B.TECH V SEMESTER
ANTENNA AND WAVE PROPAGATION
ECE-301

L	T	P
3	1	-

Time -	**3 Hrs**
Theory-	**60**
Sessional-	**40**
Credit-	**3.5**

OBJECTIVE: This course is meant to orient the students to takeoff in the areas of Antenna & wave propagation. Thereby facilitating the students to go for advanced study in the area of microwave & radar communication.

UNIT – I
ANTENNA BASICS AND TERMINOLOGY: Radiation and induction fields. Radiation from elementary dipole (Hertzian dipole) half wave dipole, Antenna parameters: Radiation resistance, Radiation pattern, Beam width, Gain, Directivity, Effective height, Effective aperture, Bandwidth and Antenna Temperature.

UNIT – II
RADIATING WIRE STRUCTURES: Folded dipole, Biconical Antenna, Loop Antenna, Helical Antenna, Antennas for receiving and transmitting TV Signals e.g. Yagi-Uda and Turnstile Antennas.

.
ANTENNA ARRAYS : Principle of pattern multiplication, Broadside arrays, Endfire arrays, Array pattern synthesis, Uniform Array, Binomial Array, Chebyshev Array.

UNIT – III
APERTURE TYPE ANTENNAS: Radiation from rectangular aperture, E-plane Horns, H-plane Horns, Pyramidal Horn, Lens Antenna.

BROADBAND AND FREQUENCY INDEPENDENT ANTENNAS: Broadband Antennas. The frequency independent concept: Ramsey's principle, Frequency independent planar log spiral antenna, Frequency independent conical spiral antenna and Log periodic antenna.

UNIT – IV
PROPAGATION OF RADIO WAVES: Different modes of propagation, Ground waves, Space waves, Surface waves and Troposphere waves, Ionosphere, Wave propagation in the ionosphere, critical frequency, Maximum Usable Frequency (MUF), Skip distance, Virtual height, Radio noise of terrestrial and extra terrestrial origin.

TEXT/REFERENCE BOOKS:

1. Collin, Robert E. , "Antenna Radiowave Propagation", McGraw Hill,1985
2. Kraus John D., "Antennas", 2nd Edition, McGraw Hill, 1988.
3. Jordan Edward C. and Balmain Keith G, "Electromagnetic Waves and Radiating Systems", 2nd Edition, Prentice Hall of India,1997

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER ANTENNA AND WAVE PROPAGATION ECE-301 L T P Time

- 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This course is meant to orient the students to takeoff in the areas of Antenna & wave propagation. Thereby facilitating the students to go for advanced study in the area of microwave & radar communication.

UNIT – I ANTENNA BASICS AND TERMINOLOGY: Radiation and induction fields. Radiation from elementary dipole (Hertzian dipole) half wave dipole, Antenna parameters: Radiation resistance, Radiation pattern, Beam width, Gain, Directivity, Effective height, Effective aperture, Bandwidth and Antenna Temperature.

UNIT – II RADIATING WIRE STRUCTURES: Folded dipole, Biconical Antenna, Loop Antenna, Helical Antenna, Antennas for receiving and transmitting TV Signals e.g. Yagi-Uda and Turnstile Antennas. . ANTENNA ARRAYS : Principle of pattern multiplication, Broadside arrays, Endfire arrays, Array pattern synthesis, Uniform Array, Binomial Array, Chebyshev Array.

UNIT – III APERTURE TYPE ANTENNAS: Radiation from rectangular aperture, E-plane Horns, H- plane Horns, Pyramidal Horn, Lens Antenna.

BROADBAND AND FREQUENCY INDEPENDENT ANTENNAS: Broadband Antennas. The frequency independent concept: Ramsey's principle, Frequency independent planar log spiral antenna, Frequency independent conical spiral antenna and Log periodic antenna.

UNIT – IV PROPAGATION OF RADIO WAVES: Different modes of propagation, Ground waves, Space waves, Surface waves and Troposphere waves, Ionosphere, Wave propagation in the ionosphere, critical frequency, Maximum Usable Frequency (MUF), Skip distance, Virtual height, Radio noise of terrestrial and extra terrestrial origin.

