2007-2008

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
KUKATPALLY, HYDERABAD

B.TECH ELECTRICAL AND ELECTRONICS ENGINEERING

III year – II Semester

Course Structure

CODE	SUBJECT	T	P	C
	Digital Signal Processing	4+1*	-	4
	Microprocessors and Microcontrollers	4+1*	-	4
	Management Science	4+1*	-	4
	Instrumentation	4+1*	-	4
	Switch Gear and Protection	4+1*	-	4
	VLSI Design	4+1*	-	4
	Advanced English Communications Skills Lab	-	3	2
	Power Electronics and Simulation Lab	-	3	2
	Total	30	6	28

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III Year B.Tech EEE II-Sem	**T**	**P**	**C**
	4+1*	**0**	**4**

DIGITAL SIGNAL PROCESSING

UNIT I

INTRODUCTION: Introduction to Digital Signal Processing: Discrete time signals & sequences, linear shift invariant systems, stability, and causality. Linear constant coefficient difference equations. Frequency domain representation of discrete time signals and systems.

UNIT II

DISCRETE FOURIER SERIES: Properties of discrete Fourier series, DFS representation of periodic sequences, Discrete Fourier transforms: Properties of DFT, linear convolution of sequences using DFT, Computation of DFT. Relation between Z-transform and DFS

UNIT III

FAST FOURIER TRANSFORMS: Fast Fourier transforms (FFT) - Radix-2 decimation in time and decimation in frequency FFT Algorithms, Inverse FFT, and FFT for composite N

UNIT IV

REALIZATION OF DIGITAL FILTERS: Review of Z-transforms, Applications of Z – transforms, solution of difference equations of digital filters, Block diagram representation of linear constant-coefficient difference equations, Basic structures of IIR systems, Transposed forms, Basic structures of FIR systems, System function,

UNIT V

IIR DIGITAL FILTERS: Analog filter approximations – Butter worth and Chebyshev, Design of IIR Digital filters from analog filters, Design Examples: Analog-Digital transformations

UNIT VI

FIR DIGITAL FILTERS : Characteristics of FIR Digital Filters, frequency response. Design of FIR Digital Filters using Window Techniques, Frequency Sampling technique, Comparison of IIR & FIR filters.

UNIT VII

MULTIRATE DIGITAL SIGNAL PROCESSING: Decimation, interpolation, sampling rate conversion, Implementation of sampling rate conversion.

UNIT VIII

INTRODUCTION TO DSP PROCESSORS: Introduction to programmable DSPs: Multiplier and Multiplier Accumulator (MAC), Modified Bus Structures and Memory Access schemes in DSPs Multiple access memory, multiport memory, VLSI Architecture, Pipelining, Special addressing modes, On-Chip Peripherals.

Architecture of TMS 320C5X- Introduction, Bus Structure, Central Arithmetic Logic Unit, Auxiliary Registrar, Index Registrar, Auxiliary Registger Compare Register, Block Move Address Register, Parallel Logic Unit, Memory mapped registers, program controller, Some flags in the status registers, On- chip registers, On-chip peripherals

TEXT BOOKS:

1. Digital Signal Processing, Principles, Algorithms, and Applications: John G. Proakis, Dimitris G. Manolakis,
   Pearson Education / PHI, 2007.
2. Discrete Time Signal Processing – A.V.Oppenheim and R.W. Schaffer, PHI
3. Digital Signal Processors – Architecture, Programming and Applications,, B.Venkataramani, M. Bhaskar, TATA McGraw Hill, 2002

Reference Books:

1. Digital Signal Processing: Andreas Antoniou, TATA McGraw Hill , 2006
2. Digital Signal Processing: MH Hayes, Schaum's Outlines, TATA Mc-Graw Hill, 2007.
3. DSP Primer - C. Britton Rorabaugh, Tata McGraw Hill, 2005.
4. Fundamentals of Digital Signal Processing using Matlab – Robert J. Schilling, Sandra L. Harris, Thomson, 2007.
5. Digital Signal Processing – Alan V. Oppenheim, Ronald W. Schafer, PHI Ed., 2006

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MICROPROCESSORS AND MICROCONTROLLERS

Objective :
The objective of the Microprocessor and Microcontrollers is to do the students familiarize the architecture of 8086 processor, assembling language programming and interfacing with various modules. The student can also understand of 8051 Microcontroller concepts, architecture, programming and application of Microcontrollers. Student able to do any type of industrial and real time applications by knowing the concepts of Microprocessor and Microcontrollers.

