w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE STRUCTURE

I YEAR   **I SEMISTER**

S. No.	Subject	T	P	Credits
1	English – I	3	-	2
2	Mathematics - I	3	-	2
3	Engineering Physics – I	3	-	2
4	Engineering Chemistry I	3	-	2
5	C Programming	3	-	2
6	Environmental Studies	3	-	2
7	Engineering Physics & Engineering Chemistry Laboratory -I	-	3	2
8	Engineering Workshop (Carpentry, Fitting, House wiring,)	-	3	2
9	C Programming Lab	-	3	2
10	English Proficiency Lab	-	3	2
	Total			**20**

I YEAR   **II SEMISTER**

S. No.	Subject	T	P	Credits
1	English – II	3	-	2
2	Mathematics – II	3	-	2
3	Engineering Physics – II	3	-	2
4	Engineering Chemistry-- II	3	-	2
5	Engineering Drawing	3	-	2
6	Mathematical Methods	3	-	2
7	Engineering Physics & Engineering Chemistry Laboratory -II	-	3	2
8	English - Communication Skills Lab	-	3	2
9	IT Workshop	-	3	2
	Total			**18**

w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE STRUCTURE

II YEAR   **I SEMISTER**

S. No.	Subject	T	P	Credits
1	Managerial Economics and Financial Analysis	4	-	4
2	Electronic Devices and Circuits	4	-	4
3	Probability Theory & Stochastic Processes	4	-	4
4	Network Analysis	4	-	4
5	Signals & Systems	4	-	4
6	Electrical Technology	4	-	4
7	EDC Lab	-	3	2
8	Networks &Electrical Technology Lab	-	3	2
9	English Communication Practice	-	2	1
10	Professional Ethics & Morals-I	2	-	-
	Total			**29**

II YEAR   **II SEMISTER**

S. No.	Subject	T	P	Credits
1	Electronic Circuit Analysis	4	-	4
2	Control Systems	4	-	4
3	Pulse & Digital Circuits	4	-	4
4	Switching Theory & Logic Design	4	-	4
5	EM Waves and Transmission Lines	4	-	4
6	Analog Communications	4	-	4
7	Electronic Circuits & P D C Lab	-	3	2
8	Analog Communications Lab	-	3	2
9	English Communication Practice	-	2	1
10	Professional Ethics & Morals-II	2	-	-
	Total			**29**

w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE STRUCTURE

III YEAR   **I SEMISTER**

S. No.	Subject	T	P	Credits
1	Linear IC Applications	4	-	4
2	Computer Architecture & Organization	4	-	4
3	Digital IC Applications	4	-	4
4	Digital Communications	4	-	4
5	Antennas and Wave Propagation	4	-	4
6	Electronic Measurements and Instrumentation	4	-	4
7	Digital Communications Lab	-	3	2
8	IC Applications Lab	-	3	2
9	I P R & Patents - I	2	-	-
	Total			**28**

III YEAR   **II SEMISTER**

S. No.	Subject	T	P	Credits
1	Computer Networks	4	-	4
2	Digital Signal Processing	4	-	4
3	VLSI Design	4	-	4
4	Microwave Engineering	4	-	4
5	Microprocessors and Microcontrollers	4	-	4
6	Management Science	4	-	4
7	Microprocessors and Microcontrollers Lab	-	3	2
8	Electronic Computer Aided Design Lab	-	3	2
9	I P R & Patents - II	2	-	-
	Total			**28**

w.e.f. 2010-2011 academic year

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE STRUCTURE

IV YEAR   **I SEMISTER**

S. No.	Subject	T	P	Credits
1	Optical Communication	4	-	4
2	Embedded Systems	4	-	4
3	Digital Image Processing	4	-	4
4	Radar Systems	4	-	4
5	**Open Elective**	4	-	4
6	**Elective – I** 1. Telecommunication Switching Systems 2. Analog IC Design 3. Object Oriented Programming	4	-	4
7	Digital Signal Processing Lab	-	3	2
8	Microwave and Optical Communications Lab	-	3	2
	Total			**28**

