DEENBANDHUCHHOTURAMUNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL (SONEPAT)
SCHEME OF STUDIES AND EXAMINATION
B. TECH. III YEAR (ELECTRONICS & COMMUNICATION ENGINEERING)
SEMESTER VI
Credit Based Scheme w.e.f. 2014-2015

Sr. No.	Course No.	Course Title	Teaching Schedule			Marks of Class Work	Exam. Marks		Total Marks	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, 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	3
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 PRESENTATION SKILLS (common for all branches)	-	-	2	20	-	30	50	1	2
		Total	20	6	10	275	500	225	1000	32	

Note:

1. Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports is given in General Proficiency Syllabus.
2. The students will be allowed to use non-Programmable Scientific Calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronic Gadgets including Cellular Phones are not allowed in the examination.
4. At the end of 6th semester each student would undergo four weeks Professional Training in an Industry/ Institute/ Professional / Organization/ Research Laboratory / training centre etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization.

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	Exam. Marks		Total Marks	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

HUM302B **REPORT WRITING SKILLS**

B. Tech. Semester – VI (Common for all branches)

L	T	P	Credits
1	-	-	1

Class Work	:	25 Marks
Theory	:	50 Marks
Total	:	75 Marks

Duration of Exam. : 2Hrs.

UNIT I

Report Writing:
Reports: meaning, their importance and types, Structure of reports, Formats of reports, Use of illustrations

UNIT II

Writing of Business and Technical Reports:
Preliminary steps and procedure of writing report, writing various types of reports on technical, business related topics.

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.

ECE302B MICROWAVE AND RADAR ENGINEERING

B. Tech Semester –VI (ECE, EEE)

L	T	P	Credits
3	1	-	4

Class Work	:	25Marks
Theory	:	75Marks
Total	:	100Marks

Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION TO MICROWAVES:
Characteristic features- advantages and applications, Waveguides- Basic concepts and properties, Comparison of Waveguide with transmission lines, Propagation in TE & TM mode, Rectangular waveguide, TEM mode in rectangular waveguide, Introduction to circular waveguides and planar transmission lines.

MICROWAVE COMPONENTS:
Directional Couplers, Tees, Hybrid Ring, Attenuators, Cavity resonators, Mixers & detectors, Matched load, Phase shifter, Isolators, Circulators.

UNIT II

MICROWAVE TUBES:
Limitations of conventional tubes, Construction, operation , properties and applications of Klystron amplifier, Reflex Klystron, Magnetron, TWT, BWO, Crossed field amplifiers.

MICROWAVE SOLID STATE DEVICES:
Principle of operation and applications of Varactor diode, Tunnel diode, Schottky diode, GUNN diode, IMPATT, TRAPATT and PIN diodes. MASER, Parametric amplifiers.

UNIT III

MICROWAVE MEASUREMENTS:
Measurement of Frequency, Power, VSWR, Wavelength & Impedance.

RADAR FUNDAMENTALS:
Introduction, RADAR principles, development, frequencies, block diagram and operation and applications.

UNIT IV

RADAR EQUATION:
Simple form of RADAR equation, Prediction of Range Performance, Minimum detectable signal, Pulse repletion frequency & range ambiguities, system losses, propagation effects.

RADAR SYSTEMS:
Block Diagram and operation of CW , Frequency Modulated RADAR, MTI & Pulsed Doppler RADAR, The Doppler effect, blind speed, Applications.

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.

Approved by UG BOS & FET

EE312B **CONTROL SYSTEM ENGINEERING**

B.Tech Semester-VI (ECE, BME, common with 5th Sem. AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25Marks
Theory	:	75Marks
Total	:	100Marks

Duration of Exam. : 3 Hrs.

UNIT1

INPUT / OUTPUT RELATIONSHIP:

System / Plant model, illustrative examples of plants & their inputs and outputs, open loop & closed loop control system & their illustrative examples, Mathematical modeling and representation of physical systems, Concept of transfer function, relationship between transfer function and impulse response, order of a system, block diagram algebra, signal flow graphs: Mason's gain formula & its application, characteristic equation, derivation of transfer functions of electrical and electromechanical systems.

