classification of Integrated circuits, comparison of various logic families, standard TTL NAND Gate-Analysis & characteristics, TTL open collector O/Ps, Tristate TTL, MOS & CMOS open drain and tri-state outputs, CMOS transmission gate, IC interfacing- TTL driving CMOS & CMOS driving TTL.

UNIT - II:

OP-AMP and Applications: Basic information of OP-AMP, ideal and practical OP-AMP, internal circuits, OP-AMP characteristics, DC and AC characteristics, 741 OP-AMP and its features, modes of operation-inverting, non-inverting, differential.

Basic application of OP-AMP, instrumentation amplifier, ac amplifier, V to I and I to V converters, sample & hold circuits, multipliers and dividers, Differentiators and Intergrators, Comparators, introduction to voltage regulators.

UNIT - III:

Active Filters & Oscillators: Introduction, 1st order LPF, HPF filters, Band pass, Band reject and all pass filters. Oscillator types and principle of operation - RC, Wien and quadrature type, waveform generators - triangular, sawtooth, square wave and VCO.

UNIT - IV:

Timers & Phase Locked Loops: Introduction to 555 timer, functional diagram, monostable and astable operations and applications, Schmitt Trigger. PLL - introduction, block schematic, principles and description of individual blocks of 565.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

UNIT - V:

D-A and A-D Converters: Introduction, basic DAC techniques, weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, Different types of ADCs - parallel comparator type ADC, counter type ADC, successive approximation ADC and slope ADC. DAC and ADC specifications.

TEXT BOOKS:

1. Linear Integrated Circuits, D. Roy Chowdhury, New Age International(p) Ltd.
2. Op-Amps & Linear ICs, Ramakanth A. Gayakwad, PHI

REFERENCES BOOKS:

1. Operational Amplifiers & Linear Integrated Circuits, R.F. Coughlin & Fredrick F. Driscoll, PHI.
2. Operational Amplifiers & Linear Intergrated Circuits: Theory & Applications, Denton J. Daibey, TMH.
3. Design with Operational Amplifiers & Analog Integrated Circuits, Sergio Franco, McGraw Hill.
4. Digital Fundamentals - Floyd and Jain, Pearson Education.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

Vidya Jyothi Institute of Technology

(An Autonomous Institution)

(Accredited by NBA, Approved By A.I.C.T.E., New Delhi, Permanently Affiliated to JNTU, Hyderabad)

(Aziz Nagar, C.B.Post, Hyderabad -500075)

IV Year B.Tech. EEE I-Sem

L	T	P	C
-	-	3	2

MICROPROCESSORS AND INTERFACING DEVICES LAB

8086 Microprocessor:

1. Arithmetic Operations (addition, subtraction, multiplication and division)
2. Addition of two BCD numbers.
3. Ascending order/Descending order of an array of numbers.
4. Finding Largest/Smallest numbers in an array of numbers.
5. Generation of Fibonacci series.
6. Hexadecimal to Decimal conversions
7. ASCII to Decimal conversion
8. Program for sorting an array for 8086.
9. Program for searching for a number or character in a string for 8086.
10. Program for string manipulations for 8086.

Head of the Department
Dept. of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

MASM PROGRAMMING:

1. Arithmetic Operations (addition, subtraction, multiplication and division)
2. Addition of two BCD numbers.
3. Ascending order/Descending order of an array of numbers.
4. Finding Largest/Smallest numbers in an array of numbers.
5. Generation of Fibonacci series.
6. Hexadecimal to Decimal conversions

Vidya Jyothi Institute of Technology

(An Autonomous Institution)

(Accredited by NBA, Approved By A.I.C.T.E., New Delhi, Permanently Affiliated to JNTU, Hyderabad)

(Aziz Nagar, C.B.Post, Hyderabad -500075)

8051 MICROCONTROLLER:

1. Arithmetic Operations (addition, subtraction, multiplication and division)
2. Addition of two BCD numbers.
3. Ascending order/Descending order of an array of numbers.
4. Finding Largest/Smallest numbers in an array of numbers.
5. Generation of Fibonacci series.
6. Masking of Bits.
7. Hexadecimal to Decimal conversion.

Interfacing with 8086 Microprocessor:

1. Stepper motor interfacing to 8086.
2. Elevator simulator interfacing to 8086.
3. seven- segment display interfacing to 8086.
4. Interfacing ADC and DAC to 8086.
5. Digit Key – interfacing to 8086.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

Note: Minimum of 12 experiments to be conducted.

Website: www.jntuh.ac.in
E Mail: dap@jntuh.ac.in

Phone: Off:+91-40-23156115
Fax:+91-40-23156115

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

(Established by JNTU Act No.30 of 2008)

Kukatpally, Hyderabad – 500 085, Telangana State (India)

Lr.No.D1/960/2017

Date: 17.11.2017

DR. N.YADAIAH
B.E (OUCE), M. Tech (IIT KGP), Ph.D.(JNTU)
SMIEEE, FIE, FIETE, MSSI, MISTE
Professor of Electrical & Electronics Engineering &
REGISTRAR

To,
The Principal,
Vidya Jyothi Institute of Technology,
Aziznagar Gate, C.B. Post,
Hyderabad,

Sir,

Sub:- JNT University Hyderabad-Academic & Planning – Nominations for Academic Council, Governing Body and Board of Studies members for various Departments offered by Vidya Jyothi Institute of Technology, Aziznagar Gate, C.B. Post, Hyderabad,

Ref:- 1. Your letter dated 23.10.2017
2. Note Orders of the Vice-Chancellor dated 14.11.2017

***

With reference to your letters 1st cited, I am by direction to inform you that the following faculty members of the University are nominated to constitute the following bodies mentioned below for a period of two years as per the UGC guidelines as desired by you:

I Academic Council (Three members)

S.No	Name of the University Nominee
1.	Dr.B.N. Bhandari, Director, Academic & Planning, JNTUH
2.	Dr.G.K. Vishwanadh, OSD to VC, JNTUH
3.	Dr.M. Manzoor Hussain, Director, Admissions, JNTUH

II. Governing Body (One member)

S.No	Name of the University Nominee
1.	Dr.N. Yadaiah, Registrar, JNTUH

II. Board of Studies (One nominee for each department)

S.No	Name of the Department	Courses	Name of the University Nominee
1.	Civil	B.Tech/M.Tech	Dr.G.V. Narsimha Reddy
2.	EEE	B.Tech/M.Tech	Dr.N. Venkata Ramana
3.	Mech. Engineering	B.Tech/M.Tech	Dr.B. Sudheer Prem Kumar
4.	ECE	B.Tech/M.Tech	Dr.M. Madhavilatha
5.	CSE/IT	B.Tech/M.Tech	Dr.M. Sreenivasa Rao
6.	English	B.Tech	Dr.N.V.S.N. Lakshmi
7.	Mathematics	B.Tech, M.Tech and MBA	Dr.V. Srinivasa Kumar
8.	Physics	B.Tech	Dr.T. Srikanth
9.	Chemistry	B.Tech	Dr.M. Thirumala Chari
10.	Environmental Studies	B.Tech	Dr.V. Hima Bindhu
11.	MBA	MBA & B.Tech	Dr.A. Prabhu Kumar
12.	NSS & Yoga	Physical Education	Dr.Y. Gopi Krishna

Yours sincerely,

REGISTRAR

Copy to the individuals concerned
Copy to PA to VC/Rector/Registrar for information

Vidya Jyothi Institute of Technology

(An Autonomous Institution)
(Accredited by NAAC & NBA, Approved by AICTE New Delhi & Permanently Affiliated to JNTUH)
Aziznagar Gate, C.B. Post, Hyderabad-500 075

Dr. P. Venugopal Reddy
Ph. D, F.A.P.A.Sc., F.T.S.A.Sc.,
DIRECTOR

e-mail : director@vjit.ac.in
Ph. No: 9848212388
Hyderabad

Ref: VJIT/Dir.ofc/24/2017-18

Date: 22.02.2018.