UNIT-I 8086 ARCHITECTURE:
Functional Diagram, Register Organization, Addressing modes, Instructions, Functional schematic, Minimum and Maximum mode operations of 8086, 8086 Control signal interfacing, Timing Diagrams.

UNIT-II ASSEMBLY LANGUAGE PROGRAMMMING OF 8086

Assembly Directives, Macro's, Simple Programs using Assembler, Implimentation of FOR Loop, WHILE, REPEAT and IF-THEN-ELSE Features.

UNIT-III I/O INTERFACE
8255 PPI, Various modes of operations and interface of I/O devices to 8086, A/D, D/A Converter Interfacing.

UNIT-IV INTERFACING WITH ADVANCED DEVICES.

8086 System bus structure, Memory and I/O Interfacing with 8086, Interfacing through various IC Peripheral Chips, 8257 (DMA Controller), 8259 (Interrupt Priority Control).

UNIT-V COMMUNICATION INTERFACE
Serial Communication Standards, USART Interfacing RS-232, IEEE-488, 20mA Current Loop, Prototyping and Trouble shooting, Software Debugging tolls, MDS.

UNIT-VI INTRODUCTION TO MICRO CONTROLLERS
Overview of 8051 Micro Controller, Architecture, I/O ports and Memory Organization, Addressing modes and Instruction set of 8051, Simple Programs using Stack Pointer, Assembly language programming.

UNIT-VII 8051 INTERRUPTS COMMUNICATION
Interrupts, Timer/Counter and Serial Communication, Programming Timer Interrupts, Programming External H/W interrupts, Programming the serial communication interrupts, Interrupt Priority in the 8051, Programming 8051 Timers, Counters and Programming.

UNIT- VIII INTERFACING AND INDUSTRIAL APPLICATIONS
Applications of Micro Controllers, Interfacing 8051 to LED's, Push button, Relay's and Latch Connections, Keyboard Interfacing, Interfacing Seven Segment Display, ADC and DAC Interfacing.

TEXT BOOKS:

1. Kenneth J Ayala, " The 8051 Micro Controller Architecture, Programming and Applications", Thomson Publishers, 2nd Edition.
2. D.V.Hall, "Micro Processor and Interfacing ", Tata McGraw-Hill.

REFERENCE BOOKS:

1. Ajay V. Deshmukh, "Microcontrollers – theory applications", Tata McGraw-Hill Companies – 2005.
2. Ray and BulChandi, " Advanced Micro Processors", Tata McGraw-Hill.
3. Kenneth J Ayala, " The 8086 Micro Processors Architecture, Programming and Applications", Thomson Publishers, 2005.
4. Microcomputer Systems: The 8086/8088 Family: Architecture, Programming and Design, 2nd ed., Liu & Gibson

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MANAGEMENT SCIENCE

Unit I: ***Introduction to Management*****:** Concepts of Management and organization- Nature and Importance of Management, Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y, Herzberg's Two-Factor Theory of Motivation, Systems Approach to Management, Leadership Styles, Social responsibilities of Management.

Unit II: ***Designing Organisational Structures*****:** Basic concepts related to Organisation - Departmentation and Decentralisation, Types of mechanistic and organic structures of organisation (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organisation, Cellular Organisation, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure) and their merits, demerits and suitability.

Unit III: ***Operations Management*****:** Principles and Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study -Basic procedure involved in Method Study and Work Measurement-Statistical Quality Control: $\overline{X}$ chart, R chart, *c* chart, *p* chart, (simple Problems), Acceptance Sampling, Deming's contribution to quality.

Unit IV: ***A) Materials Management*****:** Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records - Supply Chain Management

B) Marketing**:** Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle., Channels of distribution.

Unit V: ***Human Resources Management (HRM):*** Concepts of HRM, HRD and Personnel Management and Industrial Relations (PMIR), HRM vs. PMIR, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating.