IV YEAR   **II SEMISTER**

S. No.	Subject	T	P	Credits
1	Cellular and Mobile Communications	4	-	4
2	**Elective – II** 1. Network Security & Cryptography 2. Satellite Communications 3. Digital Control Systems	4	-	4
3	**Elective – III** 1. Operating Systems 2. Structured Digital Design 3. Wireless Sensor Networks	4	-	4
4	**Elective – IV** 1. Analytical Instrumentation 2. Real Time Operating Systems 3. TV Engineering	4	-	4
5	PROJECT			12
	Total			**28**

Open Electives:
1. Bio Medical Engineering
2. Image Processing
3. Signals & Communication Systems

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

LINEAR IC APPLICATIONS

UNIT I
INTEGRATED CIRCUITS : Differential Amplifier- DC and AC analysis of Dual input Balanced output Configuration, Properties of other differential amplifier configuration (Dual Input Unbalanced Output, Single Ended Input – Balanced/ Unbalanced Output), DC Coupling and Cascade Differential Amplifier Stages, Level translator.

UNIT II
Characteristics of OP-Amps, Integrated circuits-Types, Classification, Package Types and temperature ranges, Power supplies, Op-amp Block Diagram, ideal and practical Op-amp specifications, DC and AC characteristics, 741 op-amp & its features, FET input. Op-Amps, Op-Amp parameters & Measurement, Input & Out put Off set voltages & currents, slew rates, CMRR, PSRR, drift, Frequency Compensation technique.

UNIT III
LINEAR APPLICATIONS OF OP- AMPS : Inverting and Non-inverting amplifier, Integrator and differentiator, Difference amplifier, Instrumentation amplifier, AC amplifier, V to I, I to V converters, Buffers.

UNIT IV
NON-LINEAR APPLICATIONS OF OP- AMPS: Non- Linear function generation, Comparators, Multivibrators, Triangular and Square wave generators, Log and Anti log amplifiers, Precision rectifiers.

UNIT V
ACTIVE FILTERS: Introduction, Butter worth filters – 1st order, 2nd order LPF, HPF filters. Band pass, Band reject and All pass filters.

UNIT VI
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, 565 PLL, Applications of PLL – frequency multiplication, frequency translation, AM, FM & FSK demodulators. Applications of VCO (566).

UNIT VII
D to A & A to D CONVERTERS : Introduction, basic DAC techniques, weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, and IC 1408 DAC, Different types of ADCs - parallel comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC. DAC and ADC Specifications, Specifications AD 574 (12 bit ADC).

UNIT VIII
ANALOG MULTIPLIERS AND MODULATORS : Four Quadrant multiplier, balanced modulator,IC1496,Applications of analog switches and Multiplexers, Sample & Hold amplifiers.

TEXT BOOKS :
1.   Linear Integrated Circuits – D. Roy Chowdhury, New Age International (p) Ltd, 2nd

Edition,2003.
2.   Op-Amps & Linear ICs - Ramakanth A. Gayakwad, PHI,1987.

REFERENCES :
1.   Design with Operational Amplifiers & Analog Integrated Circuits - Sergio Franco, McGraw Hill, 1988.
2.   OP AMPS and Linear Integrated Circuits concepts and Applications, James M Fiore, Cenage Learning India Ltd.
3.   Operational Amplifiers & Linear Integrated Circuits–R.F.Coughlin & Fredrick Driscoll, PHI, 6th Edition.
4.   Operational Amplifiers – C.G. Clayton, Butterworth & Company Publ.Ltd./ Elsevier, 1971.
5.   Operational Amplifiers & Linear ICs – David A Bell, Oxford Uni. Press, 3rd Edition
6.   Linear Integrated Circuits – S Salivahana, VSK Bhaskaran TMH, 2008.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

COMPUTER ARCHITECTURE & ORGANAGATION

Unit 1:
Computer System:
Computer components, computer function, interconnection structures, Bus interconnection, arithmetic and logic unit, integer representation, integer arithmetic, fixed point representation, floating point representation.

Unit 2:
Central Processing Unit:
Instruction Sets: Characteristics and addressing modes – Machine instruction characteristics, Types of operands and operators, addressing modes, instruction formats, Assembly language
Process Structure and Functions – Process organization, register organization, instruction cycle, instruction pipelining.