OFFICE ORDER

As the University has replaced the University Nominee with a new person and a few other members have left the college, it has been decided by the administration of the college to reconstitute the Board of Studies in ECE, with effect from the Academic year 2018-19. Accordingly, the newly constituted members of BoS are as follows:

The list of members of the reconstituted Board of Studies in ECE is,

1. Dr. Harikrishna Kamatham, Professor & Head, ECE, VJIT	Chairman
2. Dr. M. Madhavilatha, Professor, JNTUH	University Nominee
3. Dr. K S Rao, Director, Anurag Group of Institutions	External Member
4. Dr. G. Laxmi Narayana, Principal, Anurag College of Engg., Aushapur.	External Member
5. Dr. P. Chandra Sekhar, Dept., of ECE, Osmania University	External Member
6. Mr. Ch. Satyanarayana, Scientist G, RCI, Hyderabad	External Member
7. Mr. N. Venkatesh, Sr. Vice-President, Redpine Signals, Hyderbad	External Member
8. Dr. K. Vasanth, Professor, ECE, VJIT	Internal Member
9. Dr. P. Ganesan, Professor, ECE, VJIT	Internal Member
10. Mr. M Rajendra Prasad, Assoc. Professor, ECE, VJIT	Internal Member
11. Mrs. A. Jaya Lakshmi, Assoc. Professor, ECE, VJIT	Internal Member

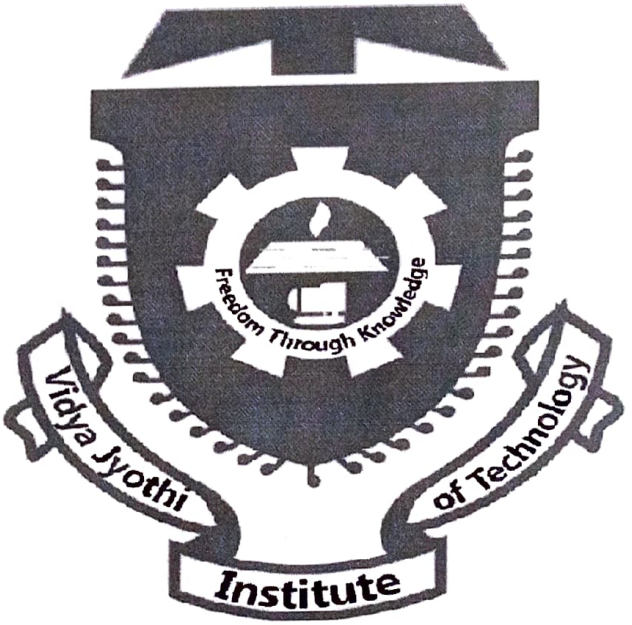
- The above Board will frame the syllabi, course structure and all other academic related matters of both B.Tech & M.Tech courses.
- The above members of the Board of Studies in Electronics and Communication Engineering shall hold the office for a period of two years with effect from the date of issue of this order.
- The external members attending the meeting of the Board of Studies are eligible for T.A. and D.A. as per the rules of the Institutions in force.
- The members are also requested to intimate this office in case if any change in their address and designation.

(P.Venugopal Reddy)

Copy to all members

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

Department of Electronics and Communication Engineering



Board of Studies Meeting

held on

02 March 2018

Vidya Jyothi Institute of Technology

Minutes of the Board of studies of Dept. of Electronics and Communication Engineering meeting held on 2nd March 2018

at 2.00 P.M in Board Room

The following members were present in the meeting.

S.No	Name of the Member	Designation	Signature
1	Dr. Harikrishna Kamatham, Professor & Head ECE, VJIT.	Chairman	
2	Dr. M.Madhavi Latha, Professor, JNTUH.	University Nominee	
3	Dr. K S Rao, Director, Anurag Group of Institutions.	External Member	
4	Dr. G. Laxmi Narayana, Principal, Anurag College of Engg., Aushapur.	External Member	
5	Dr. P. Chandra Sekhar, Dept. of ECE, Osmania University	External Member	
6	Mr. Ch. Satyanarayana, Scientist G, RCI, Hyderabad.	External Member	
7	Mr. N. Venkatesh, Sr. Vice – President, Redpine Signals, Hyderabad.	External Member	
8	Dr. K. Vasanth, Professor, ECE, VJIT.	Internal Member	
9	Dr. P. Ganesan, Professor, ECE, VJIT.	Internal Member	
10.	Mr. M Rajendra Prasad, Assoc. Professor, ECE, VJIT.	Internal Member	
11.	Mrs. A. Jaya Lakshmi, Assoc. Professor, ECE, VJIT.	Internal Member	

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

Item No. 1: Presentation of 4th Year I Semester B.Tech Syllabi

a). The Chairman presented the syllabi of three subjects of B.Tech IV Year I Semester viz.:

1. Digital Communications
2. Embedded System Design
3. Antennas & Microwave Engineering

b). The Chairman also presented the syllabi of Professional and Open Electives to be offered during IV year I semester. The titles of the subjects are;

Professional Elective - 3

1. Digital Image Processing
2. Spread Spectrum Communications
3. Multimedia Signal Coding

Professional Elective - 4

1. DSP Architectures
2. Telecommunication Switching Systems and Networks
3. Low Power VLSI

Open Elective - 3

1. Introduction to MATLAB
2. Circuits Simulation using PSpice

c). Thirdly, the Chairman presented the syllabi of Labs of IV year I semester. The Labs are:

1. Embedded System Design Lab
2. Microwave Engineering and Digital Communications Lab

d). Industry Oriented Mini Project

Item No. 2: Presentation of 4th Year II Semester B.Tech Syllabi

a). The Chairman presented the syllabi of three subjects of B.Tech IV Year II Semester viz.:

1. Cellular and Mobile Communications
2. Computer Networks
3. Radar Engineering

b). Major Project

c). Seminar

d). Comprehensive Viva - Voce

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

Item No. 3: Presentation of 4th Year I Semester B.Tech EEE Syllabi.

The Chairman presented the syllabi offered to EEE Department during IV year I semester

1. Microprocessor and Interfacing Devices
2. Microprocessor and Interfacing Devices Lab

Item No. 4: Discussion regarding the Panel of examiners

The Chairman emphasized the necessity of Panel of Examiners. Their services will be utilized in the preparation of End-Semester Question paper(s), Evaluation of End-Semester Examination Answer Scripts. They will be paid remuneration as per the recommendations of College Finance Committee.

Resolutions

After discussing various aspects of the syllabi the committee passed the following resolution.

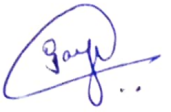
Resolution (1): The members after thorough discussion approved the syllabi of IV – I, IV – II theory and labs (Annexure – II, Annexure – III) as per the subject titles in Annexure – I, and the subject offered for IV – I EEE theory and Labs as per Annexure -IV.

Noted and Approved.

Resolution (2): The BoS Chairman is authorized to prepare the Panel of examiners for both B.Tech IV Year I &II Semesters and IV – I EEE theory and Lab.

Noted and Approved.

Signatures of the Members Present:

1. 
2. 
3. 
4. 
5.
6.
7. 
8. 
9. 
10. 
11. 

Head of the Department

ANNEXURE – I

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE STRUCTURE FOR B.TECH IV YEAR

IV B.Tech I Sem ECE:

S.No.	Subject Code	Subject Name	Lectures			Credits
			L	T	P	
1	A17430	Digital Communication	4	0	0	3
2	A17431	Embedded System Design	4	0	0	3
3	A17432	Antennas & Microwave Engineering	3	1	0	3
4		**Professional Elective – 3:**	4	0	0	3
	A17433	1. Digital Image Processing				
	A17434	2. Spread Spectrum Communications				
	A17435	3. Multimedia and Signal Coding				
5		**Professional Elective – 4:**	4	0	0	3
	A17436	1. DSP Architectures				
	A17437	2 Telecommunication Switching Systems and Networks				
	A17438	3. Low Power VLSI				
6		**Open Elective – 3:**	4	0	0	3
	A17439	1. Introduction to MATLAB				
	A17440	2. Circuit Simulation using PSpice				
7	A17491	Embedded System Design Lab	0	0	3	2
8	A17492	Microwave Engineering & Digital Communications Lab	0	0	3	2
9	MP - I	Industry Oriented Mini-Project	-	-	-	2
	Total		**23**	**1**	**6**	**24**

IV B.Tech II Sem ECE:

S.No.	Subject Code	Subject Name	Lectures			Credits
			L	T	P	
1	A18441	Cellular and Mobile Communications	4	0	0	3
2	A18442	Computer Networks	4	0	0	3
3	A18443	Radar Engineering	3	1	0	3
4	MP - II	Major Project	0	0	15	10
5	SM	Seminar	0	0	6	2
6	CVV	Comprehensive Viva-Voce	-	-	-	3
	Total		**11**	**1**	**21**	**24**

ANNEXURE – II

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

DIGITAL COMMUNICATIONS

Pre Requisites

- Analog Communications
- Probability Theory
- Signals and Systems

Course Objectives

In this course it is aimed

- To understand different digital modulation techniques such as PCM, DM and various shift keying techniques.
- To analyze baseband transmission and optimal reception of a digital signal.
- To study about different detection and correction codes.
- To recite the importance of information theory on signals.

UNIT-I

Elements of Digital Communication Systems: Model of digital communication systems-digital representation of analog signal- certain issues in digital transmission- advantages of digital communication systems- bandwidth-S/N tradeoff- Hartley Shannon law- Sampling Theorem.

Pulse Code Modulation: PCM generation and reconstruction- Quantization noise- non uniform quantization and companding- DPCM- adaptive DPCM- DM and adaptive DM- Noise in PCM and DM.

UNIT-II

Digital Modulation Techniques: Introduction- ASK-modulator- Coherent and Non-coherent detector- FSK- bandwidth and frequency spectrum of FSK- Non coherent FSK detector- coherent FSK detector- FSK detection using PLL- BPSK- Coherent PSK detection- QPSK- Differential PSK.

