



# **VEL TECH MULTI TECH Dr RANGARAJAN Dr.SAKUNTHALA ENGINEERING COLLEGE**

(An ISO 9001: 2008 Certified Institution)  
(Owned by 'VEL Shree R. Rangarajan  
Dr. Sakunthala Rangarajan Educational Academy)  
(Approved by AICTE, New Delhi &  
Govt. of Tamil Nadu and affiliated to Anna University)



## **SYLLABUS**

### **WEEKLY SCHEDULE**

**VI SEMESTER                      2014- 2015**

### **DEPARTMENT OF ECE**

### **IV YEAR DEGREE COURSE**

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## WEEKLY SCHEDULE

**ACADEMIC YEAR: 2014– 2015**

Sl.No	WEEKS	DATE	
		FROM	TO
1	WEEK1	02.01.15	09.01.15
2	WEEK2	12.01.15	16.01.15
3	WEEK3	19.01.15	23.01.15
4	WEEK4	27.01.15	30.01.15
5	WEEK5	02.02.15	06.02.15
6	WEEK6	09.02.15	13.02.15
7	WEEK7	16.02.15	20.02.15
8	WEEK8	23.02.15	27.02.15
9	WEEK9	02.03.15	06.03.15
10	WEEK10	09.03.15	13.03.15
11	WEEK11	16.03.15	20.03.15
12	WEEK12	23.03.15	27.03.15
13	WEEK13	30.03.15	01.04.15
14	WEEK14	06.04.15	10.04.15
15	WEEK 15	13.04.15	17.04.15
16	WEEK16	20.04.15	24.04.15
17	WEEK17	27.04.15	30.04.15

## SUBJECT CONTENTS

<b>SL.NO</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>
<b>THEORY</b>		
1	<b>MG2351</b>	<b>Principles of management</b>
2	<b>EC 2351</b>	<b>Measurement and Instrumentation</b>
3	<b>EC 2352</b>	<b>Computer Networks</b>
4	<b>EC 2353</b>	<b>Antenna &amp; Wave Propagation</b>
5	<b>EC 2354</b>	<b>VLSI design</b>
6	<b>EC2021</b>	<b>Medical Electronics</b>
<b>PRACTICAL</b>		
7	<b>EC 2356</b>	<b>Computer Networks Lab</b>
8	<b>EC 2357</b>	<b>VLSI Design Lab</b>
9	<b>EC 2321</b>	<b>Communication Skills Lab</b>

## TEST / EXAM SCHEDULE

<b>SL. NO</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>	<b>UNIT TEST I</b>	<b>UNIT TEST II</b>	<b>UNIT TEST III</b>	<b>UNIT TEST IV</b>	<b>UNIT TEST V</b>
<b>1</b>	<b>MG2351</b>	<b>Principles of management</b>	<b>22.01.15 FN</b>	<b>11.02.15 FN</b>	<b>03.03.15 FN</b>	<b>23.03.15 FN</b>	<b>13.04.15 FN</b>
<b>2</b>	<b>EC 2351</b>	<b>Measurement and Instrumentation</b>	<b>22.01.15 AN</b>	<b>11.02.15 AN</b>	<b>03.03.15 AN</b>	<b>23.03.15 AN</b>	<b>13.04.15 AN</b>
<b>3</b>	<b>EC 2352</b>	<b>Computer Networks</b>	<b>23.01.15 FN</b>	<b>12.02.15 FN</b>	<b>04.03.15 FN</b>	<b>24.03.15 FN</b>	<b>15.04.15 FN</b>
<b>4</b>	<b>EC 2353</b>	<b>Antenna &amp; Wave Propagation</b>	<b>23.01.15 AN</b>	<b>12.02.15 AN</b>	<b>04.03.15 AN</b>	<b>24.03.15 AN</b>	<b>15.04.15 AN</b>
<b>5</b>	<b>EC 2354</b>	<b>VLSI design</b>	<b>24.01.15 FN</b>	<b>13.02.15 FN</b>	<b>05.03.15 FN</b>	<b>25.03.15 FN</b>	<b>16.04.15 FN</b>
<b>6</b>	<b>EC2021</b>	<b>Medical Electronics</b>	<b>24.01.15 AN</b>	<b>13.02.15 AN</b>	<b>05.03.15 AN</b>	<b>25.03.15 AN</b>	<b>16.04.15 AN</b>