TEXT/REFERENCE BOOKS:

1. Collin, Robert E. , "Antenna Radiowave Propagation", McGraw Hill,1985 2. Kraus John D., "Antennas", 2nd Edition, McGraw Hill, 1988. 3. Jordan Edward C. and Balmain Keith G, "Electromagnetic Waves and Radiating

Systems", 2nd Edition, Prentice Hall of India,1997

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER
APPLICATION OF COMPUTER ESSENTIALS IN INDUSTRY
ECE-303

L	T	P		
3	1	-	Time -	3 Hrs
			Theory-	60
			Sessional-	40
			Credit-	3.5

OBJECTIVE: This course provides essential ingredients for application of information technology & computers in various electronic & communication industries.

UNIT – I
FUNDAMENTALS OF COMPUTER ARCHITECTURE: Introduction-Organization of small computer, Central Processing Unit-Execution cycle-Instruction categories-measure of CPU performance, Memory-Input/Output devices-Bus-Addressing modes, System Software-Assembler-loaders and linkers-Compilers and interpreters, Operating system-Introduction-memory management schemes, Process management Scheduling-Threads

UNIT-II
PROCESSOR DESIGN: Fixed point and floating point arithmetic addition, subtraction , multiplication and division ,Decimal arithmetic operations ,Forms of Parallel processing, classification of Parallel structures, Array Processors, Structure of general purpose multiprocessors.

UNIT-III
MEMORY ORGANIZATION:
Memory device characteristics, Random access memories: Serial access memories, Memory organization, Magnetic disk memories, Magnetic tape memories, Optical memories, Virtual memories, interleaved memory, Cache memory, Associative memory.

UNIT-IV
PROBLEM SOLVING WITH ALGORITHMS:
Programming styles, Coding standards and Best practices-Introduction to C Programming, Testing and Debugging, Code reviews System Development Methodologies- Software developments model, User interface design- introduction –The Process- Elements of UI design & reports

TEXT/REFERENCE BOOKS:

1. Hayes J. P., "Computer Architecture & Organisation", 2nd Edition, Tata McGraw Hill,1988
2. Mano Morris M., "Computer System Architecture", 3rd Edition, Prentice Hall of India, 1997.

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

ECE-303 L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This course provides essential ingredients for application of information technology & computers in various electronic & communication industries.

UNIT – I FUNDAMENTALS OF COMPUTER ARCHITECTURE:
Introduction-Organization of small computer, Central Processing Unit-Execution cycle-Instruction categories-measure of CPU performance, Memory-Input/Output devices-Bus-Addressing modes, System Software- Assembler-loaders and linkers-Compilers and interpreters, Operating system-Introduction- memory management schemes, Process management Scheduling-Threads

UNIT-II PROCESSOR DESIGN: Fixed point and floating point arithmetic addition, subtraction , multiplication and division ,Decimal arithmetic operations ,Forms of Parallel processing, classification of Parallel structures, Array Processors, Structure of general purpose multiprocessors.

UNIT-III MEMORY ORGANIZATION: Memory device characteristics, Random access memories: Serial access memories, Memory organization, Magnetic disk memories, Magnetic tape memories, Optical memories, Virtual memories, interleaved memory, Cache memory, Associative memory.

UNIT-IV PROBLEM SOLVING WITH ALGORITHMS: Programming styles, Coding standards and Best practices-Introduction to C Programming, Testing and Debugging, Code reviews System Development Methodologies- Software developments model, User interface design- introduction –The Process- Elements of UI design & reports

TEXT/REFERENCE BOOKS:

1. Hayes J. P., “Computer Architecture & Organisation”, 2nd Edition, Tata McGraw

Hill,1988 2. Mano Morris M., “Computer System Architecture”, 3rd Edition, Prentice Hall of

India, 1997.

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEM
LINEAR IC & ITS APPLICATIONS
ECE-305

L	T	P		
3	1	-	**Time -**	**3 Hrs**
			Theory-	**60**
			Sessional-	**40**
			Credit-	**3.5**

OBJECTIVE: This is the first course in area of integrated circuit application which provides suitable stepping a stone to go head in the field of latest integrated circuit & applications.

UNIT-I
DIFFERENTIAL & CASCADE AMPLIFIER: Differential amplifier & its circuit configuration, FET differential amplifiers, Constant current bias, Current Mirrors, Level translators, Cascade configuration of amplifiers.
Operational amplifier, Introduction to ideal op-amp, Characteristics, parameters, Practical op-amp, its equivalent circuit and Op-amp circuit configuration.