UNIT-III

Baseband Transmission and Optimal Reception of Digital Signal: Pulse shaping for optimum transmission- A baseband signal receiver- probability of error- optimum receiver- optimal of coherent reception- signal space representation and probability of error- eye diagrams and cross talk.

UNIT-IV

Information Theory: Information and Entropy- conditional entropy and redundancy- Shannon-Fano coding- mutual information- information loss due to noise.

Source Coding - Huffman code- variable length coding- source coding to increase average information per bit- lossy source coding.

UNIT-V

Linear Block Codes: Introduction- Matrix description of Linear Block codes- Error detection and error correction capabilities of linear block codes- Cyclic Codes: Algebraic structure- encoding- syndrome calculation and decoding.

Convolution Codes: Encoding- Decoding using state- tree- trellis diagrams- decoding using viterbi algorithm- comparison of error rates in coded and uncoded transmission- Introduction to Spread Spectrum Modulation.

Text Books

1. Digital communications- John G. Proakis- Masoud Salehi- 5th edition- McGraw-Hill- 2008.
2. Principles of Communication systems – H.Taub and D.Schilling- TMH- 2008- 3rd Ed.
3. Digital and Analog Communication Systems – Sam Shanmugam- John Wiley- 2005.

References

1. Digital Communication: Theory, Techniques and Applications- R.N. Mutagi- 2nd Ed. 2013.
2. Digital Communications : Simon Haykin- John Wiley-2005
3. Modern Analog and Digital Communication – B.P.Lathi- Oxford reprint- 3rd Ed. 2004.
4. Digital Communications: Simon Haykin- John Wiley-2005.

Course Outcomes

At the end of the course the student should be able to

CO1. Understand different pulse code modulation techniques.

CO2. Compare the different digital modulation techniques using shift keying.

CO3. Calculate different parameters of base band signal for optimum transmission.

CO4. Analyze the performance of different information coding techniques.

Head of the Department
Department of Electronics and Communication Engg.
Vallurupalli Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

EMBEDDED SYSTEM DESIGN

Pre Requisites

- Switching Theory and Logic Design
- Microprocessors and Microcontrollers

Course Objectives

In this course it is aimed

- To learn the fundamentals of embedded system design.
- To illustrate the need for co-design in embedded systems.
- To acquire knowledge on communication protocols.
- To study the overview of RTOS.

UNIT-I

Introduction to Embedded Systems: Embedded Vs General Computing Systems- History- classifications- applications- characteristics- quality attributes- Design metrics - challenges.

Embedded Hardware: Processor embedded into a system- Processor selection- embedded hardware units and devices.

UNIT-II

Embedded Software: An overview of programming languages- challenges and issues related to embedded software development.

Co-design-development process: Design cycle - Embedded software development tools-Target Machines - Linker/Locators - Embedded Software on Target system -Issues in co-design.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT-III

ARM® Cortex™-M0+ processor: Overview- Architecture- Features- interfaces- configurable options-Modes of operation and Execution and Instruction Set- FRDM KL25Z Architecture - Interfacing of I/O devices with FRDM KL25Z- Integration and testing of embedded hardware-testing methods

UNIT-IV

Communication protocols: Network Embedded Systems- Serial Bus Communication Protocols- Parallel Bus Device Protocols, Parallel Communication Network Using ISA, PCI, PIC-X and Advanced Buses- Internet Enabled Systems, Network protocols- Wireless and Mobile System Protocols.

UNIT-V

RTOS based Embedded System Design: Operating system basics – types of operating systems-tasks-process and threads- multiprocessing and multitasking-task scheduling-Communication-shared memory- memory passing-remote procedure calls and sockets-device drivers-how to choose RTOS.

Text Books

1.Raj Kamal- "Embedded Systems-Architecture- Programming and Design-" 3/e-Tata McGraw Hill Education- 2015.

2.Shibu K V- "Introduction to Embedded systems"- 1/e- McGraw Hill Education- 2009.

3.Frank Vahid and Tony Givargis- "Embedded System Design: A Unified Hardware/Software Approach- 1999.

References

1. David E.Simon- "An Embedded software primer"- Pearson Education- 2004.

2. Embedded System Design : A Unified Hardware/ Software Introduction- 1/e- Wiley- John & Sons.

3. The Definitive Guide to ARM® Cortex®-M0 and Cortex-M0+ Processors - Joseph Yiu- Newnes Publications - second edition

Course Outcomes

At the end of the course the student should be able to

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

CO1: Express the fundamentals of the embedded system design.

CO2: Interpret the different issues in co-design.

CO3: Interface serial- parallel and network communication protocols to embedded systems.

CO4: Summarize the concepts of RTOS for Embedded Systems.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

ANTENNAS & MICROWAVE ENGINEERING

Pre Requisites

- Electromagnetic waves and Transmission lines

Course Objectives

In this course it is aimed to introduce to the students with

- To understand basic terminology and concepts of Antennas.
- To interrelate the wave spectrum and propagation of the waves for different antennas.
- To identify the basic principles of microwave components and its transmission.
- To interpret the various microwave solid state devices and their measurements.

UNIT- I

Antenna Basics: Introduction- Radiation Mechanism- Current Distribution on wire antenna- Antenna Parameters - Related Problems- Retarded vector potentials -Dipole – Parameters - Types- Radiation Resistance- Introduction to Loop antennas- comparison of small loop and short dipole.

Antenna Arrays: Two element arrays -Types- Multiplication of patterns- Linear Array with n-isotropic point sources of equal amplitude and spacing

UNIT-II

RF Antennas: Non-Resonant Radiators-Long wire antennas-Types- Design Relations- Travelling wave antenna-Broadband Antennas- The Helical Antennas - Significance- Geometry- helix modes and Practical design considerations-VHF- UHF and Microwave Antennas - Dipole array with Parasitic Elements- Folded Dipoles and their characteristics- Yagi-Uda Antenna- Reflector Antennas -Types- Parabolic Reflectors –parameters -Types- Feed systems Horn Antennas-Types.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

UNIT-III

Wave Propagation: Modes of Propagation-Types- Characteristics- Parameters- Mechanism of Reflection and Refraction- Effect of Earth's Curvature- Duct Propagation (M-curves)

Microwave Transmission Lines: Microwave spectrum and bands- Applications- Rectangular waveguides –solution of wave equations in rectangular coordinates- TE/TM/TEM mode analysis- mode characteristics-wavelengths and impedance relations- related problems- Micro strip lines cavity Resonators.

UNIT- IV

Waveguide Components and Microwave Tubes: Waveguide Attenuators –Types- Posts- Screws- Waveguide multiport junctions -Types- Magic Tee-Directional couplers - Types- Ferrites- composition and characteristics- faraday rotation- Ferrite components -Types- Scattering matrix-significance- properties- calculations- related problems.
High frequency limitations of conventional tubes- Bunching and velocity modulation- mathematical theory of bunching- principles and operation of two cavity, multi cavity Klystron- Reflex Klystron and TWT-Theory of crossed field interaction- Magnetrons.

UNIT-V

Microwave Solid State Devices and Measurements: TEDs - Introduction- Gunn Diode - Principle- RWH Theory- Characteristics- Basic Modes of Operation- Avalanche Transit Time Devices.

Description of Microwave Bench – Different Blocks and their Features- Microwave Power Measurement- Measurement of Attenuation- Volatge standing wave Ratio measurements- Impedance Measurements.

Text Books

1. John D. Krauss- Ronald J. Marhefka & Ahmad S. Khan- "Antennas and wave Propagation"- 4/e TMH- 2010.

2. Constantine A. Balanis- Antenna Theory: "Analysis and Design- "3/e- John Wiley- 2005.

3. Samuel Y. Liao- "Microwave Devices and Circuits"- 3/e- Pearson Education- 2003.

4. Rizzi P- "Microwave Devices and Circuits"- 3/e- Pearson Education- 2003.

References

1. E. C. Jordan & Keith G. Balmain- "Electromagnetic Waves and Radiating Systems"- 2/e- Pearson Education- 2006.

2. R. E. Collins- "Foundations for Microwave Engineering"- 2/e- Wiley India Pvt. Ltd.- 2012.

COURSE OUTCOMES

At the end of the course the student should be able to
CO1: Understand the different parameters in the antenna design.

CO2: Restate the principles and design issues of fundamental antennas

CO3: Summarize the wave propagation and significance of various microwave components.

CO4: Explain the various microwave solid state devices and their measurements.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Vardhaka Institute of Technology
Mysuru-570 035

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

DIGITAL IMAGE PROCESSING
(Professional Elective - 3)

Pre Requisites

- Signals and Systems
- Digital Signal Processing

Course Objectives

In this course it is aimed to introduce to the students with

- To Understand the basic principles of digital image processing
- To describe the different enhancement and restoration techniques in image processing
- To recite the different image segmentation, compression and morphological processing techniques.
- To illustrate the basics of color image processing.