## MODEL EXAM

<b>SL.NO</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>	<b>DATE</b>
<b>1</b>	<b>MG2351</b>	<b>Principles of management</b>	<b>20.04.2015</b>
<b>2</b>	<b>EC 2351</b>	<b>Measurement and Instrumentation</b>	<b>21.04.2015</b>
<b>3</b>	<b>EC 2352</b>	<b>Computer Networks</b>	<b>22.04.2015</b>
<b>4</b>	<b>EC 2353</b>	<b>Antenna &amp; Wave Propagation</b>	<b>23.04.2015</b>
<b>5</b>	<b>EC 2354</b>	<b>VLSI design</b>	<b>24.04.2015</b>
<b>6</b>	<b>EC2021</b>	<b>Medical Electronics</b>	<b>27.04.2015</b>

# **MG2351 PRINCIPLES OF MANAGEMENT**

## **UNIT I OVERVIEW OF MANAGEMENT**

### **WEEK-1**

Definition - Management - Role of managers - Evolution of Management thought. Organization and the environmental factors, Trends and Challenges of Management in Global Scenario.

### **WEEK-2**

#### **UNIT TEST-1**

## **UNIT II PLANNING**

### **WEEK-3**

Nature and purpose of planning - Planning process - Types of plans – Objectives - -Managing by objective (MBO) Strategies

### **WEEK-4**

Types of strategies - Policies – Decision Making - Types of decision - Decision Making Process

### **WEEK-5**

Rational Decision Making Process – Decision, Making under different conditions.

### **WEEK- 6**

#### **UNIT TEST-2**

## **UNIT III ORGANIZING**

### **WEEK-7**

Nature and purpose of organizing - Organization structure - Formal and informal groups / organization - Line and Staff authority Departmentation - Span of control -Centralization and Decentralization

## **WEEK-8**

Delegation of authority – Staffing Selection and Recruitment - Orientation - Career Development - Career stages – Training - Performance Appraisal

## **WEEK-9**

### **UNIT TEST-3**

## **UNIT-IV DIRECTING**

### **WEEK-10**

Creativity and Innovation - Motivation and Satisfaction - Motivation Theories -Leadership Styles - Leadership theories –

### **WEEK-11**

Communication - Barriers to effective communication - Organization Culture Elements and types of culture – Managing cultural diversity.

### **WEEK-12**

### **UNIT TEST-4**

## **UNIT -V - CONTROLLING**

### **WEEK-13**

Process of controlling - Types of control - Budgetary and non-budgetary control techniques - Managing Productivity

**WEEK-14** Cost Control - Purchase Control – Maintenance Control - Quality Control - Planning operations

### **WEEK-15**

### **UNIT TEST-5**

### **WEEK-16**

### **MODEL EXAMINATION-I (5 UNITS)**

### **WEEK-17**

### **MODEL PRACTICAL EXAMINATION**



## **TEXT BOOKS**

1. Stephen P. Robbins and Mary Coulter, 'Management', Prentice Hall of India, 8th edition.
2. Charles W L Hill, Steven L McShane, 'Principles of Management', Mcgraw Hill Education, Special Indian Edition, 2007

## **REFERENCE BOOKS**

1. Hellriegel, Slocum & Jackson, ' Management - A Competency Based Approach', Thomson South Western, 10th edition, 2007.
2. Harold Koontz, Heinz Weihrich and Mark V Cannice, 'Management - A global & Entrepreneurial Perspective', Tata Mcgraw Hill, 12<sup>th</sup> edition, 2007.
3. Andrew J. Dubrin, 'Essentials of Management', Thomson Southwestern, 7<sup>th</sup> edition, 2007.

## **EC2351 MEASUREMENTS AND INSTRUMENTATION**

### **UNIT I BASIC MEASUREMENT CONCEPTS**

#### **WEEK 1**

Measurement systems – Static and dynamic characteristics – units and standards of measurements. error :- accuracy and precision, types statistical analysis – moving coil, moving iron meters – multimeters  
Bridge measurements : – Maxwell, Hay, Schering, Anderson and Wien bridge.

