



### Scheme of Studies & Examinations

Department: Electronics & communication Engineering – 6<sup>th</sup> Semester

Sr. No	Course No.	Course Title	Teaching Schedule			Marks of class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	practical			
1	HUM302B	REPORT WRITING SKILLS(common for all branches)	1	-	-	25	50	-	75	1	2
2	ECE302B	MICROWAVE AND RADAR ENGINEERING (ECE,EEE)	3	1	-	25	75	-	100	4	3
3	EE312B	CONTROL SYSTEM ENGINEERING(ECE,BME,common with 5th Sem.AEI)	3	1	-	25	75	-	100	4	3
4	ECE304B	ANTENNA AND WAVE PROPAGATION	3	1	-	25	75	-	100	4	3
5	ECE306B	HDL BASED SYSTEM DESIGN(ECE,AEI)	3	1	-	25	75	-	100	4	3
6	ECE308B	MICROELECTRONICS(ECE,AEI)	3	1	-	25	75	-	100	4	3
7	ECE310B	MICROCONTROLLER BASED SYSTEM DESIGN (ECE,common with BME)	3	1	-	25	75	-	100	4	3
8	ECE322B	MICROWAVE AND RADAR ENGINEERING LAB(ECE,EEE)	-	-	2	20	-	30	50	1	3
9	EE332B	CONTROL SYSTEM ENGINEERING LAB (ECE,BME,common with 5th Sem.AEI)	-	-	2	20	-	30	50	1	3
10	ECE326B	HDL BASED SYSTEM DESIGN LAB(ECE,AEI)	-	-	2	20	-	30	50	1	-
11	ECE330B	MICROCONTROLLER LAB(ECE,common with BME)	-	-	2	20	-	30	50	1	3
12	GPEC302B	GENERAL PROFICIENCY & ETHICS	1	-	-	-	-	75	75	2	-
13	HUM304B	ORAL PRESENTATIONSKILLS(common for all branches)	-	-	2	20	-	30	50	1	2
Total			20	6	10	275	500	225	1000	32	

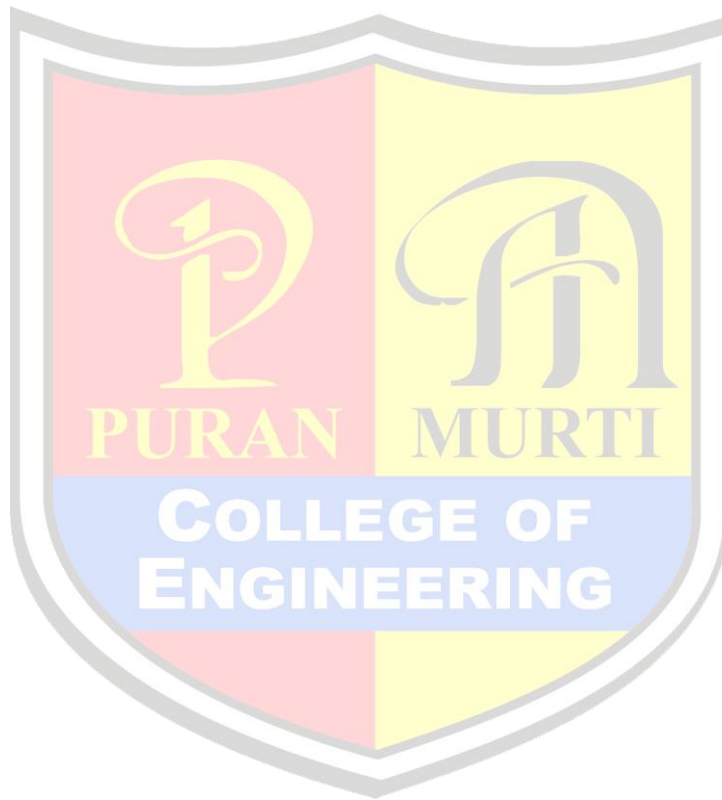
**Note:**

- Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weight-age of Moral Values & Ethics and Sports are given in General Proficiency Syllabus.
- Students will be permitted to opt for any one elective run by the other department (i.e. open electives) and for any two electives, one from Elective-I and one from Elective-II run by the department. However, the department shall offer those elective for which they have expertise. The choice of the students for any elective shall not be binding for the department to offer, if the department does not have expertise. The minimum strength of the students should be 20 to run an elective course.
- Assessment of Professional Training-II, undergone at the end of VI semester, will be based on seminar, viva-voce, report and certificate of Professional Training obtained by the student from the industry, institute, research lab, training center etc
- The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.



**Subject to be taught to other departments which are not in above scheme**

Sr. No	Course No.	Course Title	Teaching Schedule			Marks of class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	practical			
1	ECE312B	COMMUNICATION SYSTEMS & TECHNOLOGY (EE)	3	1	-	25	75	-	100	4	3
2	ECE332B	COMMUNICATION SYSTEMS & TECHNOLOGY LAB(EE)	-	-	2	20	-	30	50	1	3





### SYLLABUS: B Tech (ECE)

Department: Electronics & communication engineering – 6<sup>th</sup> Semester

Subject: Report Writing Skills (Theory)

Subject Code: HUM302B

#### Detailed Content

##### Unit No . 1

Topic No.1 : Report Writing

Topic No.2 : Reports: meaning, Their importance and types

Topic No.3 : Structure of reports, Formats of reports, Use of illustrations

##### Unit No. 2

Topic No.4 : Writing of Business and Technical Reports

Topic No.5 : Preliminary steps and procedure of writing report

Topic No.6 : Writing various types of reports on technical

Topic No.7 : Business related topics

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External (Examination)	Assessment	
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
1	-	-	1	25	50	2 hours	75

##### Recommended Reading:

1. Borowick, Jerome. N. Technical Communication and its Applications. New Delhi: PHI, 2000.
2. Guffey, Mary Ellen. Business Communication: Process & Product. USA: South western College Publishing, 2000.
3. Kumar, Sanjay and Pushp Lata. Communication Skills. Delhi: OUP, 2011.