UNIT-I

Fundamentals of Image Processing: Components of Digital Image Processing Systems – Image sensing and Acquisition- Elements of Visual Perception – structure of human eye – light-luminance- brightness and contrast- image formation- Basic steps of image processing- Sampling - Quantization and Digital Image representation - Basic relationships between pixels.

UNIT-II

Image Enhancement in Spatial domain: Introduction-Point Processing-Histogram processing-Arithmetic and logical operations-Fundamentals of Spatial filtering-masking-Spatial filters for Smoothing - Spatial filters for Sharpening.

Image Enhancement in Frequency domain: Need for transform-Basics of filtering in frequency domain-Image smoothing in frequency domain-Image sharpening in frequency domain-Homomorphic filtering-Selective filtering.

UNIT-III

Image Restoration: Introduction- Degradation model –Noise models-Spatial domain filtering for restoration- Mean Filters – Order Statistics filters – Adaptive filters –frequency domain filtering for noise removal - Band reject Filters – Band pass Filters – Notch Filters –Degradation function estimation– Inverse filtering – Wiener filter.

Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology,
Hyderabad-500075

UNIT-IV

Image Segmentation: Segmentation concepts - Point - Line - Edge Detection-Thresholding based segmentation- Local- Global and Adaptive Thresholding- Region based segmentation-Region growing-Region splitting and merging.

Morphological processing: Introduction- structuring element – erosion – dilation – Opening - closing-Hit or Miss Transform.

UNIT-V

Image Compression: Introduction-Redundancy in images-Fidelity Criteria-Image compression model-Lossless compression-Huffman coding–Bit-plane coding-Lossless Predictive coding-Lossy compression– lossy predictive coding- Transform coding –Image compression standards-JPEG and JPEG 2000.

Color Image Processing: Color fundamentals-Color models-Pseudo Color Image processing-Fundamentals of Full Color Image Processing.

Text Books

1. Rafael C. Gonzales- Richard E. Woods- "Digital Image Processing"- Third Edition- Pearson Education- 2010.
2. Anil K. Jain- Fundamentals of Digital Image Processing- PHI Learning Private Limited- New Delhi- 2002.

References

1. Rafael C. Gonzalez- Richard E woods and Steven L.Eddins- "Digital Image processing using MATLAB"- Tata McGraw Hill- Second Edition- 2010.

2. William K Pratt- "Digital Image Processing"- 3rd Edition- John Wiley & Sons- 2002.

3. Jayaramann S- S Esakkirajan- T Veerakumar- "Digital Image processing"- Tata McGraw Hill Education- 2011.

4. Greenberg A.D. and S.Greenberg- "Digital Images: A Practical Guide"- 1st Edition- McGraw Hill- 1995.

5. Edward R Dougherty- "Electronic Imaging Technology"- 1st Edition- PHI- 2005.

6. John C. Russ- The Image Processing Handbook- 6th Edition- CRC Press- Taylor & Francis Group- 2011.

7. Bernd Jähne- Digital Image Processing- 5th Revised and Extended Edition- Springer- 2002.

8. Malay K. Pakhira- "Digital Image Processing and Pattern Recognition"- First Edition- PHI Learning Pvt. Ltd- 2011.

Course Outcomes

At the end of the course the student should be able to

CO1: State the Digital Image Fundamentals.
CO2: Illustrate the quality improvement techniques on images
CO3: label the binary images using segmentation and morphological processing
CO4: interpret the various color models in different applications.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

SPREAD SPECTRUM COMMUNICATIONS

(Professional Elective - 3)

Pre Requisites

- Probability Theory and Stochastic Processes
- Analog Communications.

Course Objectives:

The objectives of this course are to make the student to

1. Understand the concept of Spread Spectrum and study various types of Spread Spectrum sequences and their generation.
2. Understand various Code tracing loops for optimum tracking of wideband signals viz Spread spectrum signals
3. Describe the performance of spread spectrum systems in Jamming environment, systems with Forward Error Correction.
4. Commercial Applications of Spread Spectrum

UNIT -I

Introduction to Spread Spectrum Systems: Fundamental Concepts of Spread Spectrum Systems, Applications and Advantages of Spread Spectrum ,Pseudo noise sequence, Pulse - Noise Jamming, Low Probability of Detection, Classifications : Direct Sequence SS, Frequency hopped SS, Hybrid SS. Fast Hopping Versus Slow Hopping- time Hopping SS systems.

Binary Shift Register Sequences for Spread Spectrum Systems:

Introduction, Definitions, Mathematical Background and Sequence Generator Fundamentals, Maximal Length Sequences, Gold Codes.

UNIT -II

Spread Spectrum Technique -Analysis: Synchronization of SS systems - Acquisition, Tracking. Jamming Consideration - Broadband, Partial band, multiple tone, Pulse-repeat band, jamming blade systems.

UNIT –III

Code Tracking Loops: Introduction, Optimum Tracking of Wideband Signals, Base Band Delay-Lock Tracking Loop, Tau-Dither Non- Coherent Tracking Loop, Double Dither Non-Coherent Tracking Loop.

Initial Synchronization of the Receiver Spreading Code: Introduction, Problem Definition and the Optimum Synchronizer, Serial Search Synchronization Techniques, Synchronization using a Matched Filter, Synchronization by Estimated the Received Spreading Code.

UNIT -IV:

Performance of Spread Spectrum Systems in Jamming Environments: Spread Spectrum Communication System Model, Performance of Spread Spectrum Systems without Coding.

Performance of Spread Spectrum Systems with Forward Error Correction: Elementary Block Coding Concepts, Optimum Decoding Rule, and Calculation of Error Probability, Elementary Convolution Coding Concepts, Viterbi Algorithm, Decoding and Bit-Error Rate.

UNIT –V

Spread Spectrum Technique Applications: Commercial applications - CDMA, Multipath channels, The FCC Part 15 rules -Direct sequence CDMA, IS-95 CDMA Digital cellular systems. Spread Spectrum applications in cellular, PCS and mobile communication.

TEXT BOOKS:

1. Rodger E Ziemer, Roger L. Peterson and David E Borth - "Introduction to Spread Spectrum Communication- Pearson, 1st Edition, 1995.
2. Mosa Ali Abu-Rgheff – "Introduction to CDMA Wireless Communications." Elsevier Publications, 2008.
3. M.K. Simon, J.K. Scholtz abd B.K. Levitt - 'Spread Spectrum Communications Vol-1, Vol-2, Vol-3', Computer Science Press Inc, 1985

REFERENCE BOOKS:

1. George R. Cooper, Clare D. Mc Gillem - "Modern Communication and Spread Spectrum," McGraw Hill, 1986.
2. Andrew j. Viterbi - "CDMA: Principles of spread spectrum communication," Pearson Education, 1st Edition, 1995.
3. Kamilo Feher - "Wireless Digital Communications," PHI, 2009.
4. Andrew Richardson - "WCDMA Design Handbook," Cambridge University Press, 2005.
5. Steve Lee - Spread Spectrum CDMA, McGraw Hill, 2002.

Course Outcomes:

On completion of this course student will be able to

1. Understand about spread spectrum system, various types of Spread spectrum sequences.
2. Analyze the performance of Spread spectrum systems in Jamming environment and systems with Forward Error Correction.
3. Understand about Code Tracking Loops and Initial Synchronization of the Receiver Spreading Code.
4. Describe about Commercial Applications of Spread Spectrum.

Head of the Department
Department of Electronics and Communication Engg
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

MULTIMEDIA AND SIGNAL CODING
(Professional Elective - 3)

Pre Requisites

- Signals and Systems
- Digital Signal Processing

Course Objectives

In this course it is aimed to introduce to the students with

- To understand the basic principles and techniques in Multimedia signal coding and compression.
- To relate the different techniques related to multimedia networks.
- To outline the current multimedia standards and technologies.
- To illustrate the need for different Multimedia Techniques

UNIT -I

Introduction to Multimedia: Components of Multimedia-Hypermedia-World Wide Web-Overview of Multimedia Software Tools-Multimedia Authoring-Graphics and Image Data Types- File Formats.

Color in Image and Video Processing: Light and Spectra-Human Vision-Image Formation-Camera Systems- Gamma Correction-CIE Chromaticity Diagram-Color Monitor Specifications-Out-of-Gamut Colors-White Point Correction-XYZ to RGB Transform-L*A*B* Color Model-Color Models in Images-RGB- CMY-Transformation from RGB to CMY-Under Color Removal: CMYK System-Printer Gamut- Color Models in Video - Video Color Transforms-YUV-YIQ and YCbCr.

UNIT -II

Fundamentals of Video: Types of Video Signals-Component- Composite and S-Video-- Analog Video-NTSC- PAL and SECAM- Digital Video- Chroma sub sampling-HDTV.