#### **WEEK-2**

#### **UNIT TEST-1**

### **UNIT II BASIC ELECTRONIC MEASUREMENTS**

#### **WEEK-3**

Electronic multimeters – Cathode ray oscilloscopes – block schematic – applications – special oscilloscopes

#### **WEEK-4**

Delayed time base oscilloscopes, analog and digital storage oscilloscope, sampling oscilloscope

### **WEEK-5**

Q meters – Vector meters – RF voltage and power measurements –

### **WEEK-6**

### **UNIT TEST-2**

## **UNIT III SIGNAL GENERATORS AND ANALYZERS**

### **WEEK-7**

Function generators – pulse and square wave generators, RF signal generators –Sweep generators – Frequency synthesizer

### **WEEK-8**

wave analyzer – Harmonic distortion analyzer – spectrum analyzer:- digital spectrum analyzer, Vector Network Analyzer –Digital L,C,R measurements, Digital RLC meters.

### **WEEK-9**

### **UNIT TEST-3**

## **UNIT IV DIGITAL INSTRUMENTS**

### **WEEK-10**

Comparison of analog and digital techniques – digital voltmeter – multimeters –frequency counters – measurement of frequency and time interval – extension of frequency range

### **WEEK-11**

Automation in digital instruments, Automatic polarity indication, automatic ranging, automatic zeroing, fully automatic digital instruments, Computer controlled test systems, Virtual instruments.

### **WEEK-12**

### **UNIT TEST-4**

## **UNIT V DATA ACQUISITION SYSTEMS AND FIBER OPTIC MEASUREMENTS**

### **WEEK-13**

Elements of a digital data acquisition system – interfacing of transducers – multiplexing – data loggers –computer controlled instrumentation.

### **WEEK-14**

IEEE 488 bus – fiber optic measurements for power and system loss – optical time domains reflectometer.

### **WEEK-15**

### **UNIT TEST 5**

### **WEEK-16**

### **MODEL EXAMINATION-I (5 UNITS)**

### **WEEK-17**

### **MODEL PRACTICAL EXAMINATION**

### **TEXT BOOKS**

1. Albert D.Helfrick and William D.Cooper – Modern Electronic Instrumentation and Measurement Techniques, Pearson / Prentice Hall of India, 2007.
2. Ernest O. Doebelin, Measurement Systems- Application and Design, TMH, 2007.

### **REFERENCE BOOKS**

1. Joseph J.Carr, Elements of Electronics Instrumentation and Measurement, PearsonEducation, 2003.
2. Alan. S. Morris, Principles of Measurements and Instrumentation, 2nd Edition,Prentice Hall of India, 2003.
3. David A. Bell, Electronic Instrumentation and measurements, Prentice Hall of IndiaPvt Ltd, 2003.
4. B.C. Nakra and K.K. Choudhry, Instrumentation, Measurement and Analysis, 2ndEdition, TMH, 2004.

5. James W. Dally, William F. Riley, Kenneth G. McConnell, Instrumentation for Engineering Measurements, 2nd Edition, John Wiley, 2003.

# **EC2352 COMPUTER NETWORKS**

## **UNIT I PHYSICAL LAYER**

### **WEEK-1**

Data Communications – Networks - Networks models – OSI model – Layers in OSI model – TCP / IP protocol suite Addressing – Guided and Unguided Transmission Media Switching: Circuit switched networks – Data gram Networks Virtual circuit networks Cable networks for Data transmission: Dialup modems – DSL – Cable TV – Cable TV for Data transfer.

### **WEEK-2**

### **UNIT TEST-1**

## **UNIT II DATA LINK LAYER**

### **WEEK-3**

Data link control: Framing – Flow and error control –Protocols for Noiseless and Noisy Channels – HDLC Multiple access: Random access – Controlled access.

### **WEEK-4**

Wired LANS : Ethernet – IEEE standards – standard Ethernet – changes in the standard– Fast Ethernet – Gigabit Ethernet.Wireless LANS : IEEE 802.11–Bluetooth

### **WEEK 5**

Connecting LANS: Connecting devices - Backbone networks - Virtual LANS Virtual circuit networks: Architecture and Layers of Frame Relay and ATM.