##### SCHEME OF END-TERM EXAMINATION (MAJOR TEST) AND INSTRUCTIONS FOR EXAMINER Theory

1. The duration of the exam will 2 hours.
2. The Question Paper for this theory course shall have three questions in all covering both the units. All will be compulsory with internal choice.
3. Question no. 1 will be of 10 marks. The question may have two/three parts with enough internal choice, covering various components of both the Units.
4. Question no 2 with internal choice will be of 10 marks covering contents of the Unit I. It will be theoretical in nature.
5. Question no 3 will have two parts of 15 marks each. The student will be asked to write reports on business and technical subject/ issue covering contents of Unit II. The emphasis would be on testing the actual report writing on a given business and technical situation/ subject in letter format.



**SYLLABUS: B Tech (ECE)**

**Department: Electronics & communication engineering – 6<sup>th</sup> Semester**

**Subject: Microwave And Radar Engineering (Theory)**

**Subject Code: ECE302B**

**Detailed Content**

**Unit No.1 Introduction To Microwaves:**

- Topic No.1 : Characteristic Features- Advantages And Applications
- Topic No.2 : Waveguides- Basic Concepts And Properties, Comparison Of Waveguide With Transmission Lines
- Topic No.3 : Propagation In TE & TM Mode, Rectangular Waveguide, TEM Mode In Rectangular Waveguide
- Topic No.4 : Introduction To Circular Waveguides And Planar Transmission Lines
- Topic No.5 : Directional Couplers, Tees, Hybrid Ring, Attenuators, Cavity Resonators
- Topic No.6 : Mixers & Detectors, Matched Load, Phase Shifter, Isolators, Circulators

**Unit No. 2 Microwave Tubes:**

- Topic No.7 : Limitations Of Conventional Tubes
- TOPIC NO.8 : CONSTRUCTION, OPERATION, PROPERTIES AND APPLICATIONS OF KLYSTRON AMPLIFIER, REFLEX KLYSTRON, Magnetron, TWT, BWO, Crossed Field Amplifiers
- Topic No.9 : Principle Of Operation And Applications Of Varactor Diode, Tunnel Diode, Schottky Diode, Gunn Diode, Impatt, Trapatt And Pin Diodes
- Topic No.10: MASER, Parametric Amplifiers

**Unit No. 3 Microwave Measurements:**

- Topic No.11: Measurement Of Frequency, Power, VSWR, Wavelength & Impedance
- Topic No.12: Introduction: Radar Principles, Development, Frequencies, Block Diagram And Operation And Applications

**Unit No.4 Radar Equation:**

- Topic No.13: Simple Form Of Radar Equation
- Topic No.14: Prediction Of Range Performance, Minimum Detectable Signal, Pulse Repletion Frequency & Range Ambiguities, System Losses, Propagation Effects
- Topic No.15: Block Diagram And Operation Of CW, Frequency Modulated Radar, MTI & Pulsed Doppler Radar
- Topic No.16: The Doppler Effect, Blind Speed, Applications

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**Text Books :**

1. Foundations for Microwave Engineering: R.E.Collin, MGH
2. Introduction to Radar Systems: Merrill I. Skolnik, MGH

**Reference Books:**

1. Radar Principles, Technology, Applications: Byron Edde, Pearson Education
2. Microwave Devices and Circuit: Samuel Liao, PHI.
3. Elements of Microwave Engineering : R.Chatterjee, EWP

**NOTE:**

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.



### SYLLABUS: B Tech (ECE)

Department: Electronics & communication engineering – 6<sup>th</sup> Semester

Subject: Control System Engineering (Theory)

Subject Code: EE312B

#### Detailed Content

##### **Unit No.1 Input / Output Relationship:**

- Topic No.1 : System / Plant Model, Illustrative Examples Of Plants & Their Inputs And Outputs
- Topic No.2 : Open Loop & Closed Loop Control System & Their Illustrative Examples
- Topic No.3 : Mathematical Modeling And Representation Of Physical Systems
- Topic No.4 : Concept Of Transfer Function, Relationship Between Transfer Function And Impulse Response
- Topic No.5 : Order Of A System
- Topic No.6 : Block Diagram Algebra
- Topic No.7 : Signal Flow Graphs, Mason's Gain Formula & Its Application
- Topic No.8 : Characteristic Equation
- Topic No.9 : Derivation Of Transfer Functions Of Electrical And Electromechanical Systems

##### **Unit No. 2 Time Domain Analysis:**

- Topic No.10: Typical Test Signals
- Topic No.11: Time Response Of First Order Systems To Various Standard Inputs, Time Response Of 2nd Order System To Step Input, Time Domain Specifications
- Topic No.12: Steady State Error And Error Constants
- Topic No.13: Concept Of Stability, Pole-Zero Configuration And Stability
- Topic No.14: Necessary And Sufficient Conditions For Stability, Hurwitz Stability Criterion, Routh Stability Criterion And Relative Stability
- Topic No.15: Root Locus Concept, Development Of Root Loci For Various Systems, Stability Considerations

##### **Unit No.3 Frequency Domain Analysis:**

- Topic No.16: Relationship Between Frequency Response And Time-Response For 2nd Order System
- Topic No.17: Polar, Nyquist, Bode Plots
- Topic No.18: Stability, Gain-Margin And Phase Margin, Relative Stability
- Topic No.19: Frequency Response Specifications.