Fundamentals of Digital Audio: Digitization of Sound-MIDI-Quantization and Transmission of Audio.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT -III

Data Compression in Multimedia: Lossless Compression Algorithms-Run Length Coding-Variable Length Coding- Arithmetic Coding- Lossless JPEG Image Compression. Lossy Image Compression Algorithms-Transform Coding- Wavelet Based Coding. Image Compression Standards: JPEG and JPEG2000.

UNIT – IV

Video Compression Techniques: Basics of Video Compression- Video Compression Based on Motion Compensation- Search for Motion Vectors- sequential- logarithmic- and Hierarchical search-H.261- Intra-Frame and Inter-Frame Coding-Quantization-Encoder and Decoder- MPEG video coding-MPEG 1 and MPEG2- MPEG 7 and MPEG 21.

UNIT -V

Audio Compression Techniques: Vocoders-Phase Insensitivity-Channel Vocoder-Formant Vocoder-Linear Predictive Coding- CELP- Hybrid Excitation Vocoders-MPEG Audio — MPEG Layers-MPEG Audio Strategy- MPEG Audio Compression Algorithms-MPEG-2 AAC-MPEG-4 Audio- MPEG 7 and MPEG 21.

TEXT BOOKS

1. Fundamentals of Multimedia — Ze- Nian Li- Mark S. Drew- PHI- 2010.
2. Multimedia Signals & Systems — Mrinal Kumar Mandal- Springer International Edition 1St Edition- 2009

REFERENCES

1. Digital Video Processing — A. Murat Tekalp- PHI- 1996.
2. Video Processing and Communications — Yaowang- Jorn Ostermann- Ya-QinZhang- Pearson-2002
3. Multimedia Communication Systems — Techniques- Standards & Networks KR. Rao- Zorans. Bojkoric- DragoradA.MjIovanj 1st Edition- 2002.
4. Fundamentals of Multimedia Ze- Man Li- Mark S.Drew- Pearson Education (LPE)- 1st Edition- 2009.
5. Multimedia Systems John F. Koegel Bufond Pearson Education (LPE)- 1st Edition- 2003.

Course Outcomes

At the end of the course the student should be able to

CO1: Comprehend the fundamentals behind multimedia signal processing.

CO2: Realize the fundamentals behind multimedia compression.

CO3: Know the basic principles behind existing multimedia compression and communication standards.

CO4: Understand future multimedia technologies.

Head of the Department
Department of Electronics and Communication Engg.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

DSP ARCHITECTURES
(Professional Elective - 4)

Pre Requisites

- Signals and Systems
- Digital Signal Processing
- Microprocessors

Course Objectives

In this course it is aimed to introduce to the students with

- To understand the architectural features of DSP processors.
- To study the features of TMS320C54x Processors
- To illustrate the various algorithms of DSP on a Programmable device.
- To interrelate the programmable DSP devices with its applications.

UNIT – I

Architectures for Programmable DSP Devices: Basic Architectural features- DSP Computational Building Blocks- Bus Architecture and Memory- Data Addressing Capabilities- Address Generation Unit- Programmability and Program Execution- Speed Issues- Features for External interfacing.

Unit - II

Execution Control and Pipelining: Hardware looping- Interrupts- Stacks- Relative Branch support- Pipelining and Performance- Pipeline Depth- Interlocking- Branching effects- Interrupt effects- Pipeline Programming models.

UNIT – III

Programmable Digital Signal Processors TMS320C54XX : Commercial Digital signal-processing Devices- Data Addressing modes - Memory space - Program Control- instruction set- Simple Programs- On-Chip Peripherals- Interrupts – Pipeline- Memory interface- I/O interface- Multichannel buffered serial port (McBSP)-CODEC interface circuit- CODEC programming- A CODEC-DSP interface example.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT - IV

Implementations of Basic DSP Algorithms: The Q-notation- FIR Filters- IIR Filters- Interpolation Filters- Decimation Filters- PID Controller- Adaptive Filters- 2-D Signal Processing.

Implementation of FFT Algorithms: DFT Computation- Butterfly Computation- Overflow and scaling- Bit-Reversed index generation- implementation on the TMS320C54XX- Computation of the signal spectrum.

UNIT – V

Applications of DSP Devices: DSP system- Biotelemetry receiver- Speech processing system- Image processing system - Position control for hard disk drive- Power Meter - Development Tools - Code Composer Studio - Example

TEXT BOOKS

1. Avtar Singh and S. Srinivasan(2006)- Digital Signal Processing- Thomson Publication- India.

2.Phil Lapsley Jeff Bier- Amit Shoham- Edward A.Lee(2010)-DSP Processor Fundamentals- Architectures & Features- John Wiley & Sons-India.

REFERENCES

1. B. Venkata Ramani and M. Bhaskar-(2004)-Digital Signal Processors- Architecture- Programming and Applications- Tata McGraw-Hill- New Delhi.

2. Jonatham Stein(2005)-Digital Signal Processing- John Wiley- India.

3. Emmaneul C Ifeachor- Barrie W Jrevis- Digital Signal Processing- Pearson Education.

COURSE OUTCOMES:

At the end of the course the student should be able to

CO 1: Define the various features of DSP Processors

CO 2: Recollect the different algorithms on DSP processor.

CO 3: Relate the different applications using DSP processor.

CO 4: Express the Architectural features of TMS320C54XX processor.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

TELECOMMUNICATION SWITCHING SYSTEMS AND NETWORKS

(Professional Elective - 4)

Pre Requisites

- Switching Theory and Logic Design
- Probability Theory and Stochastic Processes
- Analog Communications

Course Objectives

In this course it is aimed to introduce to the students with

- To recite through the evolution of switching systems from manual to automatic controlled digital systems.
- To Understand Switching and Signalling in the context of telecommunication network.
- To study traffic signaling- packet switching and networks.
- To illustrate various telephone networks.

UNIT-I

Basics of Switching Systems: Evolution of Telecommunications- simple telephone communication- Basics of a Switching System- Functions -Manual System- major Telecommunication Networks - Strowger switching systems- Strowger Switching Components- Step by step switching- 1000 line Blocking Exchange- Principles of Crossbar Switching- Configurations - Exchange Organization- Digital switching systems.

UNIT-II

Switching Networks: Single Stage Networks- Link systems- Two Stage Networks- Three Stage Networks- Four Stage Networks- Rearrangeable networks.

Time Division Switching: Time Division Space Switching (TDSS)- Time Division Time Switching (TDTS)- Time Multiplexed Space Switching (TMSS)- Time Multiplexed Time Switching (TMTS)- Combination Switching-Three Stage Switching- n Stage Switching.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology

UNIT-III

Traffic Engineering: Network traffic load and Parameters – Lost-call system – Grade of Service and Blocking probability – Modeling switching systems – Incoming traffic and service time characterization – Blocking models and loss estimates – Delay systems.

UNIT- IV

Signalling: Customer Line Signalling- Audio-frequency Junctions and Trunk Circuits- FDM Carrier Systems-Outbound signaling- Inband Signalling -PCM Signalling- Inter Register Signalling- Common Channel signaling principles- CCITT Signalling System- Digital Customer line Signalling.

UNIT – V

Packet Switching: Local Area and Wide Area Networks- Bus Networks- Ring Networks- Optical Fiber Networks- Large Scale Networks- Datagrams and Virtual Circuits- Routing- Flow Control- Standards- Frame Relay- Broadband Networks.

Telephone Networks: Analog Networks- Private Networks- Numbering- Charging- Routing- Network management.

Text Books

1. Thiagarajan Viswanathan (2010)- Telecommunication Switching Systems and Networks- Prentice Hall of India- New Delhi- India.
2. J. E. Flood (2016)- Telecommunications Switching- Traffic and Networks- Pearson Education- New Delhi.

References

1. John. C. Bellamy (2010)- Digital Telephony- 3rd edition- John Wiley- India.
2. Roger L. Freeman (2010)- Telecommunication System Engineering- 4th edition- John Wiley & Sons- India.
3. Achyut S. Godbole (2005)- Data Communications & Networks- Tata McGraw Hill- New Delhi.
4. Bosse J G van- Bosse John G (1997) "Signaling in Telecommunication Networks"- Wiley John & Sons.
5. T.N.Saadawi- M.H.Ammar- A.E.Hakeem (1994)- "Fundamentals of Telecommunication Networks"- Wiley Interscience.

Course Outcomes

At the end of the course the student should be able to

- Understand the main concepts of telecommunication signaling and switching in the network.
- Define fundamental telecommunication traffic in systems.
- Interpret the methodologies of packet switching.
- State the different types of telephone networks.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

LOW POWER VLSI
(Professional Elective - 4)

Pre Requisites

- VLSI Deign

Course objectives:

In this course it is aimed to introduce to the students with

- To discuss various causes of power dissipation in VLSI circuits.
- To explain the impact of technology scaling on performance of CMOS design.
- To find suitable techniques to reduce the power dissipation in VLSI circuits.
- To describe design of adders, multipliers and memory circuits with low power dissipation.