Unit 3:
Control Unit and Micro Programmed Control:
Micro operations, control of the processor, hardwired implementation, micro programmed control, micro instruction sequencing, micro instruction execution,

Unit 4:
Computer Arithmetic:
Addition and subtraction, multiplication algorithms, division algorithms, floating point arithmetic operations, decimal arithmetic unit, decimal arithmetic operations.

Unit 5:
The Memory System:
Memory Hierarchy, main memory, auxiliary memory, associative memory, cache memory and Cache organisation, virtual memory, memory management hardware.

Unit 6:
Input Output Organization:
Peripheral devices, input-output interface, asynchronous data transfer modes of transfer, priority interrupt, direct memory access, input-output processor (IOP), serial communication.

Unit 7:
Parallel Organization:
Parallel Processing – use of multiprocessors, symmetric multi processors, cache coherence and MESI protocol, multi-threading and chip multiprocessors, non-uniform memory access computers, vector computations.

Unit 8:
Multiprocessors – Characteristics of multiprocessors, interconnection structures, inter processor arbitration, inter process arbitration, interprocessor communication and synchronization.

Text Books:
1. Computer System Architecure, 3/e, M. Morris Mano, Pearson.
2. Computer Organization and Architecure, 8/e, William Stallings, Pearson.

References:
1. Computer Organization, 5/e, Hamachar, Vranesic, TMH.
2. Computer Organization and Architecture, V. Rajaraman, T. Radhakrishnan, PHI Learning.
2. Computer Organization and Design, Pal Choudary, PHI.

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References:
1. Computer Organization, 5/e, Hamachar, Vranesic, TMH.
2. Computer Organization and Architecture, V. Rajaraman, T. Radhakrishnan, PHI Learning.
2. Computer Organization and Design, Pal Choudary, PHI.

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

DIGITAL IC APPLICATIONS

UNIT I
CMOS LOGIC: Introduction to logic families, CMOS logic, CMOS steady state electrical behaviour, CMOS dynamic electrical behaviour, CMOS logic families.

UNIT II
BIPOLAR LOGIC AND INTERFACING: Diode Logic, Bipolar logic, Transistor logic, TTL families, CMOS/TTL interfacing, low voltage CMOS logic and interfacing, Emitter coupled logic, Comparison of logic families, Familiarity with standard 74XX and CMOS 40XX series-ICs – Specifications.

UNIT III
COMBINATIONAL LOGIC DESIGN-I: Introduction, Design and Analysis procedures, Decoders, encoders, three state devices, multiplexers and demultiplexers, Code Converters, EX-OR gates and parity circuits, comparators, adders & sub tractors, Design considerations of the above combinational logic circuits with relevant Digital ICs.

UNIT IV
COMBINATIONAL LOGIC DESIGN-II: Ripple Adder, Look Ahead Carry Generator, Binary Parallel Adder, n-Bit Parallel Subtractor, Binary Adder-Subtractor, ALUs, Combinational multipliers, Barrel Shifter, Simple Floating-Point Encoder, Cascading Comparators, Dual Priority Encoder, Design considerations of the above combinational logic circuits with relevant Digital ICs.

UNIT V
SEQUENTIAL LOGIC DESIGN-I: Introduction, The Basic Bistable Element, Latches, and flip-flops, Flip-Flop Conversions, SSI Latches and Flip-Flops, Counters, Design of Counters using Digital ICs, Counter applications, Synchronous design methodology, Impediments to synchronous design, Design considerations of the above sequential logic circuits with relevant Digital ICs.

UNIT VI
SEQUENTIAL LOGIC DESIGN-II: MSI Registers, Shift Registers, Modes of Operation of Shift Registers, Universal Shift Registers, MSI Shift Registers, Ring Counter, Johnson Counter, Basic sequential logic Design steps, Design of Modulus N Synchronous Counters, Design considerations of the above sequential logic circuits with relevant Digital ICs.

UNIT VII
PROGRAMMABLE LOGIC DEVICES (PLDs): Introduction, Programmable Read Only Memory, Programmable Logic Array, Programmable Array Logic Devices, Comparison between PROM, PLA and PAL. Design considerations of PLDs with relevant Digital ICs.