### **WEEK-6**

### **UNIT TEST-2**

## **UNIT III NETWORK LAYER**

### **WEEK-7**

Logical addressing: IPv4, IPv6 addresses Internet Protocol: Internetworking – IPv4, IPv6 - Address mapping – ARP, RARP, BOOTP, DHCP, ICMP.

### **WEEK-8**

IGMP, Delivery - Forwarding - Routing – Unicast, Multicast routing protocols.

### **WEEK-9**

### **UNIT TEST-3**

## **UNIT IV TRANSPORT LAYER**

### **WEEK-10**

Process-to-Process delivery - User Datagram Protocol (UDP) – Transmission Control Protocol (TCP)

### **WEEK-11**

Congestion Control – Quality of services (QoS) – Techniques to improve QoS.

### **WEEK-12**

### **UNIT TEST-4**

## **UNIT V APPLICATION LAYER**

### **WEEK-13**

Domain Name System (DNS) – E-mail – FTP – WWW – HTTP – Multimedia Network

Security: Cryptography – Symmetric key and Public Key algorithms

### **WEEK-14**

Digital signature – Management of Public keys – Communication Security – Authentication Protocols

**WEEK-15**  
**UNIT TEST 5**

**WEEK-16**  
**MODEL EXAMINATION-I (5 UNITS)**

**WEEK-17**  
**MODEL PRACTICAL EXAMINATION**

**TEXT BOOKS**

1. Behrouz A. Foruzan, “Data communication and Networking”, Tata McGraw-Hill,2006: Unit I-IV
2. Andrew S. Tannenbaum, “Computer Networks”, Pearson Education, Fourth Edition,2003: Unit V

**REFERENCE BOOKS**

1. Wayne Tomasi, “Introduction to Data Communication and Networking”, 1/e, Pearson Education.
2. James .F. Kurose & W. Rouse, “Computer Networking: A Topdown Approach Featuring”,3/e, Pearson Education.
3. C.Sivaram Murthy, B.S.Manoj, “Ad hoc Wireless Networks – Architecture and Protocols”, Second Edition, Pearson Education.
4. Greg Tomshon, Ed Tittel, David Johnson. “Guide to Networking Essentials”, fifth edition, Thomson India Learning, 2007.
5. William Stallings, “Data and Computer Communication”, Eighth Edition, PearsonEducation, 2000.

## **EC2353 ANTENNA AND WAVE PROPAGATION**

### **UNIT I ELECTROMAGNETIC RADIATION AND ANTENNA FUNDAMENTALS**

#### **WEEK-1**

Review of electromagnetic theory: Vector potential, Solution of wave equation, retarded case, Hertzian dipole. Antenna characteristics: Radiation pattern. Beam solid angle, Directivity, Gain, Input impedance, Polarization, Bandwidth, Reciprocity, Equivalence of Radiation patterns, Equivalence of Impedance. Effective aperture, Vector effective length, Antenna temperature.

#### **WEEK-2**

#### **UNIT TEST-1**

### **UNIT II WIRE ANTENNAS AND ANTENNA ARRAYS**

#### **WEEK-3**

Wire antennas: Short dipole, Radiation resistance and Directivity, Half wave Dipole, Monopole, Small loop antennas.

#### **WEEK-4**

Antenna Arrays: Linear Array and Pattern Multiplication, Two-element Array, Uniform Array.

#### **WEEK-5**

Polynomial representation, Array with non-uniform Excitation- Binomial Array.

#### **WEEK-6**

#### **UNIT TEST-2**

### **UNIT III APERTURE ANTENNAS**

#### **WEEK 7**



Aperture Antennas: Magnetic Current and its fields, Uniqueness theorem, Field equivalence principle, Duality principle, Method of Images, Pattern properties.

### **WEEK-8**

Slot antenna, Horn Antenna, Pyramidal Horn Antenna, Reflector Antenna-Flat reflector, Corner Reflector, Common curved reflector shapes, Lens Antenna.