UNIT -II
OP-AMP WITH NEGATIVE FEEDBACK & FREQUENCY RESPONSE: Block diagram representation of feedback amplifier, voltage series feedback, voltage shunt feedback, differential amplifier, compensating network, frequency response of compensating & non compensating Op-amp, high frequency op-amp equivalent circuit, open loop gain v/s Frequency, close loop frequency response, circuit stability, slew rate.

UNIT-III
OP-AMP APPLICATION : DC & AC amplifiers, Peaking amplifiers, summing, scaling, averaging & instrumentation amplifier, Differential i/p & o/p amplifier, voltage to current converter, current to voltage converter, very high input impedance circuit, integration & differentiation circuit.
Basic Comparators, Schmitt trigger, wave shaping circuits, active filters & oscillators.

UNIT-IV
SPECIALIZED LINEAR IC APPLICATIONS: 555 timer IC (monostable, astable operations) & its applications, universal active filters, PLL, power amplifier,8038 IC.

TEXT BOOK:

1. GAYAKWAD Ramakant. A., "OP-AMP and linear integrated circuits", 3rd ed. Prentice Hall of India, 1995

REFERENCE BOOK:

1. BOTKAR,K.R. "Integrated circuits", 9th edition, Khanna Publications,2000

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEM LINEAR IC & ITS APPLICATIONS ECE-305 L T P Time - 3 Hrs 3 1 -

Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This is the first course in area of integrated circuit application which provides suitable stepping a stone to go head in the field of latest integrated circuit & applications.

UNIT-I DIFFERENTIAL & CASCADE AMPLIFIER: Differential amplifier & its circuit configuration, FET differential amplifiers, Constant current bias, Current Mirrors, Level translators, Cascade configuration of amplifiers. Operational amplifier, Introduction to ideal op-amp, Characteristics, parameters, Practical op- amp, its equivalent circuit and Op-amp circuit configuration.

UNIT -II OP-AMP WITH NEGATIVE FEEDBACK & FREQUENCY RESPONSE: Block diagram representation of feedback amplifier, voltage series feedback, voltage shunt feedback, differential amplifier, compensating network, frequency response of compensating & non compensating Op-amp, high frequency op-amp equivalent circuit, open loop gain v/s Frequency, close loop frequency response, circuit stability, slew rate.

UNIT-III OP-AMP APPLICATION : DC & AC amplifiers, Peaking amplifiers, summing, scaling, averaging & instrumentation amplifier, Differential i/p & o/p amplifier, voltage to current converter, current to voltage converter, very high input impedance circuit, integration & differentiation circuit. Basic Comparators, Schmitt trigger, wave shaping circuits, active filters & oscillators.

UNIT-IV SPECIALIZED LINEAR IC APPLICATIONS: 555 timer IC (monostable, astable operations) & its applications, universal active filters, PLL, power amplifier,8038 IC.

TEXT BOOK:

1. GAYAKWAD Ramakant. A., “OP-AMP and linear integrated circuits”, 3 rd ed. Prentice Hall of India, 1995

REFERENCE BOOK:

1. BOTKAR,K.R. “Integrated circuits”, 9th edition, Khanna Publications,2000

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER
DIGITAL SIGNAL PROCESSING
ECE- 307

L	T	P
3	1	-

Time -	**3 Hrs**
Theory-	**60**
Sessional-	**40**
Credit-	**3.5**

OBJECTIVE: This course is intended to make a student versatile in the area of MATLAB providing adequate employment potential to students.

UNIT -I
DISCRETE TIME SIGNALS:
Linear Time Invariant Systems, Stability and Causality, Linear Constant Coefficient Difference Equation, Z-Transform & its Properties , Inverse Z-Transform, one sided Z-transform, Schur-Cohn Stability Test, Discrete Fourier Transform and its Properties, Fast Fourier Transform Decimation In Time and Decimation In Frequency Algorithm .

UNIT-II
REALIZATION OF DIGITAL SYSTEMS:
Direct Form, Cascade Form and Lattice Structures for FIR System, Direct Form. Signal Flow Graphs and Transposed Form, Cascade Form and Parallel Form Realization of IIR System.

UNIT-III
DESIGN OF FIR FILTER:
Window Technique, Frequency sampling Technique, Comparison of IIR & FIR filters.