##### **Unit No.4 Compensation:**

- Topic No.20: Necessity Of Compensation, Compensation Networks, Application Of Lag And Lead Compensation
- Topic No.21: Basic Modes Of Feedback Control, Proportional, Integral And Derivative Controllers
- Topic No.22: Control Components, Synchros, Servomotor, Stepper Motors, Magnetic Amplifier

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

##### **TEXT BOOK:**

1. Control System Engineering: I.J. Nagrath & M. Gopal; New Age Publishers.

##### **REFERENCE BOOKS:**

1. Automatic Control Systems: B.C. Kuo, PHI. Publishers.
2. Modern Control Engg: K. Ogata; PHI. Publishers.



**SYLLABUS: B Tech (ECE)**

**Department: Electronics & Communication Engineering – 6<sup>th</sup> Semester**

**Subject: Antenna And Wave Propagation(Theory)**

**Subject Code: ECE304B**

**Detailed Content**

**UNIT No. 1 INTRODUCTION TO EM WAVES:**

- Topic NO.1 : Introduction, Electromagnetic Wave Equations
- Topic No. 2 : Poynting Theorem & Electromagnetic Power
- Topic No. 3 : Short Electric Dipoles, Retarded Vector Potential
- Topic No. 4 : Radiation From A Small Current Element
- Topic No. 5 : CURRENT ELEMENT CHARACTERISTICS: Power Radiated By A Current Element And Its Radiation Resistance, Radiation From A Half Wave Dipole, Radiation Patterns, Radiation Power Density, Radiation Intensity

**Unit No. 2 ANTENNA PATTERN:**

- Topic No. 7 : Antenna Pattern, Antenna Parameters , Front To Back Ratio, Gain
- Topic No. 8 : Directivity: Radiation Resistance, Efficiency, Aperture Area
- Topic No. 9 : Impedence, Effective Length And Beam Width
- Topic No.10: Reciprocity Theorem For Antenna And Its Applications
- Topic No.11: ANTENNA PARAMETERS: Impedance Measurements, Radiation Pattern Measurement, Beam Width Measurement
- Topic No.12: Phase And Current, Radiation Resistance
- Topic No.13: Directivity And Polarisation Measurement

**Unit 3. TYPES OF ANTENNAS:**

- Topic No.14: Introduction, Isotropic, Yagi-Uda, Biconical, Helical, Horn
- Topic No.15: Slot
- Topic No.16: Parabolic Feeds, Conical, Log Periodic
- Topic No.17: Microwave And Patch Antenna.
- Topic No.18: ANTENNA ARRAYS: Types Of Antenna Array, Broadside Array, End Fire Array, Collinear Array And Parasitic Array, Array Of Point Sources
- Topic No.19: Pattern Multiplication, Linear Array, Phased Array, Tapering Of Array, Binomials Arrays, Continuous Arrays And Superdirective Array,
- Topic No.20: Effect Of Ground On Antennas

**UNIT IV TRANSMISSION PARAMETERS:**

- Topic No. 21: Reflection And Refraction Of Plane Waves At The Surface Of A Perfect Conductor & Perfect Dielectric
- Topic No.22: Brewster's Angle And Total Internal Reflection, Reflection At The Surfaces Of A Conductive Medium
- Topic No. 23: Surface Impedance
- Topic No. 24: Transmission-Line Analogy
- Topic No. 25: Poynting Theorem, Interpretation Of E X H
- Topic No.26 : Power Loss In A Plane Conductor
- Topic No.27: RADIO WAVE PROPAGATION: Introduction, Ground Wave, Sky Wave, Space Waves And Tropospheric Abnormalities
- Topic No.28: Multi-Hop Propagation
- Topic No.29: Effect Of Earth
- Topic No.30: Skip Distance
- Topic No.31: Ionospheric Abnormalities, Mechanism Of Ionospheric Propagation