### **WEEK-9**

#### **UNIT TEST-3**

## **UNIT IV SPECIAL ANTENNAS AND ANTENNA MEASUREMENTS**

### **WEEK-10**

Special Antennas: Long wire, V and Rhombic Antenna, Yagi-Uda Antenna, Turnstile Antenna, Helical Antenna- Axial mode helix, Normal mode helix, Biconical Antenna, Logperiodic Dipole Array, Spiral Antenna

### **WEEK-11**

Microstrip Patch Antennas. Antenna Measurements: Radiation Pattern measurement, Gain and Directivity Measurements, Anechoic Chamber measurement

### **WEEK-12**

#### **UNIT TEST-4**

## **UNIT-V RADIO WAVE PROPAGATION**

### **WEEK-13 UNIT V RADIO WAVE PROPAGATION**

Calculation of Great Circle Distance between any two points on earth, Ground Wave Propagation, Free-space Propagation, Ground Reflection, Surface waves, Diffraction, Wave propagation in complex Environments,

## **WEEK-14**

Tropospheric Propagation, Tropospheric Scatter. Ionospheric propagation: Structure of ionosphere, Sky waves, skip distance, Virtual height, Critical frequency, MUF, Electrical properties of ionosphere, Effects of earth's magnetic fields, Faraday rotation, Whistlers.

## **WEEK-15**

### **UNIT TEST-5**

## **WEEK-16**

### **MODEL EXAMINATION-I (5 UNITS)**

## **WEEK-17**

### **MODEL PRACTICAL EXAMINATION**

## **TEXT BOOKS**

1. C.Jordan and Balmain, "Electromagnetic waves and Radiating Systems", Pearson Education / PHI, 2006
2. A.R.Harish, M.Sachidanada, "Antennas and Wave propagation", Oxford University Press, 2007.

## **REFERENCE BOOKS**

1. John D.Kraus, Ronald J Marhefka and Ahmad S Khan, "Antennas for all Applications", Tata McGraw-Hill Book Company, 3 ed, 2007.
2. G.S.N.Raju, Antenna Wave Propagation, Pearson Education, 2004.
3. Constantine A. Balanis, Antenna Theory Analysis and Design, John Wiley, 2nd Edition, 2007.
4. R.E.Collins, "Antenna and Radiowave propagation",
5. W.L Stutzman and G.A. Thiele, "Antenna analysis and design", John Wiley, 2000

# **EC2354 VLSI DESIGN**

## **UNIT I CMOS TECHNOLOGY**

### **WEEK-1**

A brief History-MOS transistor, Ideal I-V characteristics, C-V characteristics, Non ideal IV effects– DC transfer characteristics - CMOS technologies, Layout design Rules CMOS process enhancements, Technology related CAD issues, Manufacturing issues

### **WEEK-1**

### **UNIT TEST-1**

## **UNIT II CIRCUIT CHARACTERIZATION AND SIMULATION**

### **WEEK-3**

Delay estimation, Logical effort and Transistor sizing, Power dissipation, Interconnect

### **WEEK-4**

Design margin, Reliability, Scaling- SPICE tutorial, Device models

### **WEEK 5**

Device characterization, Circuit characterization, Interconnect simulation

### **WEEK-6**

### **UNIT TEST-2**

## **UNIT III COMBINATIONAL AND SEQUENTIAL CIRCUIT DESIGN**

### **WEEK-7**

Circuit families –Low power logic design – comparison of circuit families – Sequencing static circuits, circuit design of latches and flip flops

### **WEEK-8**

Static sequencing element methodology- sequencing dynamic circuits – synchronizers.

### **WEEK-9**

### **UNIT TEST-3**

## **UNIT IV CMOS TESTING**

### **WEEK-10**

Need for testing- Testers, Test fixtures and test programs- Logic verification- Silicon debug principles

### **WEEK-11**

Manufacturing test – Design for testability – Boundary scan

### **WEEK-12**

### **UNIT TEST-4**

## **UNIT V SPECIFICATION USING VERILOG HDL**

### **WEEK-13**

Basic concepts- identifiers- gate primitives, gate delays, operators, timing controls,procedural assignments conditional statements, Data flow and RTL, structural gate level switch level modeling, Design hierarchies

### **WEEK-14**

Behavioral and RTL modeling, Test benches, Structural gate level description of decoder, equality detector, comparator, priorityencoder, half adder, full adder, Ripple carry adder, D latch and D flip flop.