Unit-I

Low power VLSI Design: Overview-Need for low power VLSI chips- Charging and discharging capacitance- Short circuit current in CMOS- CMOS leakage current- static current- basic principles of low power design.

Unit-II

Impact of Device & Technology in VLSI Design: Introduction- Dynamic dissipation in CMOS- Effects of V_{dd} and V_t on speed- constraints on reduction- Impact of Transistor sizing and optimal gate oxide thickness- Technology Scaling- Technology and Device innovations for low power design.

Unit-III

Power Estimation: SPICE basics- Gate level logic simulation: capacitive power dissipation- Static state power- Gate level capacitance estimation- gate level power analysis- Architecture level analysis- Probabilistic power analysis- Techniques.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology

Unit-IV

Low Power Techniques Circuit level: Transistor and Gate Sizing- Equivalent Pin Ordering- Network Restructuring and Reorganization- Special Latches & Flip- Flops- Low Power Digital Cell Library.

Logic level: Gate Reorganization- Signal Gating- Logic Encoding- State Machine Encoding- Pre-computation Logic.

Unit-V

Low Power Memory Design

Introduction- sources and reduction of power dissipation in memory subsystem- Sources of power dissipation in SRAM and DRAM - Low power SRAM circuits -Low power DRAM circuits.

TEXT BOOKS

1. Gary K. Yeap- Practical Low Power Digital VLSI Design- KAP- 2002
2. Rabaey- Pedram- Low power design methodologies- Kluwer Academic- 1997

REFERENCES

1. Kaushik Roy- Sharat Prasad- Low-Power CMOS VLSI Circuit Design- Wiley- 2000
2. Sung-Mo kang- Yusuf Leblebici- CMOS Digital Integrated Circuits- Analysis and Design- TMH- 2011.
3. A. Bellamour- M. I. Elamarsi- Low Power CMOS VLSI Circuit Design- Kluwer Academic Press- 1995.
4. J. M. Rabaey- Anatha Chandrakasan- B. Nikolic- Digital Integrated Circuits- A Design Perspective- PHI.

Course Outcomes

At the end of the course the students should be able to

CO1: understand the need for low power VLSI design.

CO2: clearly find the various sources of power dissipation in a given VLSI circuits.

CO3: describe the relationship of probability while finding power dissipation of VLSI circuits.

CO4: design low power arithmetic circuits and systems.

Head of the Department
Department of Electronics and Communication Engg
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

INTRODUCTION TO MATLAB
(Open Elective - 3)

Pre Requisites

- Programming in C

Course objectives:

In this course it is aimed to introduce to the students with

- To enable the students to understand the fundamentals and programming knowledge in MATLAB.
- To provide the deeper understanding of the tools and processes that enable students to use MATLAB for the engineering problems.
- To assist the students with computational tools to design their own analysis and interpretation strategies when facing different engineering applications.

UNIT-I

Introduction to Matlab: Introduction-environment-Advantages – file types –Variables and Constants –Vectors and Matrices- Arrays - manipulation- Built-in MATLAB Functions – Load and Save – Matlab File Processing – File Opening and Closing –Input and output statements-Function files.

UNIT- II

Control Structures in Matlab: Data types-Operators – Hierarchy of operations- Loops- for - nested for - while –Branching structures- If- switch- break- continue- error- try-catch-Debugging methods in Matlab.

UNIT-III

Matlab Plotting: Basic 2D plots: Printing labels- grid and axes box- Entering text in a box- Axis control-Style options-Multiple plots-subplots-specialized 2D plots- STEM- BAR- HIST- Pi-stairs- rose- LOG-LOG- SEMILOG-POLAR-COMET- 3D plots: – Mesh - Contour –Surf-Stem3.

UNIT- IV

Matlab Programming: Nodal analysis-loop analysis- Laplace transform- inverse Laplace transform- partial fraction expansion- transfer function representation –zeros and poles – roots-polyval-residue- Time response of control system-ordinary differential equation-ODE solver-Polynomials.

UNIT-V

Introduction to Simulink: Introduction-simulink modeling-simulating a model-using variable from matlab-Data import and export-State space modeling-Simulation of non linear system-Creating a sub system-Creating a masked sub system- Introduction-Creating and displaying GUI-GUI components-Panel and button groups-Dialogue boxes and button groups-menus-Creating efficient GUIS.

Text Books

1. Stephen J. Chapman-"MATLAB Programming for Engineers"- 5th Edition- Cengage Learning- 2015.
2. R.K.Bansal- A.K.Goe- M.K.Sharma- "MATLAB and Its Applications in Engineering"- Pearson Education India- 2009.

References

1. Amos Gilat-"MATLAB: An Introduction With Applications"- John Wiley & Sons- 2009.
2. Edward B. Magrab-"An Engineer's Guide to MATLAB: With Applications from Mechanical-Aerospace-Electrical- Civil- and Biological Systems Engineering"-3rd Edition- Prentice Hall-2011.
3. Rudra Pratap- "Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers"-Oxford University Press- 2010.
4. D. M. Etter- "Introduction to MATLAB 7"- Pearson education-2009.
5. William J.Palm III- "Introduction to MATLAB for Engineers"- 3 rd Edition- McGraw-Hill-2010.
6. M.Herniter- "Programming in MATLAB"- Thomson Learning- 2001.

Course Outcomes

At the end of the course the student should be able to

CO1: Break down computational problems into a series of simple steps.

CO2: Create programs in the MATLAB language for engineering applications.

CO3: Appraise and get familiarized with the visualization techniques.

CO4: Familiarized with Different application tools required for different area of domain.

CO5: Expose to the common algorithms and techniques that are the building blocks of MATLAB.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

CIRCUIT SIMULATION USING PSPICE

(Open Elective - 3)

Pre Requisites

- Basic Electrical and Electronics

Course objectives:

In this course it is aimed to introduce to the students with

- To develop a simulation circuit for different domain.
- To Develop and understand the types of the Pspice
- To Perform the DC analysis of the circuit such as operating point small signal transfer function and DC sweep.
- To motivate the students to analyze the frequency response of the circuit.

UNIT-I

Introduction to Pspice: Introduction-Description of Spice-Types- input files-Element values-Nodes-Circuit Elements-Sources-Types of Analysis-Output Variables-Pspice Output Commands – structure of Pspice programs-Limitations of Pspice- -Examples.

UNIT-II

DC Circuit Analysis: Introduction-Resistors-Operating Temperature-Modeling of Elements-Independent DC Sources-Dependent Sources-D C Output Variables-Example problems-Types of Output-Types of DC Analysis-Finding the thevenin's equivalent-transfer function-DC transfer characteristics with varying resistors.

UNIT-III

Transient Analysis: Introduction- AC Output Variables- Capacitors and Inductors- Modeling of Transient Sources-transient source-transient output commands-Transient response-switches-Example.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

UNIT-IV

AC Circuit Analysis: Introduction- AC Output Variables - Independent AC Sources-AC analysis- Magnetic Elements - Transmission Lines- Multiple Analyses – Examples.

Advanced Pspice Commands: Table- Laplace – freq – ends - PARAM-Fourier analysis - Noise analysis-Subckt.

UNIT-V

Application of Pspice: Introduction- Pspice model for -Diode- BJT-FET and MOSFET -VI characteristics of Diode - zener diode - CB- CC- CE characteristics-Drain- Transfer characteristics- Introduction to Orcad capture.

Text Books

1. Muhammad H. Rashid- Introduction to PSpice® Using OrCAD® for Circuits and Electronics- third edition-Pearson 2004.
2. Paul W. Tuinenga- A guide to circuit simulation and analysis using spice- Pearson Education-1995.

References

1. Nillson Introduction to PSpice Using OrCad Release 16.2: Electric Circuits 9th Edition - 2011
2. L. H. Fenical- PSpice@: A Tutorial-Prentice Hall- Prentice Hall -1992
3. John O Attia Pspice and Matlab for Electronics CRC Publication 2002.
4. James W.Nilson Introduction to PSpice for Electric Circuits Aug 2007.
5. James A.svaboda Wiley PSpice for Linear Circuits (uses PSpice version 15.7)- 2nd Edition

Course Outcomes

At the end of the course the student should be able to

CO1: Describe circuits for PSpice simulation.

CO2: Understand the types of dc - ac and their output variables analysis

CO3: Understand the response of Transient analysis and obtain their output variables.

CO4: Students can able to analyze and develop simulation circuit for different applications.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

EMBEDDED SYSTEM DESIGN LAB

Course Objectives:

1. To illustrate the basic programming concepts of ARM cortex M0+ processor using simple programs.
2. To transfer programs into FRDM kit.
3. To communicate among different processors with FRDM kit
4. To interface I/O devices with FRDM kit.