DESIGN OF IIR FILTERS:
Impulse Invariance Technique, Bilinear transformation, Design of IIR Filters Using Butterworth, Chebyshev and Elliptic filter, Digital Frequency Transformation.

UNIT-IV
DSP PROCESSOR:
Introduction to fixed point and floating point processors and their architecture, TM S320C50 Architecture, DSP Applications.

TEXT /REFERENCE BOOKS:

1. Oppenheim Alan.V, "Digital Signal Processing", 10th edition, Prentice Hall of India, 2003
2. Ifeacher EC and Jarvis BW, "Digital signal processing"
3. Salivahan S , Vallavraj A & Grananpriya C, "Digital Signal Processing", Tata McGraw Hill, 2003.
4. Proakis John G., Manolakis Dimitris G., "Digital Signal Processing: Principles", Algorithms & Applications, 3nd edition, Prentice Hall of India, 1999.

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This course is intended to make a student versatile in the area of MATLAB providing adequate employment potential to students.

UNIT -I DISCRETE TIME SIGNALS: Linear Time Invariant Systems, Stability and Causality, Linear Constant Coefficient Difference Equation, Z-Transform & its Properties , Inverse Z-Transform, one sided Z-transform, Schur- Cohn Stability Test, Discrete Fourier Transform and its Properties, Fast Fourier Transform Decimation In Time and Decimation In Frequency Algorithm .

UNIT-II REALIZATION OF DIGITAL SYSTEMS: Direct Form, Cascade Form and Lattice Structures for FIR System, Direct Form. Signal Flow Graphs and Transposed Form, Cascade Form and Parallel Form Realization of IIR System.

UNIT-III DESIGN OF FIR FILTER: Window Technique, Frequency sampling Technique, Comparison of IIR & FIR filters.

DESIGN OF IIR FILTERS: Impulse Invariance Technique, Bilinear transformation, Design of IIR Filters Using Butterworth, Chebyshev and Elliptic filter, Digital Frequency Transformation.

UNIT-IV DSP PROCESSOR: Introduction to fixed point and floating point processors and their architecture, TM S320C50 Architecture, DSP Applications.

TEXT /REFERENCE BOOKS:

1. Oppenheim Alan.V, “Digital Signal Processing”, 10th edition, Prentice Hall of India,

2003 2. Ifeacher EC and Jarvis BW, “Digital signal processing” 3. Salivahan S , Vallavraj A & Grananpriya C, “Digital Signal Processing”, Tata McGraw

Hill, 2003. 4. Proakis John G., Manolakis Dimitris G., “Digital Signal Processing: Principles”,

Algorithms & Applications, 3rd edition, Prentice Hall of India, 1999.

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER
MICROPROCESSOR
ECE- 309

L	T	P
3	1	-

Time -	**3 Hrs**
Theory-	**60**
Sessional-	**40**
Credit-	**3.5**

OBJECTIVE: This course exposes the students with application of integrated circuits to achieve exiting aims in area of microelectronic technology & microcontroller.

UNIT-I
MICROPROCESSOR ARCHITECTURE:
Internal architecture of 8085 Microprocessor & its operations, internal Data operations and 8085 registers, Memory Input & Output devices, Example of 8085 based Microcomputer system.

UNIT-II
INTRODUCTION OF 8085 & ASSEMBLY LANGUAGE PROGRAMMING:
Addressing Modes, Instruction classification & format, types of instruction- Arithmetic, logic, Data transmitter, branch, stack .Programming Techniques. Looping, counting & indexing, Brief introduction to assembler Directives

UNIT-III
MEMORY INTERFACING:
S/C memory & its types –static & dynamic RAM, ROM, EPROM, EEROM & NOVRAM- interfacing memory- interfacing SRAM, DRAM, EPROM etc, Timing of RAM & ROM signals.

UNIT-IV
DATA TRANSFER SCHEMES:
Methods of Data transfer-Programmed data transfer schemes namely synchronous-asynchronous & interrupt driven methods, 8085 interrupts, Hardware and software interrupts, enabling, disabling and masking of interrupt.

INTERFACING PERIPHERALS AND APPLICATIONS:
Parallel input output interfacing , Basic Concepts, input output ports using latches and buffers, interfacing output displays & input key board, Interfacing A/D & D/A converters..