Unit VI: ***Project Management (PERT/CPM)*****:** Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (simple problems)

Unit VII: ***Strategic Management*****:** Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives.

Unit VIII: ***Contemporary Management Practices*****:** Basic concepts of Just-In-Time (JIT) System, Total Quality Management (TQM), Six sigma and Capability Maturity Model (CMM) Levels, Value Chain Analysis,Enterprise Resource Planning (ERP), Performance Management, Business Process outsourcing (BPO), Business Process Re-engineering and Bench Marking, Balanced Score Card.

Text Book:

1. Aryasri: *Management Science*, TMH, New Delhi.

Reference Books:

1. Kotler Philip & Keller Kevin Lane: Marketing Mangement 12/e, PHI, 2007
2. Koontz & Weihrich: *Essentials of Management*, 6/e, TMH, 2007
3. Thomas N.Duening & John M.Ivancevich *Management—Principles and Guidelines,* Biztantra,2007.
4. Kanishka Bedi, *Production and Operations Management*, Oxford University Press, 2007.
5. Memoria & S.V.Ganker, *Personnel Management*, Himalaya, 25/e, 2007
6. Schermerhorn: *Management*, Wiley, 2007.
7. Parnell: Strategic Management, Biztantra,20073.
8. L.S.Srinath: PERT/CPM,Affiliated East-West Press, 2007.

Pre-requisites: Managerial Economics

***Objective*:** To familiarize with the process of management and to provide basic insights into select contemporary management practices.

Codes/Tables: Normal Distribution Function Table need to be permitted into the examination Hall.

Question Paper Pattern: 5 Questions to be answered out of 8 questions.
Each question should not have more than 3 bits.
Unit VIII will have only short questions, not essay questions.

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INSTRUMENTATION

Objective :
Instrumentation is essential in monitoring and analysis of any Physical system and its control. This course deals with different types of transducers, digital voltmeters, oscilloscopes and measurement of non electrical quantities.

UNIT-I Characteristics of Signals
Measuring Systems, Performance Characteristics, - Static characteristics, Dynamic Characteristics; Errors in Measurement – Gross Errors, Systematic Errors, Statistical Analysis of Random Errors.

UNIT-II Signals and their representation
Signal and their representation: Standard Test, periodic, aperiodic, modulated signal, sampled data, pulse modulation and pulse code modulation

UNIT-III Oscilloscope
Cathode ray oscilloscope-Cathode ray tube-time base generator-horizantal and vertical amplifiers-CRO probes-applications of CRO-Measurement of phase and frequency-lissajous patterns-Sampling oscilloscope-analog and digital type

UNIT-IV Digital Voltmeters
Digital voltmeters- Successive approximation, ramp, dual-Slope integration continuos balance type-Micro processor based ramp type DVM digital frequency meter-digital phase angle meter-

UNIT-V Signal Analyzers
Wave Analysers- Frequency selective analyzers, Heterodyne, Application of Wave analyzers- Harmonic Analyzers, Total Harmonic distortion, spectrum analyzers, Basic spectrum analyzers, spectral displays, vector impedance meter, Q meter. Peak reading and RMS voltmeters

UNIT-VI Transducers
Definition of transducers, Classification of transducers, Advantages of Electrical transducers, Characteristics and choice of transducers; Principle operation of resistor, inductor, LVDT and capacitor transducers; LVDT Applications, Strain gauge and its principle of operation, guage factor, Thermistors, Thermocouples, Synchros, Piezo electric transducers, photovoltaic, photo conductive cells, photo diodes.

UNIT-VII Measurement of Non-Electrical Quantities-I
Measurement of strain, Gauge Sensitivity, Displacement, Velocity, Angular Velocity, Acceleration, Force, Torque.

UNIT-VIII Measurement of Non-Electrical Quantities-II
Measurement of Temperature, Pressure, Vacuum, Flow, Liquid level.

TEXT BOOKS:

1. Transducers and Instrumentation by D.V.S Murthy, Prentice Hall of India
2. A course in Electrical and Electronic Measurements and Instrumentation, A.K. Sawhney, Dhanpatrai & Co.

