B.TECH VI SEMESTER
PRINCIPLES OF MANAGEMENT
HU-301

L	T	P
3	1	-

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

Objective: Objective of this course is to understand the concepts and techniques of management and to equip the students with managerial skill that are essential to take effective decisions.

UNIT-I
PERSONNEL MANAGEMENT:
Meaning and Functions of Personnel Management.
Job Analysis: process, Job Description and Job Specification, Recruitment & Selection.
Training: Meaning, Objectives and Methods of training.
Performance Appraisal-Meaning and Methods of Performance Appraisal.

UNIT-II
FINANCIAL MANAGEMENT:
Meaning and Objectives of Financial Management, Status and duties of financial manager.
Capital structure decisions: Features of appropriate capital structure, Sources of finance.
Working capital- Meaning, Factors affecting requirements of working capital.

UNIT-III
PRODUCTION MANAGEMENT:
Definition and Objectives.
Production control: Meaning and Importance of Production control and steps involved in Production control.
Plant location: Factors affecting Plant location
Plant Layout: Factors affecting Plant Layout; Brief introduction to the concept of material management, Inventory control techniques.

UNIT-IV
MARKETING MANAGEMENT:
Meaning, Functions and importance of Marketing Management.
Marketing Mix, Role of computers in marketing management. Marketing Information system.
Marketing and Society: Social Responsibility and Marketing Ethics.

TEXT/REFERENCE BOOKS:

1. Aggarwal R.D., "Organization and Management", Tata McGraw Hill
2. Shukla M.C., "Business organization and Management"
3. Drucker, Pater F., "The Practice of Management"
4. Flippo Edwin B , "Principles of Personnel Management", McGraw Hill
5. Lucius Michael J, "Personnel Management", Richard D Irwin Homewood
6. Kotler, Philip and Graw Armstrong, "Principle of Marketing", Prentice Hall of India

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 VI SEMESTER

L T P Time- 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5 Objective: Objective of this course is to understand the concepts and techniques of management and to equip the students with managerial skill that are essential to take effective decisions.

UNIT-I PERSONNEL MANAGEMENT: Meaning and Functions of Personnel Management. Job Analysis: process, Job Description and Job Specification, Recruitment & Selection. Training: Meaning, Objectives and Methods of training. Performance Appraisal-Meaning and Methods of Performance Appraisal.

UNIT-II FINANCIAL MANAGEMENT: Meaning and Objectives of Financial Management, Status and duties of financial manager. Capital structure decisions: Features of appropriate capital structure, Sources of finance. Working capital- Meaning, Factors affecting requirements of working capital.

UNIT-III PRODUCTION MANAGEMENT: Definition and Objectives. Production control: Meaning and Importance of Production control and steps involved in Production control. Plant location: Factors affecting Plant location Plant Layout: Factors affecting Plant Layout; Brief introduction to the concept of material management, Inventory control techniques.

UNIT-IV MARKETING MANAGEMENT: Meaning, Functions and importance of Marketing Management. Marketing Mix, Role of computers in marketing management. Marketing Information system. Marketing and Society: Social Responsibility and Marketing Ethics.

TEXT/REFERENCE BOOKS:

1. Aggarwal R.D., “Organization and Management”, Tata McGraw Hill 2. Shukla M.C., “Business organization and Management” 3. Drucker, Pater F., “The Practice of Management” 4. Flippo Edwin B , “Principles of Personnel Management”, McGraw Hill 5. Lucius Michael J, “Personnel Management”, Richard D Irwin Homewood 6. Kotler, Philip and Graw Armstrong, “Principle of Marketing”, Prentice Hall of India

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 VI SEMESTER

VHDL
ECE-302

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

OBJECTIVE: This offers the necessary backgrounds for basic language elements modeling, generic & configuring, packaging & library offering a strong background of digital system design to students.

UNIT-I
INTRODUCTION:
Introduction to VHDL, Capabilities, Hardware Abstraction, Basic Terminology, Entity Declaration, Architecture Body, Configuration Declaration, Package Declaration, Package Body.

BASIC LANGUAGE ELEMENTS:
Identifiers, Data Objects, Data Types, Operators.