TEXT/ REFERENCE BOOKS:

1) Gaonkar Ramesh S., "Microprocessor Architecture, Programming & Applications", 3rd edition, Penram International, 1997

2) Hall Douglas V., "Microprocessor & Interfacing" 2nd edition, Tata McGraw Hill, 1983

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER MICROPROCESSOR ECE- 309 L T P Time - 3 Hrs 3 1 -

Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This course exposes the students with application of integrated circuits to achieve exiting aims in area of microelectronic technology & microcontroller.

UNIT-I MICROPROCESSOR ARCHITECTURE: Internal architecture of 8085 Microprocessor & its operations, internal Data operations and 8085 registers, Memory Input & Output devices, Example of 8085 based Microcomputer system.

UNIT-II INTRODUCTION OF 8085 & ASSEMBLY LANGUAGE PROGRAMMING: Addressing Modes, Instruction classification & format, types of instruction- Arithmetic, logic, Data transmitter, branch, stack .Programming Techniques. Looping, counting & indexing, Brief introduction to assembler Directives

UNIT-III MEMORY INTERFACING: S/C memory & its types –static & dynamic RAM, ROM, EPROM, EEROM & NOVRAM- interfacing memory- interfacing SRAM, DRAM, EPROM etc, Timing of RAM & ROM signals.

UNIT-IV DATA TRANSFER SCHEMES: Methods of Data transfer-Programmed data transfer schemes namely synchronous-asynchronous & interrupt driven methods, 8085 interrupts, Hardware and software interrupts, enabling, disabling and masking of interrupt.

INTERFACING PERIPHERALS AND APPLICATIONS: Parallel input output interfacing , Basic Concepts, input output ports using latches and buffers, interfacing output displays & input key board, Interfacing A/D & D/A converters..

TEXT/ REFERENCE BOOKS:

1) Gaonkar Ramesh S., “Microprocessor Architecture, Programming & Applications”, 3rd

edition, Penram International, 1997

2) Hall Douglas V., “Microprocessor & Interfacing” 2nd edition, Tata McGraw Hill, 1983

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

(ELECTIVE-I)

B.TECH V SEMESTER

INFORMATION THEORY AND CODING

ECE-311

L	T	P
3	1	-

Time -	**3 Hrs**
Theory-	**60**
Sessional-	**40**
Credit-	**3.5**

OBJECTIVE: This subject is aimed to make a student conversant in field of information theory & coding which is actually providing a student background for taking up research work in the field of communication engineering and other areas.

UNIT-I

PROBABILITY AND RANDOM PROCESSES:

Introduction, Probability Theory, Random Variables, Statistical Averages, Transformation of Random Variables, Random Processes, Stationary processes, Mean, Correlation and Covariance Functions, Ergodicity, Transmission of Random Process Through a Linear Filters, Power Spectral Density, Gaussian Process , Markov Processes.

UNIT-II

INFORMATION THEORY:

Introduction, Unit of Information , Entropy, Rate of Information , Joint Entropy and Conditional Entropy , Mutual Information ,Channel Capacity, Noise Free Channel , Symmetric Channel , Binary Symmetric Channel (BSC) , Cascaded Channel , Binary Erasure Channel (BEC), Binary Channel , Shannon's Theorem , Sources Coding Theorem , Channel Coding Theorem, Huffman Coding , Shannon Fano Coding.

UNIT-III

ERROR CORRECTING CODES:

Introduction ,Coding Efficiency, Galois Field, Vector Spaces & Matrices ,Block Code, Binary Cyclic Codes, ARQ, BCH Codes, Multiple Error Correcting Codes ,Burst Error Correcting Codes, Two Dimensional Codes.

UNIT-IV

ERROR CONTROL CODING:

Introduction, Minimum Distance Consideration, Syndrome Decoding, Convolutional Coding, Code Tree , Trellis and State Diagram, Maximum Likelihood Decoding of Convolutional Codes, The Viterbi Algorithm, Free Distance of Convolutional Code.

TEXT BOOKS:

1. Haykin Simon, "Communication Systems" , John Wiley & Sons 1996.
2. Singh R.P. and S.D.Sapre, "Communication System Analog and Digital", Tata Mcgraw Hill Ltd, 1995.