Topic No.32: Critical Frequency

Topic No.33: Duct Propagation

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 Hours	100

**Text Books :**

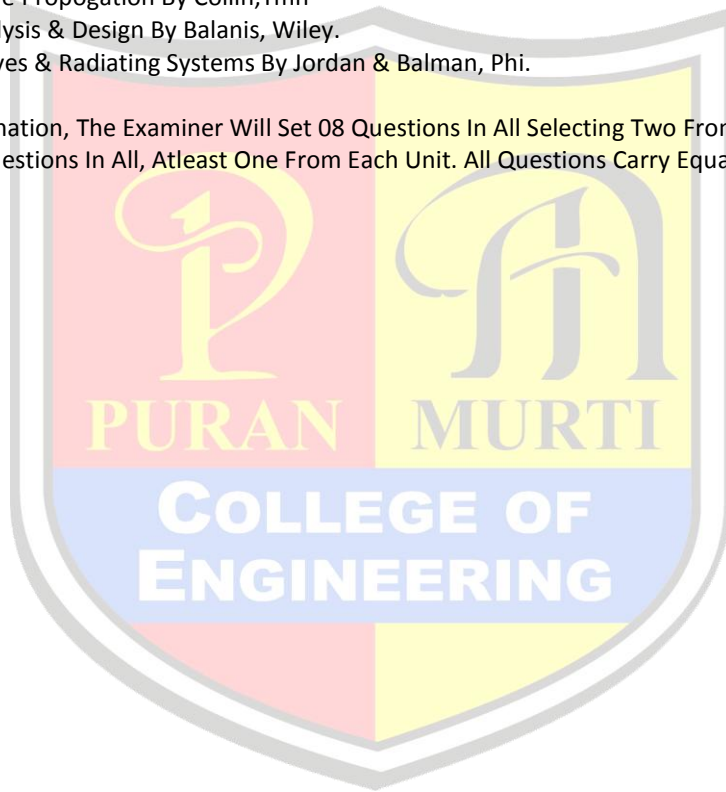
1. Antennas By J.D.Kraus, Tmh.
2. Antenna & Wave Propagation By Raju
3. Antenna & Wave Propagation By K.D Prasad.

**Reference Books:**

1. Antenna & Radiowave Propagation By Collin, Tmh
2. Antenna Theory Analysis & Design By Balanis, Wiley.
3. Electromagnetic Waves & Radiating Systems By Jordan & Balman, Phi.

**Note:**

In The Semester Examination, The Examiner Will Set 08 Questions In All Selecting Two From Each Unit. The Candidates Will Be Required To Attempt Five Questions In All, Atleast One From Each Unit. All Questions Carry Equal Marks.





**SYLLABUS: B Tech (ECE)**

**Department: ELECTRONICS & COMMUNICATION ENGINEERING – 6<sup>th</sup> Semester**

**Subject: HDL BASED SYSTEM DESIGN (Theory)**

**Subject Code: ECE306B**

**Detailed Content**

**Unit No.1 Introduction**

- Topic No.1 : System, Introduction To Digital System
- Topic No.2 : Design Issues, Computer Aided Design Tool
- Topic No.3 : Hardware Description Languages, simulation and Synthesis
- Topic No.4 : Hardware for Digital System and Design, PLA , PAL , ROM, CPLD, FPGA

**Unit No.2 VHDL Basics**

- Topic No.5 : Introduction, Entity AND Architecture Declaration
- Topic No.6 : Data Objects, Classes AND Data Types, Operators, Overloading, Logical Operators
- Topic No.7 : Type of Delays
- Topic No.8 : Behavioral, Dataflow and Structural Model
- Topic No.9 : VHDL Statements, Assignment Statements, Sequential and Process Statements, conditional and Generate Statements, Case Statement
- Topic No.10: Array and Loops
- Topic No.11: Resolution Function
- Topic No.12: Concurrent Statements

**Unit No.3 Advance VHDL Topics**

- Topic No.13: packages and Libraries, subprograms
- Topic No.14: Applications Of Function And Procedure
- Topic No.15: Structural Modelling, Component Declaration, Structural Layout and Generics
- Topic No.16: Configuration Statement, Test Benches, Alias, Generate Statements
- Topic No.17: Combinational Circuit Design, Vhdl Model and Simulation Of Combinational Circuits, Mux, Demux Encoder and Decoder, Code Converters, Comparators
- Topic No.18: Implementation Of Boolean Functions

**Unit No.4 Sequential Circuit Design**

- Topic No.19: VHDL Model and Simulation
- Topic No.20: Flip-Flop, Shift Registers, counters
- Topic No.21: Introduction and Model of FSM
- Topic No.22: Design of Digital System
- Topic No.23: Basic Component of Computer, Specification, Architecture of Simple Computer, Design Of ALU, Memory Unit
- Topic No.24: Design Implementation Using CPLD and FPGA

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

**Reference Books:**

1. "IEEE Standard VHDL Language Reference Manual (1993)".
2. "Digital design", Ashenden, Elsevier.
3. "Digital Design and Modelling with VHDL and Synthesis", K. C. Chang; IEEE Computer Society Press.