UNIT-II
BEHAVIORAL MODELING:
Entity Declaration, Architecture Body, Process Statement, Variable Assignment Statement, Wait Statement, if Statement, Case Statement, Null Statement, Loop Statement, Exit Statement , Assertion Statement, Report Statement, Other Sequential Statement, Multiple Processes, Postponed Processes.

UNIT-III
DATAFLOW MODELING
Concurrent Signal Assignment Statement, Concurrent Versus Sequential Signal Assignment, Delta Delay, Multiple Drivers, Conditional Signal Assignment Statement, Selected Signal Assignment Statement, Unaffected Value, Block Statement, Concurrent Signal Assignment Statement, Value of Signal

STRUCTURAL MODELING:
Component Declaration, Component Instantiation, Resolving Signal Values

UNIT-IV
GENERIC AND CONFIGURATION:-
Generics, Why Configuration, Default Rules, Sub programs and Overloading (Brief)

PACKAGE AND LIBRARIES:
Package Declaration , Package Body, Design File, Design Libraries, Order Of Analysis, Simulation, Writing A Test Bench, Test Bench Example .

TEXT/REFERENCE BOOKS:

1. Bhaskar J. "VHDL Primer", 3rd Edition, Prentice Hall of India, 2003 .
2. Perry Douglas L., "VHDL Programming By Examples", 4th Edition, Tata McGraw Hill, 2004.
3. Palnitkar Sameer, "VHDL: A Guide to Digital Design and Synthesis", 2nd Edition, Pearson Education ,2007

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.

VHDL ECE-302 L T P Time- 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5

OBJECTIVE: This offers the necessary backgrounds for basic language elements modeling, generic & configuring, packaging & library offering a strong background of digital system design to students.

UNIT-I INTRODUCTION: Introduction to VHDL, Capabilities, Hardware Abstraction, Basic Terminology, Entity Declaration, Architecture Body, Configuration Declaration, Package Declaration, Package Body.

BASIC LANGUAGE ELEMENTS: Identifiers, Data Objects, Data Types, Operators.

UNIT-II BEHAVIORAL MODELING: Entity Declaration, Architecture Body, Process Statement, Variable Assignment Statement, Wait Statement, if Statement, Case Statement, Null Statement, Loop Statement, Exit Statement , Assertion Statement, Report Statement, Other Sequential Statement, Multiple Processes, Postponed Processes.

UNIT-III DATAFLOW MODELING Concurrent Signal Assignment Statement, Concurrent Versus Sequential Signal Assignment, Delta Delay, Multiple Drivers, Conditional Signal Assignment Statement, Selected Signal Assignment Statement, Unaffected Value, Block Statement, Concurrent Signal Assignment Statement, Value of Signal

STRUCTURAL MODELING: Component Declaration, Component Instantiation, Resolving Signal Values

UNIT-IV GENERIC AND CONFIGURATION:- Generics, Why Configuration, Default Rules, Sub programs and Overloading (Brief)

PACKAGE AND LIBRARIES: Package Declaration , Package Body, Design File, Design Libraries, Order Of Analysis, Simulation, Writing A Test Bench, Test Bench Example .

TEXT/REFERENCE BOOKS:

1. Bhaskar J. “VHDL Primer”, 3rd Edition, Prentice Hall of India, 2003 . 2. Perry Douglas L., “VHDL Programming By Examples”, 4th Edition, Tata McGraw Hill,

2004. 3. Palnitkar Sameer, “VHDL: A Guide to Digital Design and Synthesis”, 2nd Edition,

Pearson Education ,2007

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 VI SEMESTER
MICRO-ELECTRONICS
ECE-304

L	T	P
3	1	-

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

OBJECTIVE: This course deals with fundamental & application of semiconductor technology with a view of provide basics for advanced microelectronics technology. The students also get good exposure for fabrication of packaging aspects of microelectronics technology.

UNIT-I
CRYSTAL GROWTH:
MGS, EGS, Czochralski crystal Puller, Silicon shaping, Wafer Preparation.

OXIDATION:
Thermal Oxidation Kinetics, Oxidation Techniques, Oxide Properties, Oxidation induced defects. Thin film deposition techniques: Epitaxy, CVD, PECVD, Sputtering, MBE .