REFERENCE BOOK:

1. Das, Mullick & Chartterjee, "Principles of Digital Communication: Signal Representation, Detection, Estimation & Information Coding", New Age International Publication, 2005

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

ECE-311 L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This subject is aimed to make a student conversant in field of information theory & coding which is actually providing a student background for taking up research work in the field of communication engineering and other areas.

UNIT-I PROBABILITY AND RANDOM PROCESSES: Introduction, Probability Theory, Random Variables, Statistical Averages, Transformation of Random Variables, Random Processes, Stationary processes, Mean, Correlation and Covariance Functions, Ergodicity, Transmission of Random Process Through a Linear Filters, Power Spectral Density, Gaussian Process , Markov Processes.

UNIT-II INFORMATION THEORY: Introduction, Unit of Information , Entropy, Rate of Information , Joint Entropy and Conditional Entropy , Mutual Information ,Channel Capacity, Noise Free Channel , Symmetric Channel , Binary Symmetric Channel (BSC) , Cascaded Channel , Binary Erasure Channel (BEC), Binary Channel , Shannon's Theorem , Sources Coding Theorem , Channel Coding Theorem, Huffman Coding , Shannon Fano Coding.

UNIT-III ERROR CORRECTING CODES: Introduction ,Coding Efficiency, Galois Field, Vector Spaces & Matrices ,Block Code, Binary Cyclic Codes, ARQ, BCH Codes, Multiple Error Correcting Codes ,Burst Error Correcting Codes, Two Dimensional Codes.

UNIT-IV ERROR CONTROL CODING: Introduction, Minimum Distance Consideration, Syndrome Decoding, Convolutional Coding, Code Tree , Trellis and State Diagram, Maximum Likelihood Decoding of Convolutional Codes, The Viterbi Algorithm, Free Distance of Convolutional Code.

TEXT BOOKS:

1. Haykin Simon, "Communication Systems" , John Wiley & Sons 1996. 2. Singh R.P. and S.D.Sapre, "Communication System Analog and Digital", Tata Mcgraw

Hill Ltd, 1995.

REFERENCE BOOK:

1. Das, Mullick & Chartterjee, "Principles of Digital Communication: Signal Representation, Detection, Estimation & Information Coding", New Age International Publication, 2005

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER
MECHATRONICS
ECE-313

L	T	P
3	1	-

Time -	**3 Hrs**
Theory-	**60**
Sessional-	**40**
Credit-	**3.5**

OBJECTIVE: The purpose of this course is to make the students able to develop a synergy between mechanics and electronics.

UNIT -I
SYSTEM AND SENSORS:
Definition, Open and Closed loop systems and its various elements, sensors and transducers, performance terminology, Displacement, Position, Proximity sensors, Force measurement, Flow measurement.

UNIT-II
SIGNAL CONDITIONING:
Basic definition, multi domain representation , representation and analysis of periodic / non periodic analog signals ,Signal conditioning process, various types of amplifiers, Op-amp, inverting, Non-inverting, Summing amplifiers, comparators, amplifier errors, temperature compensations, A/D conversion, D/A conversion,

UNIT -III
DRIVES AND ACTUATORS:
Pneumatic and hydraulic drives, mechanical actuation system involving, linkages, Cams, Gears, Belt and chain drives etc. Electrical Actuation systems, relays, solid state switches, stepper motor, AC, DC motors.

UNIT-IV
MICROPROCESSOR AND CONTROLLERS:
Basic structure of a microcomputer, microprocessors and micro controllers, Developments of programs using flow charts, Basic structure of PLC's, Prediction of behavior of systems with proportional (P), Integration (I), derivatives (D), PI, PD and PID controllers.

TEXT/REFERENCE BOOKS:

1. Bolton W., "Mechatronics", 2nd Edition, Pearson Education, 2003
2. Alciatore and Histand Michael B, "Introduction to Mechatronics", 2nd Edition, Tata McGraw Hill, 2003

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: The purpose of this course is to make the students able to develop a synergy between mechanics and electronics.

UNIT -I SYSTEM AND SENSORS: Definition, Open and Closed loop systems and its various elements, sensors and transducers, performance terminology, Displacement, Position, Proximity sensors, Force measurement, Flow measurement.