UNIT-VIII
MEMORIES: ROM: Internal structure, 2D-Decoding, Commercial ROM types, timing and applications,. Static RAM: Internal structure, SRAM timing, standard SRAMS, synchronous SRAMS, Dynamic RAM: Internal structure, timing, synchronous DRAMs, Familiarity with Component Data Sheets-Cypress CY6116, CY7C1006, Specifications.

TEXT BOOKS:
1. Digital Design Principles & Practices By John F. Wakerly, PHI Publications,Third Edition., 2005.
2. Digital IC Applications By Atul P.Godse and Deepali A.Godse, Technical Publications, Pune, 2005.

REFERENCES :
1. Digital Integrated Circuits-A Design Perspective By Jan M.Rabaey, Anantha Chandrakasan, Borivoje Nikolic, Pearson Education, 2005.
2. Introduction to Logic Design – Alan B. Marcovitz,TMH, 2nd Edition,2005.
3. Digital Logic and Computer Design By Mano, Pearson Education.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

DIGITAL COMMUNICATIONS

UNIT I

PULSE DIGITAL MODULATION : Elements of digital communication systems, advantages of digital communication systems, Elements of PCM: Sampling, Quantization & Coding, Quantization error, Compading in PCM systems. Differential PCM systems (DPCM).

UNIT II

DELTA MODULATION : Delta modulation, its draw backs, adaptive delta modulation, comparison of PCM and DM systems, noise in PCM and DM systems.

UNIT III

DIGITAL MODULATION TECHNIQUES : Introduction, ASK, FSK, PSK, DPSK, DEPSK, QPSK, M-ary PSK, ASK, FSK, similarity of BFSK and BPSK.

UNIT IV

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

UNIT V

INFORMATION THEORY : Discrete messages, concept of amount of information and its properties. Average information, Entropy and its properties. Information rate, Mutual information and its properties,

UNIT VI

SOURCE CODING : Introductions, Advantages, Shannon's theorem, Shanon-Fano coding, Huffman coding, efficiency calculations, channel capacity of discrete and analog Channels, capacity of a Gaussian channel, bandwidth –S/N trade off.

UNIT VII

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

UNIT VIII

CONVOLUTION CODES : Introduction, encoding of convolution codes, time domain approach, transform domain approach. Graphical approach: state, tree and trellis diagram decoding using Viterbi algorithm.

TEXT BOOKS :
1.   Digital communications - Simon Haykin, John Wiley, 2005
2.   Principles of Communication Systems – H. Taub and D. Schilling, TMH, 2003

REFERENCES :
1.   Digital and Analog Communication Systems - Sam Shanmugam, John Wiley, 2005.
2.   Digital Communications – John Proakis, TMH, 1983. Communication Systems Analog & Digital – Singh & Sapre, TMH, 2004.

3.   Modern Analog and Digital Communication – B.P.Lathi, Oxford reprint, 3rd edition, 2004.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

ANTENNAS AND WAVE PROPAGATION

UNIT I
ANTENNA FUNDAMENTALS : Introduction, Radiation Mechanism – single wire, 2 wire, dipoles, Current Distribution on a thin wire antenna . Antenna Parameters] - Radiation Patterns, Patterns in Principal Planes, Main Lobe and Side Lobes, Beamwidths, Beam Area, Radiation Intensity, Beam Efficiency, Directivty, Gain and Resolution, Antenna Apertures, Aperture Efficiency, Effective Hight. Related Problems.

UNIT II
Thin Linear Wire Antennas: Retarded Potentials, Radiation from Small Electric Dipole, Quarterwave Monopole and Halfwave Dipole – Current Distributions, Evaluation of Field Components, Power Radiated, Radiation Resistance, Beamwidths, Directivity, Effective Area and Effective Hight. Natural current distributions, fields and patterns of Thin Linear Center-fed Antennas of different lengths, Radiation Resistance at a point which is not current maximum. Antenna Theorems – Applicability and Proofs for equivalence of directional characteristics, Loop Antennas: Small Loops - Field Components, Comparison of far fields of small loop and short dipole, Concept of short magnetic dipole, D and Rr relations for small loops.