REFERENCE BOOKS:

1. Measurements Systems, Applications and Design – by D O Doeblin
2. Principles of Measurement and Instrumentation – by A.S Morris, Pearson /Prentice Hall of India
3. Electronic Instrumentation-by H.S.Kalsi Tata MCGraw-Hill Edition, 1995.
4. Modern Electronic Instrumentation and Measurement techniques – by A.D Helfrick and W.D.Cooper, Pearson/Prentice Hall of India.

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SWITCH GEAR AND PROTECTION

Objective :
This course introduces all varieties of Circuit Breakers and Relays for protection of Generators, Transformers and feeder bus bars from over voltages and other hazards. It emphasis on Neutral grounding for overall protection.

UNIT – I Circuit Breakers-1
Circuit Breakers: Elementary principles of arc interruption, Recovery, Restriking Voltage and Recovery voltages.- Restriking Phenomenon, Average and Max. RRRV, Numerical Problems - Current Chopping and Resistance Switching - CB ratings and Specifications : Types and Numerical Problems. – Auto reclosures.

UNIT –II Circuit Breakers-2
Description and Operation of following types of circuit breakers: Minimum Oil Circuit breakers, Air Blast Circuit Breakers, Vacuum and SF6 circuit breakers.

UNIT – III Electromagnetic and Static Relays
Principle of Operation and Construction of Attracted armature, Balanced Beam, induction Disc and Induction Cup relays.
Relays Classification: Instantaneous, DMT and IDMT types.
Application of relays: Over current/ Under voltage relays, Direction relays, Differential Relays and Percentage Differential Relays.
Universal torque equation, Distance relays: Impedance, Reactance and Mho and Off-Set Mho relays, Characteristics of Distance Relays and Comparison.
Static Relays: Static Relays verses Electromagnetic Relays.

UNIT – IV Generator Protection
Protection of generators against Stator faults, Rotor faults, and Abnormal Conditions. Restricted Earth fault and Inter-turn fault Protection. Numerical Problems on % Winding Unprotected.

UNIT –V Transformer Protection
Protection of transformers: Percentage Differential Protection, Numerical Problem on Design of CT s Ratio, Buchholtz relay Protection.

UNIT –VI Feeder and Bus-Bar Protection
Protection of Lines: Over Current, Carrier Current and Three-zone distance relay protection using Impedance relays. Translay Relay.
Protection of Bus bars – Differential protection.

UNIT – VII Neutral Grounding
Grounded and Ungrounded Neutral Systems.- Effects of Ungrounded Neutral on system performance. Methods of Neutral Grounding: Solid, Resistance, Reactance - Arcing Grounds and Grounding Practices.

UNIT – VIII Protection against over voltages
Generation of Over Voltages in Power Systems.-Protection against Lightning Over Voltages - Valve type and Zinc-Oxide Lighting Arresters - Insulation Coordination -BIL, Impulse Ratio, Standard Impulse Test Wave, Volt-Time Characteristics.

TEXT BOOKS:

1. Switchgear and Protection – by Sunil S Rao, Khanna Publlishers
2. Power System Protection and Switchgear by Badari Ram , D.N Viswakarma, TMH Publications

REFERENCE BOOKS:

1. Fundamentals of Power System Protection by Paithankar and S.R.Bhide.,PHI, 2003.
2. Art & Science of Protective Relaying – by C R Mason, Wiley Eastern Ltd.
3. Electrical Power Systems – by C.L.Wadhwa, New Age international (P) Limited, Publishers, 3nd editon
4. A Text book on Power System Engineering by B.L.Soni, Gupta, Bhatnagar, Chakrabarthy, Dhanpat Rai & Co.

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VLSI DESIGN

UNIT I

INTRODUCTION : Introduction to IC Technology – MOS, PMOS, NMOS, CMOS & BiCMOS technologies- Oxidation, Lithography, Diffusion, Ion implantation, Metallisation, Encapsulation, Probe testing, Integrated Resistors and Capacitors.

UNIT II

BASIC ELECTRICAL PROPERTIES : Basic Electrical Properties of MOS and BiCMOS Circuits: Ids-Vds relationships, MOS transistor threshold Voltage, gm, gds, figure of merit □o; Pass transistor, NMOS Inverter, Various pull ups, CMOS Inverter analysis and design, Bi-CMOS Inverters.