# PM

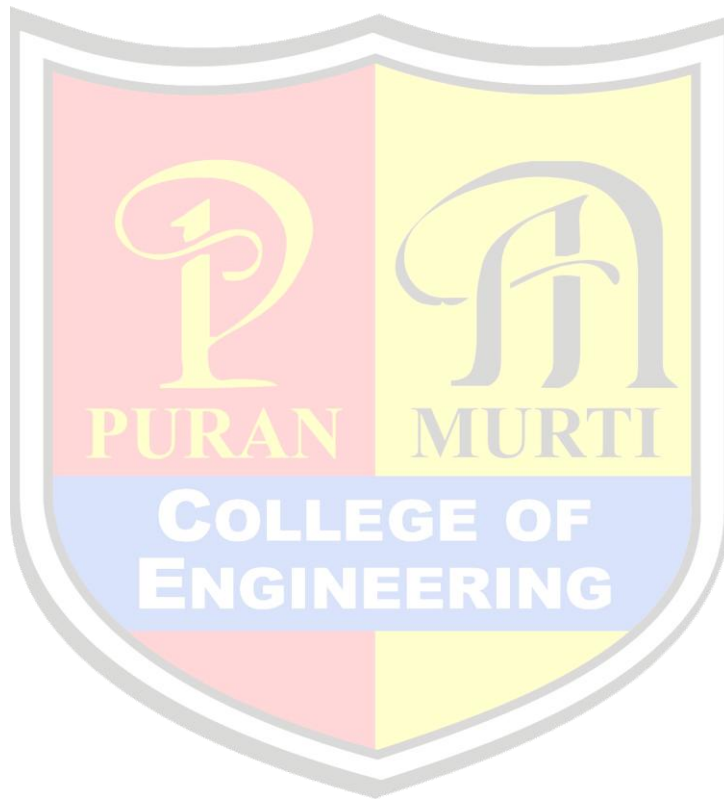
## COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India,  
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

4. "A VHDL Primer", J. Bhasker, Prentice Hall 1995.
5. "Digital System Design using VHDL", Charles. H. Roth, PWS (1998).
6. "VHDL-Analysis & Modelling of Digital Systems", Z. Navabi, McGraw Hill.
7. "VHDL", Perry, TMH (2002).
8. "Introduction to Digital Systems", Ercegovac. Lang & Moreno, John Wiley (1999).
9. "Fundamentals of Digital Logic with VHDL", Brown and Vranesic; TMH (2000)
10. "Modern Digital Electronics", R. P. Jain, TMH (2003).
11. "Digital system Design using FPGA & CPLD'S", Grout, Elsevier.
12. "VHDL", Kaur, Pearson. 13. "Circuit Design & Simulation with VHDL", Volnei A. Pedroni, PHI.

### NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks.





### SYLLABUS: B Tech (ECE)

Department: Electronics & communication engineering– 5<sup>th</sup> Semester

Subject: Microelectronics (Theory)

Subject Code: ECE308B

#### Detailed Content

##### **Unit No.1 Crystal Growth And Wafer Preparation:**

- Topic No.1: Clean Room Concept, Safety Requirements
- Topic No.2: Crystal Growth Techniques, Czochralski And Gradient Freeze Techniques
- Topic No.3: Physics Involved In CZ Growth, Energy Flow Balance, Pull Rate- Considerations, Problems And Solutions, Defects Involved In CZ Method
- Topic No.4: Effects Due To Carbon And Oxygen Impurities, Modeling Of Dopant Incorporation
- Topic No.5: Float Zone Growth For High Purity Silicon, Liquid Encapsulated Growth For Gaas
- Topic No.6: Material Characterization- Wafer Shaping
- Topic No.7: Crystal Characterization, Wafer Cleaning
- Topic No.8: Growth Mechanism And Kinetic Oxidation, Thin Oxides, Oxidation Techniques And Systems, Oxide Properties, Characterization Of Oxide Films
- Topic No.9: Growth And Properties Of Dry And Wet Oxidation, Charge Distribution During Oxidation, Oxide Characterization, Anomalies With Thin Oxide Regime.

##### **Unit No.2 Diffusion:**

- Topic No.10: The Nature Of Diffusion, Diffusion Mechanisms – Interstitial Substitution, Interstitial-Substitution Combined,, Interstitialcy And Grain Boundary
- Topic No.11: Fick's Law Of Diffusion, Limited And Constant Source Diffusion, Models Of Diffusion In Solid
- Topic No.12: Diffusion Equation, Atomic Diffusion Mechanisms, Diffusion System For Silicon And Gallium Arsenide
- Topic No.13: Measurement Techniques, Experimental Analysis Of Diffused Profiles.
- Topic No.14: Introduction, Physics Of Implantation, Range Theory
- Topic No.15: Projected Range In Stopping Mechanisms- Channeling, Nuclear Stopping, Electronic Stopping
- Topic No.16: Implantation Damage, Implantation Equipment, Annealing
- Topic No.17: Shallow Junction, Application To Silicon And Gallium Arsenide, RTA Mechanism

##### **Unit No.3 Lithography:**

- Topic No.18: Pattern Generation And Mask Making, Exposure Sources,
- Topic No.19: Photolithography, Photoresists, Optical Lithography, Electron Lithography, X-Ray Lithography, Ion Lithography, Mask Defects, Atomic Force Microscopy Based Lithography System, Dip Pen Lithography System.
- Topic No.20: Need For Film Deposition, Film Deposition Methods- Physical And Chemical, Deposition Processes, CVD Techniques For Deposition Of Polysilicon
- Topic No.21: Silicon Dioxide, Silicon Nitride And Metal Films
- Topic No.22: Sputter Deposition, Sputter Unit
- Topic No.23: Epitaxy –Types Techniques, Advantages, Vapor Phase Epitaxy, Molecular Beam Epitaxy

##### **Unit No.4 Etching:**

- Topic No.24: Directionality And Selectivity Issues
- Topic No.25: Wet Chemical Etching, Wet Etchants, Dry Physical Etching, Dry Etchants, Plasma Etching, Plasma Etching, Advantages And Disadvantages
- Topic No.26: Dry Etching Systems, Dry Chemical Etching, Reactive Ion Etching, Etching Induced Damage, Cleaning.
- Topic No.27: Introduction, Metallization Applications, Metallization Choices, Physical Vapor Deposition, Patterning, Metallization Problems