UNIT 2

TIME DOMAIN ANALYSIS:

Typical test signals, time response of first order systems to various standard inputs, time response of 2nd order system to step input, time domain specifications, steady state error and error constants, concept of stability, pole-zero configuration and stability, necessary and sufficient conditions for stability, Hurwitz stability criterion, Routh stability criterion and relative stability. Root locus concept, development of root loci for various systems, stability considerations.

UNIT3

FREQUENCY DOMAIN ANALYSIS:

Relationship between frequency response and time-response for 2nd order system, polar, Nyquist, Bode plots, stability, Gain-margin and Phase Margin, relative stability, frequency response specifications.

UNIT4

COMPENSATION:

Necessity of compensation, compensation networks, application of lag and lead compensation, basic modes of feedback control, proportional, integral and derivative controllers.

CONTROL COMPONENTS:

Synchros, servomotors, stepper motors, magnetic amplifier.

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.
3. Control Systems - Principles & Design: Madan Gopal; Tata Mc Graw Hill. Publishers.
4. Modern Control Engineering, R.C. Dorf & Bishop; Addison-Wesley Publishers.

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.

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ECE304B ANTENNA AND WAVE PROPAGATION

B. Tech Semester –VI

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks

Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION TO EM WAVES:
Introduction, Electromagnetic Wave Equations, Poynting Theorem & Electromagnetic Power, Short Electric Dipoles, Retarded Vector Potential, Radiation from a Small Current Element
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 II

ANTENNA PATTERN:
Antenna Pattern, Antenna Parameters: Front To Back Ratio, Gain, Directivity, Radiation Resistance, Efficiency, Aperture Area, Impedence, Effective Length and Beam width, Reciprocity Theorem for Antenna and Its Applications
ANTENNA PARAMETERS:
Impedance Measurements, Radiation Pattern Measurement, Beam width Measurement, Phase And Current, Radiation Resistance, Directivity And Polarisation Measurement

UNIT III

TYPES OF ANTENNAS:
Introduction,Isotropic,Yagi-Uda,Biconical,Helical,Horn,Slot,Parabolic Feeds, Conical, Log Periodic, Microwave and Patch Antenna.
ANTENNA ARRAYS:
Types of Antenna Array: Broadside Array, End Fire Array, Collinear Array and Parasitic Array, array of point sources, pattern multiplication, Linear Array, Phased Array, Tapering of Arrays, Binomials Arrays, Continuous Arrays and Superdirective Array, effect of ground on antennas.

UNIT IV

TRANSMISSION PARAMETERS:
Reflection and refraction of plane waves at the surface of a perfect conductor & perfect dielectric (both normal incidence as well as oblique incidence), Brewester's angle and total internal reflection, reflection at the surfaces of a conductive medium, surface impedance, transmission-line analogy, poynting theorem, interpretation of E x H, power loss in a plane conductor.
RADIO WAVE PROPAGATION:
Introduction, Ground Wave, Sky Wave, Space Waves and Tropospheric Abnormalities, Multi-Hop Propagation, Effect of Earth, Skip Distance, Ionospheric Abnormalities, Mechanism of Ionospheric propogation, critical frequency,MUF , Duct Propagation.

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 Propogation 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.

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ECE306B **HDL BASED SYSTEM DESIGN**

B. Tech Semester –VI (ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks

Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION:
System: definition, introduction to digital system, design issues of digital system, computer-aided design tools for designing of digital systems, hardware description languages, simulation and synthesis.

HARDWARE FOR DIGITAL SYSTEM DESIGN:
PLA, PAL, ROM, CPLDs and FPGA.

UNIT II

VHDL BASICS:
Introduction to VHDL, entity and architecture declaration, data objects, classes and data types, operators, overloading, logical operators, types of delays, behavioural, dataflow and structural models.

VHDL STATEMENTS:
Assignment statements; sequential statements and process; conditional statements; Generate statement; case statement, array and loops, resolution functions, concurrent statements.