UNIT III
ANTENNA ARRAYS : 2 element arrays – different cases, Principle of Pattern Multiplication, N element Uniform Linear Arrays – Broadside, Endfire Arrays, EFA with Increased Directivity, Derivation of their characteristics and comparison; Concept of Scanning Arrays. Directivity Relations (no derivations). Related Problems. Binomial Arrays, Effects of Uniform and Non uniform Amplitude Distributions, Design Relations.

UNIT IV
NON-RESONANT RADIATORS : Introduction, Travelling wave radiators – basic concepts, Longwire antennas – field strength calculations and patterns, V-antennas, Rhombic Antennas and Design Relations, Broadband Antennas: Helical Antennas – Significance, Geometry, basic properties; Design considerations for monofilar helical antennas in Axial Mode and Normal Modes (Qualitative Treatment).

UNIT V
VHF, UHF AND MICROWAVE ANTENNAS - I : Arrays with Parasitic Elements, Yagi - Uda Arrays, Folded Dipoles & their characteristics. Reflector Antennas : Flat Sheet and Corner Reflectors. Paraboloidal Reflectors – Geometry, characteristics,types of feeds, F/D Ratio, Spill Over, Back Lobes, Aperture Blocking, Off-set Feeds, Cassegrainian Feeds].

UNIT VI
VHF, UHF AND MICROWAVE ANTENNAS - II : Horn Antennas – Types, Optimum Horns, Design Characteristics of Pyramidal Horns; Lens Antennas – Geometry, Features, Dielectric Lenses and Zoning, Applications. Antenna Measurements – Patterns Required, Set Up, Distance Criterion, Directivity and Gain Measurements (Comparison, Absolute and 3-Antenna Methods).

UNIT VII

WAVE PROPAGATION - I: Concepts of Propagation – frequency ranges and types of propagations. Ground Wave Propagation–Characteristics, Parameters, Wave Tilt, Flat and Spherical Earth Considerations. Sky Wave Propagation – Formation of Ionospheric Layers and their Characteristics, Mechanism of Reflection and Refraction, Critical Frequency, MUF & Skip Distance – Calculations for flat and spherical earth cases, Optimum Frequency, LUHF, Virtual Height, Ionospheric Abnormalities, Ionospheric Absorption.

UNIT VIII
WAVE PROPAGATION – II: Fundamental Equation for Free-Space Propagation, Basic Transmission Loss Calculations. Space Wave Propagation – Mechanism, LOS and Radio Horizon. Tropospheric Wave Propagation – Radius of Curvature of path, Effective Earth's Radius, Effect of Earth's Curvature, Field Strength Calculations, M-curves and Duct Propagation, Tropospheric Scattering.

TEXT BOOKS :
1. Antennas for All Applications – John D. Kraus and Ronald J. Marhefka, TMHI, 3rd Edn., 2003.
2. Electromagnetic Waves and Radiating Systems – E.C. Jordan and K.G. Balmain, PHI, 2nd ed., 2000.

REFERENCES :
1. Antenna Theory - C.A. Balanis, John Wiley & Sons, 2nd ed., 2001.
2. Antennas and Wave Propagation – K.D. Prasad, Satya Prakashan, Tech India Publications, New Delhi, 2001.
3. Transmission and Propagation – E.V.D. Glazier and H.R.L. Lamont, The Services Text Book of Radio, vol. 5, Standard Publishers Distributors, Delhi.
4. Electronic and Radio Engineering – F.E. Terman, McGraw-Hill, 4th edition, 1955.
5. Antennas – John D. Kraus, McGraw-Hill, SECOND EDITION, 1988.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

ELECTRONIC MEASUREMENTS AND INSTRUMENTATION

UNIT I
Performance characteristics of instruments, Static characteristics, Accuracy, Resolution, Precision, Expected value, Error, Sensitivity. Errors in Measurement, Dynamic Characteristics- speed of response, Fidelity, Lag and Dynamic error. DC Voltmeters- Multirange, Range extension/Solid state and differential voltmeters, AC voltmeters- multi range, range extension, shunt. Thermocouple type RF ammeter, Ohmmeters series type, shunt type, Multimeter for Voltage, Current and resistance measurements.

UNIT II
Signal Generator- fixed and variable, AF oscillators, Standard and AF sine and square wave signal generators, Function Generators, Square pulse, Random noise, sweep, Arbitrary waveform.