# PM

## COLLEGE OF ENGINEERING

A Unit of Puran Murti Educational Society  
Approved by AICTE, Ministry of HRD, Govt. of India,  
Affiliated to Deenbandhu Chhotu Ram University of Science & Technology

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 Hours	100

### Text Books :

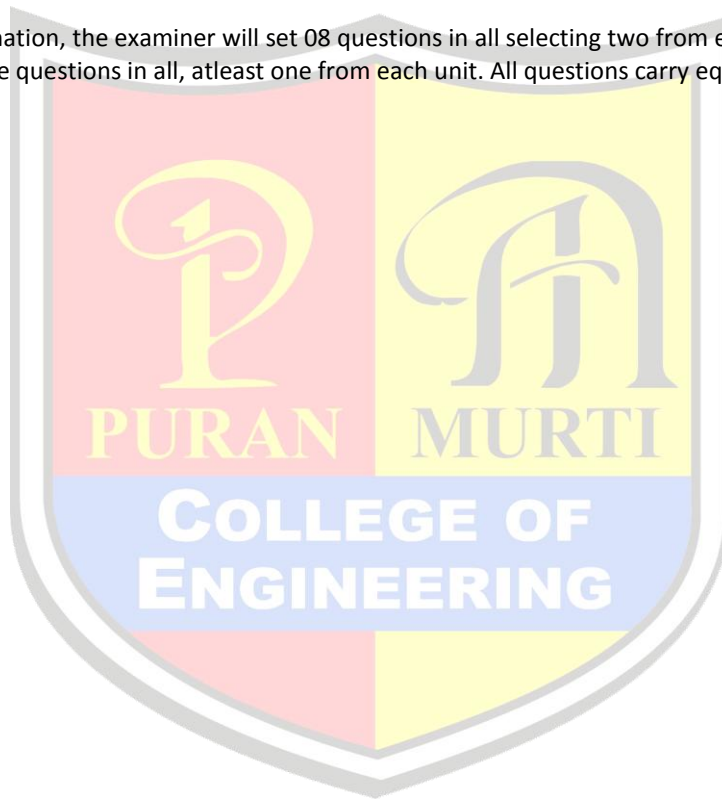
1. S.M.Sze, "VLSI Technology" TMH
2. S.K.Gandhi, "VLSI Fabrication Principles"

### Reference Books:

1. S.M.Sze, "Semiconductor Devices Physics and Technology"
2. K.R.Botkar, "Integrated Circuits".

### NOTE:

In the Semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all, atleast one from each unit. All questions carry equal marks





**SYLLABUS: B TECH (ECE)**

**Department: Electronics & Communication Engineering– 6<sup>th</sup> Semester**

**Subject: Microcontroller Based System Design (Theory)**

**Subject Code: ECE310B**

**Detailed Content**

**Unit No.1 Introduction Of Embedded Systems:**

- Topic No.1 : Definition, Ingredients Of Embedded System, Requirements & Challenges Of Embedded System Design
- Topic No.2 : Different Types Of Microcontrollers: Embedded Microcontrollers, External Memory Microcontrollers Etc. Processor Architectures: Harvard V/S Princeton, CISC V/S RISC
- Topic No.3 : Microcontrollers Memory Types
- Topic No.4 : Microcontrollers Features: Clocking, I/O Pins, Interrupts, Timers, And Peripherals
- Topic No.5 : Software For Embedded System Design: Development Tools/ Environments
- Topic No.6 : Assembly Language Programming Style, Interpreters
- Topic No.7 : High Level Languages, Intel Hex Format Object Files, Debugging

**Unit No.2 8051 Microcontroller:**

- Topic No.8 : Pin Diagram Explanation, Internal Diagram 8051
- Topic No.9 : Instruction Set
- Topic No.10: Addressing Mode, Data Transfer Instruction, Logical, Arithmetic Instruction, Bit Instruction, Branching Instruction
- Topic No.11: Timers, Serial Interface & Interrupts Of 8051 Microcontroller: Timer: Control Word, Mode Of Timers, Simple Programming, Generation Of Square Wave
- Topic No.12: Serial Interface: Introduction, Control Word, Mode Of Serial Interface, Simple Programming
- Topic No.13: Interrupts: Introduction, Control Word Simple Programming, Generation Of Waveforms Using Interrupt, Serial Interface Using Interrupt

**Unit No.3 PIC Microcontroller:**

- Topic No.14: Introduction To Pic Microcontrollers, Features Of Pic Family Microcontrollers, Architecture And Pipelining, Program Memory Considerations
- Topic No.15: Addressing Modes, Cpu Registers, Instruction Set, And Simple Operations.
- Topic No.16: Features Of Pic Microcontroller: Timer: Control Word, Mode Of Timers, Simple Programming, Generation Of Square Wave, Watch-Dog Timer
- Topic No.17: Serial Interface: Introduction, Control Word, Mode Of Serial Interface, Simple Programming
- Topic No.18: Interrupts: Introduction, Control Word Simple Programming, Generation Of Waveforms Using Interrupt, Serial Interface Using Interrupt