UNIT III

ADVANCE VHDL TOPICS:
Packages and libraries; subprograms: application of functions and procedures, structural modelling, component declaration, structural layout and generics, configuration statement, Test Benches, ALIAS, Generate statement.

COMBINATIONAL CIRCUIT DESIGN:
VHDL models and simulation of combinational circuits such as multiplexers, demultiplexers, encoders, decoders, code converters, comparators, implementation of boolean functions etc.

UNIT IV

SEQUENTIAL CIRCUITS DESIGN:
VHDL models and simulation of sequential circuits flip flops, shift registers, counters etc., introduction to FSM, VHDL models and simulation of FSM.

DESIGN OF DIGITAL SYSTEM:
Basic components of a computer, specifications, architecture of a simple computer system, design of ALU, memory unit, design implementation using CPLDs and FPGAs.

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.
4. "A VHDL Primmer", 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.

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ECE308B **MICROELECTRONICS**

B. Tech Semester –VI (ECE, AEI)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks

Duration of Exam. : 3 Hrs.

UNIT I

CRYSTAL GROWTH AND WAFER PREPARATION:

Clean room concept, safety requirements, crystal growth techniques: czochralski and gradient freeze techniques, physics involved in CZ growth, Energy flow balance, pull rate- considerations, problems and solutions , defects involved in CZ method, effects due to carbon and oxygen impurities, modeling of dopant incorporation, float zone growth for high purity silicon, liquid encapsulated growth for GaAs, material characterization- wafer shaping, crystal characterization, wafer cleaning.

CURRENT ELEMENT CHARACTERISTICS:

Growth mechanism and kinetic oxidation, thin oxides, oxidation techniques and systems, oxide properties, characterization of oxide films, growth and properties of dry and wet oxidation, charge distribution during oxidation, oxide characterization, anomalies with thin oxide regime.

UNIT II

DIFFUSION:

The nature of diffusion, diffusion mechanisms – interstitial, substitution, interstitial-substitution combined, interstitialcy and grain boundary, Fick's law of diffusion, limited and constant source diffusion, models of diffusion in solid, diffusion equation, atomic diffusion mechanisms, diffusion system for silicon and gallium arsenide. Measurement techniques, experimental analysis of diffused profiles.

ION IMPLANTATION:

Introduction, physics of implantation, range theory, projected range,ion stopping mechanisms- channeling, nuclear stopping, electronic stopping, implantation damage, implantation equipment, annealing, shallow junction, application to silicon and gallium arsenide, RTA mechanism.

UNIT III

LITHOGRAPHY:

Pattern generation and mask making, exposure sources, photolithography, photoresists, optical lithography, electron lithography, X-ray lithography, ion lithography, mask defects, atomic force microscopy based lithography system, dip pen lithography system.

DEPOSITION:

Need for film deposition, film deposition methods- physical and chemical, deposition processes, CVD techniques for deposition of polysilicon, slicon dioxide, silicon nitride and metal films, sputter deposition, sputter unit, Epitaxy –types, techniques, advantages, vapor phase epitaxy, molecular beam epitaxy.

UNIT IV

ETCHING:

Directionality and selectivity issues, wet chemical etching, wet etchants, dry physical etching, dry etchants, plasma etching, advantages and disadvantages, issues involved, dry etching systems, dry chemical etching, reactive ion etching, etching induced damage, cleaning.

METALLIZATION:

Introduction, metallization applications, metallization choices, physical vapor deposition, patterning, metallization problems.

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

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ECE310B MICROCONTROLLER BASED SYSTEM DESIGN

B. Tech Semester –VI (ECE, common with BME)

L	T	P	Credits
3	1	-	4

Class Work	:	25 Marks
Theory	:	75 Marks
Total	:	100 Marks

Duration of Exam. : 3 Hrs.

UNIT I

INTRODUCTION OF EMBEDDED SYSTEMS:
Definition, ingredients of embedded system, requirements & challenges of embedded system design, different types of microcontrollers: Embedded microcontrollers, external memory microcontrollers etc., processor architectures: Harvard V/S Princeton, CISC V/S RISC, microcontrollers memory types, microcontrollers features: clocking, i/o pins, interrupts, timers, and peripherals.
SOFTWARE FOR EMBEDDED SYSTEM DESIGN:
Development tools/ environments, Assembly language programming style, Interpreters, High level languages, Intel hex format object files, Debugging.