List of Experiments

1. Blinking of LED : Hello World
2. Breath out 2 LEDs
3. Color Circle
4. ADC Potentiometer
5. Analog serial plotter
6. Interface to Accelerometer sensor using FRDM kit
7. Serial port communication using FRDM kit
8. Interface to touch sensor using FRDM kit
9. Radio frequency transmission operation using FRDM kit
10. LED intensity control using touch sensor using FRDM kit
11. Interface and plot LDR using FRDM kit
12. Interface and plot temperature sensor using FRDM kit

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

Course Outcomes:

Students can able to

1. Write programs using ARM cortex M0+ processor instruction set.
2. Transfer programs into FRDM kit.
3. Communicate among different processors with FRDM kit.
4. Interface I/O devices with FRDM kit.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-I Sem

MICROWAVE ENGINEERING AND DIGITAL COMMUNICATIONS LAB

Course Objectives:

The student should be made to:

1. Know about the behavior of microwave components.
2. Examine microwave measurement procedures
3. Describe the Radiation Pattern of the Horn antenna
4. Illustrates the effects of TDM
5. Explain base band digital modulation schemes (PCM & DM)
6. Compares Pass band digital modulation schemes (ASK-FSK- PSK DPSK and QPSK)

Note: Minimum 12 Experiments to be conducted

Part — A: Microwave Engineering Lab (Any 6 Experiments):

1. Reflex Klystron Characteristics
2. Gunn Diode Characteristics
3. Directional Coupler Characteristics
4. VSWR Measurement
5. Measurement of Waveguide Parameters
6. Radiation Pattern of Horn Antenna
7. Measurement of Scattering parameters of a Magic Tee
8. Measurement of Scattering parameters of a Circulator
9. Attenuation Measurement
10. Microwave Frequency Measurement

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

Part — B: Digital Communications Lab (Any 6 Experiments):

1. PCM Generation and Detection
2. Differential Pulse Code Modulation
3. Delta Modulation
4. Time Division Multiplexing of 2 Band Limited Signals
5. Frequency shift keying: Generation and Detection
6. Phase Shift Keying: Generation and Detection
7. Amplitude Shift Keying: Generation and Detection
8. Study of the spectral characteristics of PAM- QAM
9. DPSK :Generation and Detection
10. QPSK: Generation and Detection

Equipment required for the Laboratory:
Microwave Engineering Lab:

1. Microwave Bench set up with Klystron Power Supply
2. Microwave Bench set up with Gunn Power Supply
3. Micro Ammeter
4. Milli Ammeter
5. VSWR meter
6. Microwave Components

Digital Communication Lab

1. RPS: O-30V
2. CR0: O-2OMHz
3. Function Generators: 0-1MHz
4. Experimental Kits

Head of the Department
Department of Electronics and Communication Engg.
Vidya Vardhaka Institute of Technology,
Mysuru-570 002.

COURSE OUTCOMES:

At the end of the course- the student should be able to:

1. Explain and verify the characteristics of microwave devices
2. Identify and illustrate the scattering parameters of different microwave devices
3. Demonstrate their knowledge in base band signaling schemes through implementation of FSK- PSK and DPSK
4. Understand Multiplexing of two Band limited Signals through TDM.

ANNEXURE – III
VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS
IV Year B.Tech. ECE-II Sem

CELLULAR AND MOBILE COMMUNICATIONS

Pre Requisites

- Analog Communications
- Digital Communications

Course Objectives

In this course it is aimed to introduce to the students with

- To provide the student with an understanding of the Cellular concept- Frequency reuse- Hand-off strategies.
- To enable the student to compare wireless and mobile cellular communication systems over a stochastic fading channel.
- To enable the student to relate Co-channel and Non- Co-channel interference.
- To give the student an outline of frequency management- Channel assignment and types of handoff.

UNIT-I

Introduction to Cellular Mobile Radio Systems: Limitations of Conventional Mobile Telephone Systems- Basic Cellular Mobile System- First, Second, Third and Fourth Generation of Cellular Wireless Systems- Uniqueness of Mobile Radio Environment- Fading- Fundamentals of Cellular Radio System Design- Concept of Frequency Reuse- Cell Splitting- Sectoring- Microcell Zone Concept.

UNIT -II

Channel Interference: Measurement Of Real Time Co-Channel Interference- Design of Antenna System- Diversity Techniques- Non-Co-Channel Interference- Adjacent Channel Interference- Near End, Far End Interference- Cross Talk- Effects on Coverage and Interference by Power Decrease and Antenna Height Decrease- Effects of Cell Site Components.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT -III

Cell Coverage for Signal and Traffic: Signal Reflections in Flat and Hilly Terrain- Phase Difference between Direct and Reflected Paths- Constant Standard Deviation- General formula for Mobile Propagation over water and flat open area- Straight Line Path Loss Slope.

Cell Site and Mobile Antennas: Umbrella Pattern Antennas- Minimum Separation of Cell Site Antennas- Mobile Antennas.

UNIT -IV

Frequency Management and Channel Assignment: Numbering and Grouping- Setup Access and Paging Channels- Channel assignments to cell sites and mobile units-Channel Sharing and Borrowing- Sectorization- Overlaid Cells- Non Fixed Channel Assignment.

UNIT —V

Handoffs and Dropped Calls: Handoff Initiation- Advantages of Handoff -Types of Handoff- Delaying Handoff- Power difference handoff-Forced handoff-Mobile assisted and soft handoff- intersystem handoff- Introduction to Dropped Call Rates and their Evaluation.

TEXT BOOKS

1. Mobile Cellular Telecommunications — W.C.Y. Lee- Mc Graw Hill- 2nd Edn.- 1989.
2. Wireless Communications – Theodore. S. Rapport- Pearson Education- 2nd Edn.- 2002.
3. Mobile Cellular Communication – Gottapu sashibhushana Rao- Pearson- 2012.

REFERENCES

1. Principles of Mobile Communications — Gordon L. Stuber- Springer International- 2nd Edn.- 2001.
2. Modern Wireless Communications-Simon Haykin- Michael Moher-Pearson Education- 2005.
3. Wireless Communications Theory and Techniques- Asrar U. H .Sheikh- Springer- 2004.
4. Mobile Communications, Second Edition Book by Jochen Schiller.
5. Wireless Communications —Andrea Goldsmith- Cambridge University Press- 2005.

Course Outcomes

At the end of the course the student should be able to

CO1: To explain the concept of cell coverage for signal- traffic- and diversity techniques to design an antenna.

CO2: To use frequency management- Channel assignment for the design of a cellular system.

CO3: To analyze and design wireless and mobile cellular systems.

CO4: To classify frequency management- Channel assignment and types of handoff and apply in the design of a cellular system.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-II Sem

COMPUTER NETWORKS

Pre Requisites

- Switching Theory and Logic Devices
- Digital Communications

Course Objectives

In this course it is aimed to introduce to the students with

- To explore the various layers of OSI Model.
- To introduce the fundamental types of computer networks.
- To demonstrate the TCP/IP and OSI models with merits and demerits.
- To introduce UDP and TCP Models.

UNIT-I

Overview of the Internet: Protocol- Layering Scenario- Internet history standards and administration-The OSI Model-TCP/IP Protocol suite- Comparison of the OSI and TCP/IP reference model.

Physical Layer: Guided and wireless transmission media.

Data Link Layer: Design issues- CRC Codes- Elementary Data link Layer protocols- sliding window protocol.

UNIT-II

Multiple Access Protocols: ALOHA- CSMA- Collision free protocols- Ethernet- Physical Layer- Ethernet Mac Sub layer- repeaters- hubs- bridges- learning bridges- spanning tree bridges - switches- routers and gateways- data link layer switching.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT-III

Network Layer: Introduction-Design issues- Packet switching- connection less and connection oriented networks-Tunneling- Encapsulation-Internetwork routing-Packet fragmentation and packet delivery.

Network Layer Protocols: Internet Protocol (IP)- Mobile IP-IPv4- ICMPv4- Transition from IPV4 to IPV6- IPv6- Addressing IPv6 Protocol- ICMPV6 Protocol.

UNIT-IV

Transport Layer: Introduction - Transport Layer Protocols-Bidirectional Protocols- Services - Port Numbers.

Transmission Control Protocol: Services- Features-Segments- Connection- State Transition- Flow and Error Control - Congestion Control- TCP in Wireless Domain.

User Datagram Protocol: Introduction- Services- Applications. The Internet Transport Protocols.

UNIT-V

Application Layer: Introduction –services- Paradigms-Standard client-server model and application-HTTP- FTP- Electronic mail- TELNET- DNS- SSH- Quality of Service- Queue Management.

TEXT BOOKS

1. Data Communications and Networking — Behrouz A. Forouzan- Fifth Edition TMH-2013.
2. Computer Networks — Andrew S Tanenbaum- 4th Edition- Pearson Education.
3. High performance TCP/IP Networking -- Mahbub Hasan & Raj Jain PHI -2005

REFERENCES

1. An Engineering Approach to Computer Networks-S.Keshav- 2nd Edition- Pearson Education.
2. Computer Networks- L.L.Peterson and B.S.Davie-4th edition- ELSE VIER.
3. Internetworking with TCP/IP -- Douglas. E.Comer- Volume I PHI -
4. Computer Networks-Larry L. Perterson and Bruce S.Davie -
5. Mobile Communications - Jochen Schiiler- Pearson - Second Edition

Course Outcomes

At the end of the course the student should be able to

CO1: To understand and explore the basics of Computer Networks and Various Protocols.