**Unit No.4 Applications Based On 8051 Microcontroller:**

- Topic No.19: Interfacing Of Memory, Intelligent Lcd, 8255, Adc, Dac, Led Display, Memory Card, Bio-Metric System
- Topic No.20: **Application Based On Pic Microcontrollers:** Interfacing Of Graphical Display, Memory Card, Bio-Metric System Music Box
- Topic No.21: Applications Like Mouse Wheel Turning, Pwm Motor Control, Ultra Sonic Distance Measuring, Temperature Sensor, Pressure Sensor, Magnetic Field Sensor

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)	Exam Duration	
L	T	P	Credits	Max. Marks	Max. Marks		
3	1	-	4	25	75	3 Hours	100

**Reference Books:**

1. 8051, Scott Mackenzie, Phi, Englewood Cliffs, New Jersey.
2. Programming & Customizing The 8051 Microcontroller, Myke Predko, Tata Mcgraw-Hill Pub. Co. Ltd., New Delhi.
3. 8051 Architecture Programming & Applications, K. J. Ayala, Penram International Publishers, India.
4. Programming & Customizing The Pic Microcontroller, Myke Predko, Tata Mcgraw-Hill Pub. Co. Ltd., New Delhi.



**SYLLABUS: B Tech (ECE)**

**Department: Electronics & communication engineering – 6<sup>th</sup> Semester**

**Subject: Microwave And Radar Engineering Lab**

**Subject Code: ECE322B**

**Detailed Content**

**LIST OF EXPERIMENTS:**

- 1 To study of Wave guide Components.
- 2 Generation of Microwave Power & Basic set-up.
- 3 To Study the characteristic of reflex klystron.
- 4 To measure frequency of Microwave source and demonstrate relationship among frequency, free space wavelength and guide wave length.
- 5 To measure VSWR of an unknown load.
- 6 To measure large standing wave ratio of a unmatched load.
- 7 To match impedance for maximum power transfer using slide screw tuner.
- 8 To measure VSWR, insertion loss and attenuation of a fixed and variable attenuator.
- 9 To measure coupling factor and directivity of Directional coupler.
- 10 To determine the insertion loss, isolation of three port circulator
- 11 To determine the insertion loss, isolation of a isolator.
- 12 To study the characteristics of Gunn Diode.

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 Hours	50

**Note:-**

- 1 Total ten experiments are to be performed in the semester.
  - 2 At least seven experiments should be performed from the above list.
- Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.



**SYLLABUS: B Tech (ECE)**

**Department: Electronics & communication engineering – 6<sup>th</sup> Semester**

**Subject: Control System Engineering Lab**

**Subject Code: EE332B**

**Detailed Content**

**LIST OF EXPERIMENTS:**

1. To study A.C. servo motor and to plot its torque-speed characteristics.
2. To study D.C. servo motor and to plot its torque speed characteristics.
3. To study the magnetic amplifier and to plot its load current v/s control current characteristics for:
  - (a) series connected mode
  - (b) parallel connected mode.
4. To plot the load current v/s control current characteristics for self excited mode of the magnetic amplifier
5. To study the synchro & to:
  - (a) Use the synchro pair (synchro transmitter & control transformer) as an error detector.
  - (b) Plot stator voltage v/s rotor angle for synchro transmitter i.e. to use the synchro transmitter as position transducer.
6. To use the synchro pair (synchro transmitter & synchro motor) as a torque transmitter.
7. (a) To demonstrate simple motor-driven closed-loop position control system.  
(b) To study and demonstrate simple closed-loop speed control system.
8. To study the lead, lag, lead-lag compensators and to draw their magnitude and phase plots.
9. To study a stepper motor & to execute microprocessor or computer-based control of the same by changing number of steps, direction of rotation & speed.
10. To implement a PID controller for level control of a pilot plant.
11. To implement a PID controller for temperature control of a pilot plant.
12. To study the MATLAB package for simulation of control system design.

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 Hours	50

**Note:-**

- 1 Total ten experiments are to be performed in the semester.
  - 2 At least seven experiments should be performed from the above list.
- Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.



### SYLLABUS: B Tech (ECE)

Department: Electronics & communication engineering – 6<sup>th</sup> Semester

Subject: HDL Based System Design Lab

Subject Code: Ece326b

#### Detailed Content

#### List Of Experiments:

1. Design all Basic gates using HDL.
2. Design Universal gates using HDL.
3. Write VHDL programs for half adder and full adder circuits, check the wave forms and the hardware generated.
4. Write VHDL programs for multiplexer & demultiplexer circuits, check the wave forms and the hardware generated.
5. Write VHDL programs for the following circuits, check the wave forms and the hardware generated
  - a. Decoder
  - B. Encode
6. Write a VHDL program for a comparator and check the wave forms and the hardware generated.
7. Write a VHDL program for a code converter and check the wave forms and the hardware generated.
8. Write a VHDL program for a FLIP-FLOP and check the wave forms and the hardware generated.
9. Write a VHDL program for a counter and check the wave forms and the hardware generated.
10. Write VHDL programs for the following circuits, check the wave forms and the hardware generated (a) Register (b) Shift register
11. Implement any three (given above) on FPGA kit.
12. Implement any three (given above) on CPLD kit.

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 Hours	50

#### Note:-

- 1 Total ten experiments are to be performed in the semester.
  - 2 At least seven experiments should be performed from the above list.
- Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.