UNIT III
Wave Analyzers, Haromonic Distortion Analyzers, Spectrum Analyzers, Digital Fourier Analyzers.

UNIT IV
Oscilloscopes CRT features, vertical amplifiers, horizontal deflection system, sweep, trigger pulse, delay line, sync selector circuits, simple CRO, triggered sweep CRO, Dual beam CRO, Measurement of amplitude and frequency.

UNIT V
Dual trace oscilloscope, sampling oscilloscope, storage oscilloscope, digital readout oscilloscope, digital storage oscilloscope, Lissajous method of frequency measurement, standard specifications of CRO, probes for CRO- Active & Passive, attenuator type, Frequency counter, Time and Period measurement.

UNIT VI
AC Bridges Measurement of inductance- Maxwell's bridge, Anderson bridge. Measurement of capacitance - Schearing Bridge. Wheat stone bridge. Wien Bridge, Errors and precautions in using bridges. Q-meter.

UNIT VII
Transducers- active & passive transducers : Resistance, Capacitance, inductance; Strain gauges, LVDT, Piezo Electric transducers, Resistance Thermometers, Thermocouples, Thermistors, Sensistors.

UNIT VIII
Measurement of physical parameters force, pressure, velocity, humidity, moisture, speed, proximity and displacement. Data acquisition systems.

TEXTBOOKS :
1. Electronic instrumentation, second edition - H.S.Kalsi, Tata McGraw Hill, 2004.
2. Modern Electronic Instrumentation and Measurement Techniques – A.D. Helfrick and W.D. Cooper, PHI,5th Edition, 2002.

REFERENCES :
1.   Electronic Instrumentation & Measurements - David A. Bell, PHI, 2nd Edition, 2003.
2.   Electronic Test Instruments, Analog and Digital Measurements - Robert A.Witte, Pearson Education, 2nd Ed., 2004.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

DIGITAL COMMUNICATIONS LAB

1. Time division multiplexing.
2. Pulse code modulation.
3. Differential pulse code modulation.
4. Delta modulation.
5. Frequency shift keying.
6. Phase shift keying .
7. Differential phase shift keying.
8. Companding
9. Source Encoder and Decoder
10. Linear Block Code-Encoder and Decoder
11. Binary Cyclic Code - Encoder and Decoder
12. Convolution Code - Encoder and Decoder

Equipment required for Laboratories:
1. RPS - 0 – 30 V
2. CRO - 0 – 20 M Hz.
3. Function Generators - 0 – 1 M Hz
4. RF Generators - 0 – 1000 M Hz./0 – 100 M Hz.
5. Multimeters
6. Lab Experimental kits for Digital Communication
7. Components
8. Radio Receiver/TV Receiver Demo kits or Trainees.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

IC APPLICATIONS LAB

Minimum Twelve Experiments to be conducted :
1. Study of OP AMPs – IC 741, IC 555, IC 565, IC 566, IC 1496 – functioning, parameters and Specifications.
2. OP AMP Applications – Adder, Subtractor, Comparator Circuits.
3. Integrator and Differentiator Circuits using IC 741.
4. Active Filter Applications – LPF, HPF (first order)
5. Active Filter Applications – BPF, Band Reject (Wideband) and Notch Filters.
6. IC 741 Oscillator Circuits – Phase Shift and Wien Bridge Oscillators.
7. Function Generator using OP AMPs.
8. IC 555 Timer – Monostable Operation Circuit.
9. IC 555 Timer – Astable Operation Circuit.
10. Schmitt Trigger Circuits – using IC 741 and IC 555.
11. IC 565 – PLL Applications.
12. IC 566 – VCO Applications.
13. Voltage Regulator using IC 723.
14. Three Terminal Voltage Regulators – 7805, 7809, 7912.
15. 4 bit DAC using OP AMP.

Equipment required for Laboratories:
1. RPS
2. CRO
3. Function Generator
4. Multi Meters
5. IC Trainer Kits (Optional)
6. Bread Boards
7. Components:- IC741, IC555, IC565, IC1496, IC723, 7805, 7809, 7912 and other essential components.
8. Analog IC Tester

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

III Year B. Tech. Electronics and Communication Engineering – I Sem.

IPR & PATENTS – I