CO2: To explain the World Wide Web concepts.

CO3: To administrate a network and flow of information.

CO4: To understand easily the concepts of network security- Mobile and ad hoc networks.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. ECE-II Sem

RADAR ENGINEERING

Pre Requisites

- Signal and Systems
- Analog and Digital Communications

Course Objectives:

In this course it is aimed to introduce to the students with

- To understand Radar Fundamentals and illustration of the Radar Equation
- To elaborate various modulation technologies involved in the design of radar transmitter and receivers.
- To Illustrate Various Types Of Radars Like MTI- Doppler And Tracking Radars and Their Comparison.

Unit – I

Basics of Radar: Introduction- Maximum Unambiguous Range- Radar Waveforms- - Radar Block Diagram and Operation- Radar Frequencies and Applications. Prediction of Range Performance- Minimum Detectable Signal- Receiver Noise.

Radar Equation: Simple and Modified form of Radar Range Equation with Illustrative Problems - SNR- Envelop Detector-False Alarm Time and Probability- Integration of Radar Pulses- Radar Cross Section of Targets (simple targets - sphere- cone-sphere)- Transmitter Power- PRF and Range Ambiguities- System Losses (qualitative treatment)- Illustrative Problems.

Unit – II

CW and Frequency Modulated Radar : Doppler Effect- CW Radar – Block Diagram- Isolation between Transmitter and Receiver- Non-zero IF Receiver- Receiver Bandwidth Requirements- Applications of CW radar- Illustrative Problems.

FM-CW Radar: Range and Doppler Measurement- Block Diagram and Characteristics- FM-CW altimeter- Measurement Errors- Multiple Frequency CW Radar.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

Unit – III

MTI and Pulse Doppler Radar: Introduction- Principle- MTI Radar with Power Amplifier Transmitter and Power Oscillator Transmitter- Delay Line Cancellers – Filter Characteristics- Blind Speeds- Double Cancellation- Staggered PRFs- Range Gated Doppler Filters- MTI Radar Parameters- Limitations to MTI Performance- MTI versus Pulse Doppler Radar.

Unit – IV

Tracking Radar: Tracking With Radar- Sequential Lobing- Conical scan- Monopulse Tracking Radar-Amplitude Comparison Monopulse(One-And Two-Coordinates)-Phase Comparison Monopulse- Tracking In Range- Acquisition and Scanning Patterns- Comparison Of Trackers.

Unit – V

Detection of Radar Signals in Noise: Introduction- Matched Filter Receiver-Response Characteristics and Derivation- Correlation Function and Cross-Correlation Receiver- Efficiency of Non-Matched Filters- Matched Filter with Non-White Noise.
Radar Receivers-Noise Figure and Noise Temperature- Display-Types- Duplexers-Branch types And Balanced type- Circulators as Duplexers. Introduction to Phased Array Antennas-Basic concepts- Radiation Pattern- Beam Steering and Beam Width changes- Advantages and Limitations- Applications.

TEXT BOOKS

1. Introduction to radar systems-Merrill I.Skolnik- TMH special Indian edition-2nd ed.-2007.

REFERENCES

1. Radar: Principles- Technology- Applications-Byron Edde- Pearson Education- 2004.
2. Radar Principles- Peebles- Jr.- P.Z.- Wiley- New York- 1998.
3. Principles Of Modern Radar: Basic Principles-Mark A. Richards- James A.Scheer- William A.Holm-Yesdee-2013

Course Outcomes

At the end of the course the student should be able to
CO1: Understand the concepts of radar fundamentals and analysis of the radar signals.
CO2: List and differentiate various radar transmitters and receivers.
CO3: Relate and contrast the different types of radars like MTI- Doppler and tracking radars.
CO4: Identify detection process of radar signals in noise.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology.
Hyderabad-500075

ANNEXURE - IV

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. EEE-I Sem

MICROPROCESSORS AND INTERFACING DEVICES

Pre Requisites

- Switching Theory and Logic Design
- IC Applications

Course Objectives

1. To develop an in-depth understanding of the operation of microprocessors and microcontrollers
2. To interpret the 8086 architecture with its internal features.
3. To analyze the techniques involved in assembly language programming of 8086.
4. To understand the interfacing techniques and their applications.

UNIT-I

8086 Microprocessor: Introduction to 8085 microprocessor- 8086 architecture- Functional Diagram- Register Organization- Memory segmentation- Memory addresses- physical memory organization- Signal descriptions of 8086- common function signals- Minimum and Maximum mode operation- Timing diagrams- Interrupt structure.

UNIT-II

Assembly Language Programming using 8086: Instruction formats- addressing modes- instruction set- assembler directives- procedures-macros- Simple programs.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075

UNIT-III

Interfacing with 8086 Microprocessor: 8255 Programmable Peripheral Interface- Various Modes of Operation-Interfacing Keyboard- Display- Stepper motor- ADC-DAC- 8259 Programmable Interrupt Controller - 8257DMA controller.

UNIT-IV

Communication Interface: Serial communication standards- serial data transfer schemes- 8251 USART architecture and Interfacing- RS-232- TTL to RS 232C and RS232C to TTL conversion. Simple programs on serial data transfer-IEEE-488.

UNIT-V

Introduction to Microcontrollers: Overview of 8051 microcontroller- Architecture- I/O ports and Memory organization- addressing modes and instruction set of 8051- Simple programs.

Text Books

1. Advanced Microprocessors and Peripherals — A. K. Ray and K.M. Bhurchandani- TMH- 2nd Edition 2006.
2. D. V. Hall- Microprocessors and Interfacing- TMGH- 2nd Edition 2006.
3. Kenneth. J. Ayala- The 8051 Micro controller 3rd Ed.- Cengage Learning.

References

1. The 8051Microcontrollers- Architecture and Programming and Applications -K.Uma Rao- Andhe Pallavi- Pearson- 2009.
2. Micro Computer System 8086/8088 Family Architecture- Programming and Design – Liu and GA Gibson- PHI- 2nd Ed.
3. Microcontrollers and Application – Ajay. V. Deshmukh- TMGH- 2005
4. The 8085 Microprocessor: Architecture- programming and Interfacing K.Uday Kumar- B.S.Umashankar- 2008- Pearson

Head of the Department
Department of Electronics and Communication
Vardhaman College of Engineering
Hyderabad-501218

Course Outcomes

At the end of the course the student should be able to

CO 1: Illustrate the internal architecture of 8086 and 8051

CO 2: Understand and apply the fundamentals of assembly level programming of microprocessors and microcontroller.

CO 3: Explain the use of interrupts with suitable examples.

CO4: Demonstrate the interfacing of various peripheral devices with the microprocessor 8086.

VIDYA JYOTHI INSTITUTE OF TECHNOLOGY, AUTONOMOUS

IV Year B.Tech. EEE-I Sem

MICROPROCESSORS AND INTERFACING DEVICES LAB

8086 MICROPROCESSOR:

1. Arithmetic Operations (addition, subtraction, multiplication and division)
2. Addition of two BCD numbers.
3. Ascending order/Descending order of an array of numbers.
4. Finding Largest/Smallest numbers in an array of numbers.
5. Generation of Fibonacci series.
6. Hexadecimal to Decimal conversions
7. ASCII to Decimal conversion
8. Program for sorting an array for 8086.
9. Program for searching for a number or character in a string for 8086.
10. Program for string manipulations for 8086.

MASM PROGRAMMING:

1. Arithmetic Operations (addition, subtraction, multiplication and division)
2. Addition of two BCD numbers.
3. Ascending order/Descending order of an array of numbers.
4. Finding Largest/Smallest numbers in an array of numbers.
5. Generation of Fibonacci series.
6. Hexadecimal to Decimal conversions

8051 MICROCONTROLLER:

1. Arithmetic Operations (addition, subtraction, multiplication and division)
2. Addition of two BCD numbers.
3. Ascending order/Descending order of an array of numbers.
4. Finding Largest/Smallest numbers in an array of numbers.
5. Generation of Fibonacci series.
6. Masking of Bits.
7. Hexadecimal to Decimal conversion.

INTERFACING WITH 8086 MICROPROCESSOR:

1. Stepper motor interfacing to 8086.
2. Elevator simulator interfacing to 8086.
3. seven- segment display interfacing to 8086.
4. Interfacing ADC and DAC to 8086.
5. Digit Key – interfacing to 8086.

Note: Minimum of 12 experiments to be conducted.

Head of the Department
Department of Electronics and Communication Engg.
Vidya Jyothi Institute of Technology
Hyderabad-500075