**WEEK-15**  
**UNIT TEST-5**

**WEEK-16**  
**MODEL EXAMINATION-I (5 UNITS)**

**WEEK-17**  
**MODEL PRACTICAL EXAMINATION**

**TEXT BOOKS**

1. Weste and Harris: CMOS VLSI DESIGN (Third edition) Pearson Education, 2005
2. Uyemura J.P: Introduction to VLSI circuits and systems, Wiley 2002.

**REFERENCE BOOKS**

1. D.A Pucknell & K.Eshraghian Basic VLSI Design, Third edition, PHI, 2003
2. Wayne Wolf, Modern VLSI design, Pearson Education, 2003
3. M.J.S.Smith: Application specific integrated circuits, Pearson Education, 1997
4. J.Bhasker: Verilog HDL primer, BS publication,2001
5. Ciletti Advanced Digital Design with the Verilog HDL, Prentice Hall of India, 2003

## **EC2021 MEDICAL ELECTRONICS**

### **UNIT I ELECTRO-PHYSIOLOGY AND BIO-POTENTIAL RECORDING**

#### **WEEK-1**

The origin of Bio-potentials; biopotential electrodes, biological amplifiers ECG, EEG, EMG, PCG, EOG, lead systems and recording methods. Waveforms and signal characteristics.

#### **WEEK-2**

#### **UNIT TEST-1**

### **UNIT II BIO-CHEMICAL AND NON ELECTRICAL PARAMETER MEASUREMENT**

#### **WEEK-3**

PH, PO<sub>2</sub>, PCO<sub>2</sub>, PHCO<sub>3</sub>, Electrophoresis, colorimeter, photometer, Auto analyzer

#### **WEEK-4**

Blood flow meter, cardiac output, respiratory measurement,

#### **WEEK-5**

Blood pressure, temperature, pulse, Blood cell counters

#### **WEEK -6**

#### **CYCLE TEST II**

### **UNIT III ASSIST DEVICES AND BIO-TELEMETRY**

#### **WEEK-7**

Cardiac pacemakers, DC Defibrillator, Telemetry principles, frequency selection

**WEEK-8**

Biotelemetry, radio-pill and tele-stimulation

**WEEK -9**

**CYCLE TEST II**

**UNIT IV RADIOLOGICAL EQUIPMENTS**

**WEEK-10**

Ionising radiation, Diagnostic x-ray equipments,

**WEEK-11**

Use of Radio Isotope in diagnosis, Radiation Therapy

**WEEK -12**

**UNIT TEST-4**

**UNIT V RECENT TRENDS IN MEDICAL INSTRUMENTATION**

**WEEK-13**

Thermograph, endoscopy unit, Laser in medicine

**WEEK-14**

Diathermy units, Electrical safety in medical equipment.

**WEEK-15**

**UNIT TEST-V**

**WEEK-16**

**MODEL EXAMINATION-I (5 UNITS)**

**WEEK-17**

**MODEL PRACTICAL EXAMINATION**

## **TEXT BOOKS**

1. Leislle Cromwell, “Biomedical instrumentation and measurement”, Prentice Hall of India, New Delhi, 2007

## **REFERENCE BOOKS**

1. Khandpur, R.S., “Handbook of Biomedical Instrumentation”, TATA McGraw-Hill, New Delhi, 2003.
2. Joseph J.Carr and John M.Brown, “Introduction to Biomedical equipment Technology”, John Wiley and Sons, New York, 2004..

## **EC2356 COMPUTER NETWORKS LAB**

1. PC to PC Communication Parallel Communication using 8 bit parallel cable Serial communication using RS 232C
2. Ethernet LAN protocol, to create scenario and study the performance of CSMA/CD protocol through simulation
3. Token bus and token ring protocols, to create scenario and study the performance of token bus and token ring protocols through simulation
4. Wireless LAN protocols to create scenario and study the performance of network with CSMA / CA protocol and compare with CSMA/CD protocols.
5. Implementation and study of stop and wait protocol
6. Implementation and study of Goback-N and selective repeat protocols
7. Implementation of distance vector routing algorithm
8. Implementation of Link state routing algorithm
9. Implementation of Data encryption and decryption
10. Transfer of files from PC to PC using Windows / Unix socket processing.