UNIT-II SIGNAL CONDITIONING: Basic definition, multi domain representation , representation and analysis of periodic / non periodic analog signals ,Signal conditioning process, various types of amplifiers, Op-amp, inverting, Non-inverting, Summing amplifiers, comparators, amplifier errors, temperature compensations, A/D conversion, D/A conversion,

UNIT -III DRIVES AND ACTUATORS: Pneumatic and hydraulic drives, mechanical actuation system involving, linkages, Cams, Gears, Belt and chain drives etc. Electrical Actuation systems, relays, solid state switches, stepper motor, AC, DC motors.

UNIT-IV MICROPROCESSOR AND CONTROLLERS: Basic structure of a microcomputer, microprocessors and micro controllers, Developments of programs using flow charts, Basic structure of PLC's, Prediction of behavior of systems with proportional (P), Integration (I), derivatives (D), PI, PD and PID controllers.

TEXT/REFERENCE BOOKS:

1. Bolton W., "Mechatronics", 2nd Edition, Pearson Education, 2003 2. Alciatore and Histand Michael B, "Introduction to Mechatronics", 2nd Edition, Tata

McGraw Hill, 2003

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER
POWER ELECTRONICS
ECE-315

L	T	P
3	1	-

Time -	**3 Hrs**
Theory-	**60**
Sessional-	**40**
Credit-	**3.5**

OBJECTIVE: The objective of this course is make familiar a student about the basic working of thyristors, converters, inverter, chopper & cycloconverter, which form the backbone of power electronics.

UNIT-I
INTRODUCTION:
Concept and applications of power electronics, Power electronics system, Review of construction and characteristics of power diodes ,Types of power diodes-Schottky diode ,fast recovery diode, power transistors ,IGBT ,Power MOSFETS.

UNIT-II
THYRISTORS:
Terminal characteristics of Thyristors ,Protection and ratings of thyristors, Switching characteristics of thyristors, series and parallel operation of thyristors ,GTO, Thyristor commutation techniques.

CONVERTERS:
One, two, three, six and twelve pulse converters, Single phase full wave converters, Dual converters ,Output voltage equation ,Input power factor of converter.

UNIT-III
INVERTERS:
Basic circuit and principle of operation , 120 degree and 180 degree mode conduction scheme ,Modified Mcmurray half bridge and full bridge inverters , Brief description of parallel and series inverters , Current source inverter (CSI), Transistor and MOSFET based inverters .

UNIT-IV
CHOPPERS:
Principle of chopper operation, Output voltage control strategies, one, two or four quadrant chopper , Voltage commutated and current commutated chopper.

CYCLOCONVERTERS:
Basic principle of frequency conversion, Types of cycloconverter, Non circulating and circulating type of converters.

TEXT/REFERENCE BOOKS:

1. Rashid Mohammad H., "Power Electronics: circuit Devices & Application", 2nd edition, Prentice Hall of India, 1997
2. Bhimbhra P .S, "Power Electronics", Khanna Publications, 1997

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

L T P Time - 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: The objective of this course is make familiar a student about the basic working of thyristors, converters, inverter, chopper & cycloconverter, which form the backbone of power electronics.

UNIT-I INTRODUCTION: Concept and applications of power electronics, Power electronics system, Review of construction and characteristics of power diodes ,Types of power diodes-Schottky diode ,fast recovery diode, power transistors ,IGBT ,Power MOSFETS.

UNIT-II THYRISTORS: Terminal characteristics of Thyristors ,Protection and ratings of thyristors, Switching characteristics of thyristors, series and parallel operation of thyristors ,GTO, Thyristor commutation techniques.

CONVERTERS: One, two, three, six and twelve pulse converters, Single phase full wave converters, Dual converters ,Output voltage equation ,Input power factor of converter.

UNIT-III INVERTERS: Basic circuit and principle of operation , 120 degree and 180 degree mode conduction scheme ,Modified Mcmurray half bridge and full bridge inverters , Brief description of parallel and series inverters , Current source inverter (CSI), Transistor and MOSFET based inverters .

UNIT-IV CHOPPERS: Principle of chopper operation, Output voltage control strategies, one, two or four quadrant chopper , Voltage commutated and current commutated chopper.

CYCLOCONVERTERS: Basic principle of frequency conversion, Types of cycloconverter, Non circulating and circulating type of converters.