UNIT II

8051 MICROCONTROLLER:
Pin diagram explanation, internal diagram 8051, Instruction Set, Addressing mode, data transfer instruction, logical, arithmetic instruction, bit instruction, branching instruction.
TIMERS, SERIAL INTERFACE & INTERRUPTS OF 8051 MICROCONTROLLER:
Timer: Control Word, mode of timers, simple programming, generation of square wave, Serial interface: Introduction, Control Word, mode of serial interface, simple programming, Interrupts: Introduction, Control word Simple Programming, generation of waveforms using interrupt, serial interface using interrupt.

UNIT III

PIC MICROCONTROLLER:
Introduction to PIC microcontrollers, features of PIC family microcontrollers, architecture and pipelining, program memory considerations, addressing modes, CPU registers, Instruction set, and simple operations.
FEATURES OF PIC MICROCONTROLLER:
Timer: Control Word, mode of timers, simple programming, generation of square wave, Watch-dog timer, Serial interface: Introduction, Control Word, mode of serial interface, simple programming, Interrupts: Introduction, Control word Simple Programming, generation of waveforms using interrupt, serial interface using interrupt.

UNIT IV

APPLICATIONS BASED ON 8051 MICROCONTROLLER:
Interfacing of memory, intelligent LCD, 8255, ADC, DAC, LED display, Memory Card, Bio-metric system.
APPLICATION BASED ON PIC MICROCONTROLLERS: Interfacing of Graphical Display, Memory Card, Bio-metric system Music box, Applications like Mouse wheel turning, PWM motor control, ultra sonic distance measuring, Temperature Sensor, Pressure Sensor, Magnetic Field Sensor.

Reference Books:

1. 8051, Scott Mackenizie, PHI, Englewood Cliffs, New Jersey.
2. Programnming & 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. Programnming & Customizing the PIC Microcontroller, Myke Predko, Tata McGraw-Hill Pub. Co. Ltd., New Delhi.

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.

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ECE322B MICROWAVE AND RADAR ENGINEERING LAB

B. Tech Semester –VI (ECE, EEE)

L	T	P	Credits			
-	-	2	1	Class Work	:	20Marks
				Practical	:	30Marks
				Total	:	50Marks

Duration of Exam. : 3 Hrs.

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.

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.

EE332B CONTROL SYSTEM ENGINEERING LAB

B.Tech. Semester-VI (ECE, common with 5th Sem. AEI)

L	T	P	Credits			
-	-	2	1	Class Work	:	20Marks
				Practical	:	30Marks

Total : 50Marks

Duration of Exam. : 3 Hrs.

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 exited 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.

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.

ECE326B HDL BASED SYSTEM DESIGN LAB

B. Tech Semester –VI (ECE, AEI)

L	T	P	Credits
-	-	2	1

Class Work : 20 Marks
Practical : 30 Marks
Total : 50 Marks

Duration of Exam. : 3 Hrs.

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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.

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.

ECE330B MICROCONTROLLER LAB

B. Tech Semester –VI (ECE, common with BME)

L	T	P	Credits
-	-	2	1

Class Work	:	20 Marks
Practical	:	30 Marks
Total	:	50 Marks

Duration of Exam. : 3 Hrs.

Approved by UG BOS & FET

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.

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.

GPEC302B GENERAL PROFICIENCY & ETHICS

B. Tech. Semester – VI (Common for all Branches)

L	T	P	Credits
1	-	-	2

Examination	:	-
Practical	:	75Marks
Total	:	75Marks

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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: 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 semesterand 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

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

HUM304B ORAL PRESENTATION SKILLS

B. Tech. Semester – VI (Common for all branches)

L	T	P	Credits
1	-	-	1

Class Work	:	20 Marks
Theory	:	30 Marks
Total	:	50 Marks

Duration of Exam. : 2Hrs.

Approved by UG BOS & FET

Oral Presentations:
Group Discussion; Mock interviews

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.