## **EC2357 VLSI DESIGN LAB**

- 1.** Design Entry and simulation of combinational logic circuits (8 bit adders, 4 bit multipliers, address decoders, multiplexers), Test bench creation, functional verification, and concepts of concurrent and sequential execution to be highlighted.
- 2.** Design Entry and simulation of sequential logic circuits (counters, PRBS generators, accumulators). Test bench creation, functional verification, and concepts of concurrent and sequential execution to be highlighted.
- 3.** Synthesis, P&R and Post P&R simulation for all the blocks/codes developed in Expt. No. 1 and No. 2 given above. Concepts of FPGA floor plan, critical path, design gate count, I/O configuration and pin assignment to be taught in this experiment.
- 4.** Generation of configuration/fuse files for all the blocks/codes developed as part of Expt.1. and Expt. 2. FPGA devices must be configured and hardware tested for the blocks/codes developed as part of Expt. 1. and Expt. 2. The correctness of the inputs and outputs for each of the blocks must be demonstrated atleast on oscilloscopes (logic analyzer preferred).
- 5.** Schematic Entry and SPICE simulation of MOS differential amplifier. Determination of gain, bandwidth, output impedance and CMRR.
- 6.** Layout of a simple CMOS inverter, parasitic extraction and simulation.
- 7.** Design of a 10 bit number controlled oscillator using standard cell approach, simulation followed by study of synthesis reports.
- 8.** Automatic layout generation followed by post layout extraction and simulation of the circuit studied in Expt. No.7

*Note 1.* For Expt. 1 To 4 can be carried out using Altera (Quartus) / Xilinx (Alliance) /ACTEL (Liberio) tools.

*Note 2.* For expt. 5-8 introduce the student to basics of IC design. These have to be carried out using atleast 0.5u CMOS technology libraries. The S/W tools needed Cadence / MAGMA / Tanner.

## **GE2321 COMMUNICATION SKILLS LAB**

### **A. English Language Lab (18 Periods)**

#### **1. Listening Comprehension: (6)**

Listening and typing – Listening and sequencing of sentences – Filling in the blanks -Listening and answering questions.

#### **2. Reading Comprehension: (6)**

Filling in the blanks - Close exercises – Vocabulary building - Reading and answering questions.

#### **3. Speaking: (6)**

Phonetics: Intonation – Ear training - Correct Pronunciation – Sound recognition exercises – Common Errors in English.

Conversations: Face to Face Conversation – Telephone conversation – Role play activities (Students take on roles and engage in conversation)

### **B. Discussion of audio-visual materials (6 periods)**

**(Samples are available to learn and practice)**

#### **1. Resume / Report Preparation / Letter Writing (1)**

Structuring the resume / report - Letter writing / Email Communication - Samples.

#### **2. Presentation skills: (1)**

Elements of effective presentation – Structure of presentation - Presentation tools –Voice Modulation – Audience analysis - Body language – Video samples

### **3. Soft Skills: (2)**

Time management – Articulateness – Assertiveness – Psychometrics  
–Innovation and Creativity - Stress Management & Poise - Video  
Samples

### **4. Group Discussion: (1)**

Why is GD part of selection process ? - Structure of GD – Moderator  
– led and otherGDs - Strategies in GD – Team work - Body Language  
- Mock GD -Video samples

### **5. Interview Skills: (1)**

Kinds of interviews – Required Key Skills – Corporate culture –  
Mock interviews-Video samples.

## **II. Practice Session (Weightage – 60%) 24 periods 26**

**1. Resume / Report Preparation / Letter writing:** Students  
prepare their own resume and report. (2)

**2. Presentation Skills:** Students make presentations on given  
topics. (8)

**3. Group Discussion:** Students participate in group discussions.  
(6)

**4. Interview Skills:** Students participate in Mock Interviews

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