TEXT/REFERENCE BOOKS:

1. Rashid Mohammad H., “Power Electronics: circuit Devices & Application”, 2nd edition, Prentice Hall of India, 1997 2. Bhimbhra P .S, “Power Electronics”, Khanna Publications, 1997

Note: Paper setter is requested to set eight questions in total setting two questions from each unit. Students are required to answer any five questions selecting at least one question from each unit. All questions carry equal marks.

B.TECH V SEMESTER
LINEAR IC & ITS APPLICATIONS
ECE-317

L	T	P
-	-	3

Time-	**3Hrs**
Sessional-	**60**
Prac./Viva-	**40**
Credit-	**1.5**

LIST OF EXPERIMENTS :

1. To study OP-AMP as adder and subtractor. (IC 741)
2. To study OP-AMP as an integrator and differentiator. (IC 741)
3. To study clipping circuits using OP AMP. (IC 741)
4. To study OP-AMP as Schmitt trigger. (IC 741)
5. To study OP-AMP as current to voltage converter. (IC 741)
6. To study OP-AMP as voltage to current converter. (IC 741)
7. To study OP-AMP as an Instrumentation amplifier. (IC 741)
8. To study monostable multivibrator using 555 timer
9. To study astable multivibrator using 555 timer
10. To study voltage controlled oscillator using 555 timer
11. To design 2nd order low pass filter.
12. To design 2nd order high pass filter.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope

L T P Time- 3Hrs - - 3 Sessional- 60 Prac./Viva- 40 Credit- 1.5

LIST OF EXPERIMENTS :

1. To study OP-AMP as adder and subtractor. (IC 741)
2. To study OP-AMP as an integrator and differentiator. (IC 741)
3. To study clipping circuits using OP AMP. (IC 741)
4. To study OP-AMP as Schmitt trigger. (IC 741)
5. To study OP-AMP as current to voltage converter. (IC 741)
6. To study OP-AMP as voltage to current converter. (IC 741)
7. To study OP-AMP as an Instrumentation amplifier. (IC 741)
8. To study monostable multivibrator using 555 timer
9. To study astable multivibrator using 555 timer
10. To study voltage controlled oscillator using 555 timer
11. To design 2nd order low pass filter.
12. To design 2nd order high pass filter.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope

B.TECH V SEMESTER
APPLICATION OF COMPUTER ESSENTIALS IN INDUSTRY
ECE-319

L	T	P
-	-	3

Time-	**3Hrs**
Sessional-	**60**
Prac./Viva-	**40**
Credit-	**1.5**

LIST OF EXPERIMENTS:

1. Write a c program to find the sum of individual digits of a positive integer.
2. Write a C program to take the radius of a sphere as input and print the volume and surface area of that sphere.
3. A Fibonacci sequence is defined as follows : the first and second terms in the sequence are 0 and 1.Subsequent terms are found by adding the preceding two terms in the sequence.Write a C program to generate the first n terms of the sequence .
4. Write a C program to generate all the prime numbers between 1 and n ,where n is a value supplied by the user
5. Write a C program to print the sum of first N even numbers using recursive function.
6. Write a C program to find the factorial of a given integer.
7. Write a C program to take five names as input and print the longest name.
8. Write a C program to find both the largest and smallest number in a list of integers.
9. Write a C program to find the GCD(Greatest Common Divisor) of two given integers.
10. Write a C program to enter a matrix and display the contents of a matrix.
11. Write a C program that uses functions to perform addition of two matrices.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope

ECE-319

L T P Time- 3Hrs - - 3 Sessional- 60 Prac./Viva- 40 Credit- 1.5

LIST OF EXPERIMENTS:

1. Write a c program to find the sum of individual digits of a positive integer.

2. Write a C program to take the radius of a sphere as input and print the volume and surface

area of that sphere.

3. A Fibonacci sequence is defined as follows : the first and second terms in the sequence are 0

and 1.Subsequent terms are found by adding the preceding two terms in the sequence.Write a

C program to generate the first n terms of the sequence .

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9. Write a C program to find the GCD(Greatest Common Divisor) of two given integers.

10. Write a C program to enter a matrix and display the contents of a matrix.

11. Write a C program that uses functions to perform addition of two matrices.

Note: At least 10 experiments are to be performed with atleast 7 from above list, remaining 3 may either be performed from the above list or designed & set by concerned institution as per the scope