UNIT III

VLSI CIRCUIT DESIGN PROCESSES : VLSI Design Flow, MOS Layers, Stick Diagrams, Design Rules and Layout, 2 □m CMOS Design rules for wires, Contacts and Transistors Layout Diagrams for NMOS and CMOS Inverters and Gates, Scaling of MOS circuits, Limitations of Scaling.

UNIT IV

GATE LEVEL DESIGN : Logic Gates and Other complex gates, Switch logic, Alternate gate circuits, Basic circuit concepts, Sheet Resistance RS and its concept to MOS, Area Capacitance Units, Calculations - □- Delays, Driving large Capacitive Loads, Wiring Capacitances, Fan-in and fan-out, Choice of layers

UNIT V

SUBSYSTEM DESIGN : Subsystem Design, Shifters, Adders, ALUs, Multipliers, Parity generators, Comparators, Zero/One Detectors, Counters, High Density Memory Elements.

UNIT VI

SEMICONDUCTOR INTEGRATED CIRCUIT DESIGN : PLAs, FPGAs, CPLDs, Standard Cells, Programmable Array Logic, Design Approach.

UNIT VII

VHDL SYNTHESIS : VHDL Synthesis, Circuit Design Flow, Circuit Synthesis, Simulation, Layout, Design capture tools, Design Verification Tools, Test Principles.

UNIT VIII

CMOS TESTING : CMOS Testing, Need for testing, Test Principles, Design Strategies for test, Chiplevel Test Techniques, System-level Test Techniques, Layout Design for improved Testability.

TEXTBOOKS :

1. Essentials of VLSI circuits and systems – Kamran Eshraghian, Eshraghian Dougles and A. Pucknell, PHI, 2005 Edition.
2. Principles of CMOS VLSI Design - Weste and Eshraghian, Pearson Education, 1999.

REFERENCES :

1. Chip Design for Submicron VLSI: CMOS Layout & Simulation, - John P. Uyemura, Thomson Learning.
2. Introduction to VLSI Circuits and Systems - John .P. Uyemura, JohnWiley, 2003.
3. Digital Integrated Circuits - John M. Rabaey, PHI, EEE, 1997.
4. Modern VLSI Design - Wayne Wolf, Pearson Education, 3rd Edition, 1997.
5. VLSI Technology – S.M. SZE, 2nd Edition, TMH, 2003.

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ADVANCED ENGLISH COMMUNICATIONS SKILLS LAB

1. Introduction

The introduction of the English Language Lab is considered essential at 3rd year level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.

The proposed course should be an integrated theory and lab course to enable students to use 'good' English and perform the following:

- Gather ideas and information, to organise ideas relevantly and coherently.
- Engage in debates.
- Participate in group discussions.
- Face interviews.
- Write project/research reports/technical reports.
- Make oral presentations.
- Write formal letters.
- Transfer information from non-verbal to verbal texts and vice versa.
- To take part in social and professional communication.

2. Objectives:

This Lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:

- To improve the students' fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.

3. Syllabus:

The following course content is prescribed for the Advanced Communication Skills Lab:

- Functional English - starting a conversation – responding appropriately and relevantly – using the right body language – role play in different situations.
- Vocabulary building – synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, analogy, idioms and phrases.
- Group Discussion – dynamics of group discussion , intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.
- Interview Skills – concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele and video-conferencing.
- Resume' writing – structure and presentation, planning, defining the career objective, projecting ones strengths and skill-sets, summary, formats and styles, letter-writing.
- Reading comprehension – reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, critical reading.
- Technical Report writing – Types of formats and styles, subject matter – organization, clarity, coherence and style, planning, data-collection, tools, analysis.

4. Minimum Requirement:

The English Language Lab shall have two parts:

i) **The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self- study by learners.

ii) **The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo –audio & video system and camcorder etc.

System Requirement (Hardware component):

Computer network with Lan with minimum 60 multimedia systems with the following specifications:

i) P – IV Processor
   a) Speed – 2.8 GHZ
   b) RAM – 512 MB Minimum
   c) Hard Disk – 80 GB

ii) Headphones of High quality

5. Suggested Software:

The software consisting of the prescribed topics elaborated above should be procured and used.