### SYLLABUS: B Tech (ECE)

Department: Electronics & communication engineering – 6<sup>th</sup> Semester

Subject: Microcontroller Lab

Subject Code: ECE330B

#### Detailed Content

#### LIST OF EXPERIMENTS:

1. Study Architecture of 8051 Microcontroller & Power on reset circuit.
2. (a) Write an assembly language program to add eight 8-bit numbers.  
(b) Write an assembly language program to find average of eight 8-bit numbers.
3. (a) Write an assembly language program to find a maximum number from a given 8-bit ten numbers.  
(b) Write an assembly language program to find a minimum number from a given 8-bit ten numbers.
4. Arrange the given ten 8-bit numbers in ascending order.
5. Generate a square wave of 10kHz at P1.0 Crystal frequency is XXXX.
6. Write a program to transfer data from given memory block B1 to block B2.
7. Interface LED and switch with microcontroller 8051 or PIC.
8. Interface seven segment display with microcontroller 8051 or PIC.
9. Interface LCD with microcontroller 8051 or PIC.
10. Write an assembly language program for External program and test on hardware.
11. Interface stepper motor with microcontroller 8051 or PIC.
12. Interface DC motor with microcontroller 8051 or PIC and control speed using PWM.
13. Write an assembly language program to transfer message serially.
14. Write an assembly language program using interrupts to simultaneously create 7kHz and 500kHz square wave on P1.0 and P1.1 respectively.
15. Design a mini project based on microcontroller.

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 Hours	50

#### Note:-

- 1 Total ten experiments are to be performed in the semester.
- 2 At least seven experiments should be performed from the above list.  
Remaining three experiments should be performed as designed and set by the concerned institution as per the scope of the syllabus.





**SYLLABUS: B Tech (ECE)**

**Department: Electronics & communication engineering – 6<sup>th</sup> Semester**

**Subject: General Proficiency & Ethics**

**Subject Code: GPEC302B**

**Detailed Content**

**LIST OF EXPERIMENTS:**

The purpose of this course is to inculcate a sense of professionalism in a student along with personality development in terms of quality such as receiving, responding, temperament, attitude and outlook. The student efforts will be evaluated on the basis of his/ her performance / achievements in different walks of life.

A Faculty Counselor will be attached to a group of students which will remain associated with him /her during the entire period of the degree program in the University. Each faculty member will serve as a faculty counselor. They will act like a local guardian for the students associated with him / her and will help them in terms of career guidance, personal difficulties. A. The student will present a written report before the committee with following in view: The student will present before the committee his/her achievements during the current academic session in the form of a written report highlighting followings:

- I. Academic Performance
- II. Extra Curricular Activities / Community Service, Hostel Activities (8 Marks)
- III. Technical Activities / Industrial, Educational tour (8 Marks)
- IV. Sports/games (14 Marks)
- V. Moral values & Ethics (15 Marks)

**NOTE:**

- A. Report submitted by the students should be typed on both sides of the paper.
- B. A student will support his/her achievement and verbal & communicative skill through presentation before the committee. (30 Marks)

C. Moral values & Ethics

Syllabus –

A few topics from the below mentioned books

1. R.R.Gaur, R. Sangal and G.P. Bagaria, “ Bagaria, “ A foundation course in Human Values and Professional Ethics”, Pub: Excel Books, New Delhi-110028.
2. M. Govindrajan, S Natrajan & V.S. Senthil Kumar, “ Engineering Ethics (including Human Values )” Eastern Economy Edition, Prentics Hall of India Ltd. A minor test/Quiz will be conducted during the semester and It will be the duty of the concerned teacher assigned to teach Moral values & Ethics to submit the awards to respective chairman of the department / Director/Principal. The evaluation of this course will be made by the following Committee.

University Departments:

- 1 Chairperson of the Department    Chairman 2 Senior Most Faculty Counselor    Member 3 Vice- Chancellor’s Nominee Member

Affiliated Colleges:

- 1 Director/Principal    Chairman
- 2 Head of the Department/Sr. Faculty Member
- 3 External Examiner to be appointed by the University    Member

Study Scheme				Evaluation Scheme			Total Marks
Lectures Per Week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
1	-	-	2	-	75	3 Hours	75

Note:

Remuneration will be paid to the external examiner only (at par with the other practical examinations).



### SYLLABUS: B Tech (ECE)

Department: Electronics & communication engineering – 6<sup>th</sup> Semester

Subject: Oral Presentation Skills

Subject Code: HUM304B

#### Detailed Content

#### Oral Presentations:

Group Discussion; Mock interviews

STUDY SCHEME				EVALUATION SCHEME			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 Hours	50

#### Note for the Teacher:

The teacher concerned, by devising her/his method, must preview and review the student's spoken proficiency at the beginning and end of the semester respectively to find the efficacy of the course and degree of improvement in the student.

#### Recommended Reading:

1. Konar, Nira. English Language Laboratories: A Comprehensive Manual. Delhi: PHI, 2011.
2. Kumar, Sanjay and Pushp Lata. Communication Skills. Delhi: OUP, 2011.

#### SCHEME OF END SEMESTER EXAMINATION (Practical)

An external Practical exam of 25 marks of 2 hour duration for the course will be conducted by an external examiner appointed by the university's Controller of Exams.

#### Note:

Students will be tested for their oral communication competence making them participate in Group discussion, mock situations for interview. Students may also be evaluated through a viva conducted by an external examiner.