Suggested Software:

- **Clarity Pronunciation Power** – part II
- **Oxford Advanced Learner's Compass**, 7th Edition

- **DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.**
- **Lingua TOEFL CBT Insider**, by Dreamtech
- **TOEFL & GRE**(KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- **The following software from 'train2success.com'**
  - **Preparing for being Interviewed,**
  - **Positive Thinking,**
  - **Interviewing Skills,**
  - **Telephone Skills,**
  - **Time Management**
  - **Team Building,**
  - **Decision making**

- **English in Mind**, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

6. Books Recommended:

1. **Effective Technical Communication**, M. Ashraf Rizvi, Tata Mc. Graw-Hill Publishing Company Ltd.
2. **A Course in English communication** by Madhavi Apte, Prentice-Hall of India, 2007.
3. **Communication Skills** by Leena Sen, Prentice-Hall of India, 2005.
4. **Academic Writing- A Practical guide for students** by Stephen Bailey, Rontledge Falmer, London & New York, 2004.
5. **English Language Communication : A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr G Natanam & Prof SA Sankaranarayanan, Anuradha Publications, Chennai
6. **Body Language- Your Success Mantra** by Dr. Shalini Verma, S. Chand, 2006.
7. **DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice**, New Age International (P) Ltd., Publishers, New Delhi.
8. Books on **TOEFL/GRE/GMAT/CAT** by Barron's/cup
9. **IELTS series with CDs** by Cambridge University Press.
10. **Technical Report Writing Today** by Daniel G. Riordan & Steven E. Pauley, Biztantra Publishers, 2005.
11. **Basic Communication Skills for Technology** by Andra J. Rutherford, 2nd Edition, Pearson Education, 2007.
12. **Communication Skills for Engineers** by Sunita Mishra & C. Muralikrishna, Pearson Education, 2007.
13. **Objective English** by Edgar Thorpe & Showick Thorpe, 2nd edition, Pearson Education, 2007.
14. **Cambridge Preparation for the TOEFL** Test by Jolene Gear & Robert Gear, 4th Edition.
15. **Technical Communication** by Meenakshi Raman & Sangeeta Sharma, Oxford University Press.

DISTRIBUTION AND WEIGHTAGE OF MARKS:

Advanced Communication Skills Lab Practicals*:*

1. The practical examinations for the English Language Laboratory practice shall be conducted as per the University norms prescribed for the core engineering practical sessions.

2. For the English Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 End Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The End Examination shall be conducted by the teacher concerned with the help of another member of the staff of the same department of the same institution.

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POWER ELECTRONICS AND SIMULATION LAB

Any Eight of the Experiments in Power Electronics Lab

1. Study of Characteristics of SCR, MOSFET & IGBT
2. Gate firing circuits for SCR's
3. Single Phase AC Voltage Controller with R and RL Loads
4. Single Phase fully controlled bridge converter with R and RL loads
5. Forced Commutation circuits (Class A, Class B, Class C, Class D & Class E)
6. DC Jones chopper with R and RL Loads
7. Single Phase Parallel, inverter with R and RL loads
8. Single Phase Cycloconverter with R and RL loads
9. Single Phase Half controlled converter with R load
10. Three Phase half controlled bridge converter with R-load
11. Single Phase series inverter with R and RL loads
12. Single Phase Bridge converter with R and RL loads
13. Single Phase dual converter with RL loads

Any two simulation experiments with PSPICE/PSIM

PSPICE simulation of single-phase full converter using RLE loads and single-phase AC voltage controller using RLE loads.

PSPICE simulation of resonant pulse commutation circuit and Buck chopper.

PSPICE simulation of single phase Inverter with PWM control.

REFERENCE BOOKS:

1. Simulation of Electric and Electronic circuits using PSPICE – by M.H.Rashid, M/s PHI Publications.
2. PSPICE A/D user's manual – Microsim, USA.
3. PSPICE reference guide – Microsim, USA.
4. MATLAB and its Tool Books user's manual and – Mathworks, USA.