UNIT-II
LITHOGRAPHY:
Lithography, Photolithography, E-beam lithography, X-ray Lithography, reactive Plasma etching.

ETCHING:
Etching, Plasma Properties, Feature Size control and anisotropic etching, Plasma etching techniques and equipment.

UNIT-III
DIFFUSION:
Diffusion mechanisms, Fick's one dimensional diffusion equation, Constant source and limited source diffusion, Diffusion of Group 3 and 5 impurities in Silicon Impurity Sources, Diffusion apparatus, Characterization of diffused layers.

ION IMPLANTATION: Introduction, Range Theory, Implantation Equipment, Annealing.

UNIT-IV
Isolation Techniques, Bipolar IC fabrication Process Sequence, N-MOS IC Fabrication Process Sequence.
C-MOS IC Fabrication Process Sequence, Assembly & Packaging: Package Types, Design considerations, Package fabrication technologies, Future trends reference to MEMS packaging.

TEXT/ REFERENCE BOOKS:

1. Sze, S.M. , "VLSI Technology", 2nd Edition, Tata McGraw Hill,1988
2. Gandhi Sorab.K., "VLSI Fabrication Principles: Silicon & Gallium Arsenide", 2nd Edition, John Wiley & Sons,2004.

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 deals with fundamental & application of semiconductor technology with a view of provide basics for advanced microelectronics technology. The students also get good exposure for fabrication of packaging aspects of microelectronics technology.

UNIT-I CRYSTAL GROWTH: MGS, EGS, Czochralski crystal Puller, Silicon shaping, Wafer Preparation.

OXIDATION: Thermal Oxidation Kinetics, Oxidation Techniques, Oxide Properties, Oxidation induced defects. Thin film deposition techniques: Epitaxy, CVD, PECVD, Sputtering, MBE .

UNIT-II LITHOGRAPHY: Lithography, Photolithography, E-beam lithography, X-ray Lithography, reactive Plasma etching.

ETCHING: Etching, Plasma Properties, Feature Size control and anisotropic etching, Plasma etching techniques and equipment.

UNIT-III DIFFUSION: Diffusion mechanisms, Fick's one dimensional diffusion equation, Constant source and limited source diffusion, Diffusion of Group 3 and 5 impurities in Silicon Impurity Sources, Diffusion apparatus, Characterization of diffused layers.

ION IMPLANTATION: Introduction, Range Theory, Implantation Equipment, Annealing.

UNIT-IV Isolation Techniques, Bipolar IC fabrication Process Sequence, N-MOS IC Fabrication Process Sequence. C-MOS IC Fabrication Process Sequence, Assembly & Packaging: Package Types, Design considerations, Package fabrication technologies, Future trends reference to MEMS packaging.

TEXT/ REFERENCE BOOKS:

1. Sze, S.M. , "VLSI Technology", 2nd Edition, Tata McGraw Hill,1988 2. Gandhi Sorab.K., "VLSI Fabrication Principles: Silicon & Gallium Arsenide", 2nd

Edition, John Wiley & Sons,2004.

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 VI SEMESTER
DIGITAL COMMUNICATION
ECE-306

L	T	P
3	1	-

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

OBJECTIVE: This subject is untainted to provide a strong background for analog & digital transformation, digital base band, digital passband transmission & spread spectrum modulation/ techniques.

UNIT – I
ANALOG TO DIGITAL TRANSFORMATION:
Sampling process, Aperture effect. Pulse Modulation-PAM, PWM, PPM, Quantization process, Quantization noise, PCM, μ Law and A- law compressors, Pulse Code Modulation, DPCM, DM, Adaptive Delta Modulation.

UNIT – II
DIGITAL BASEBAND TRANSMISSION :
A Baseband Digital Communication System, Line Coding and its Properties, Intersymbol interference, Nyquist criterion for distortionless baseband binary transmission-Ideal Nyquist channel and Raised cosine spectrum, Eye pattern, Basic concept of Equalization, Optimum Detection- Matched Filter and Correlation Filter.

UNIT - III
DIGITAL PASSBAND TRANSMISSION:
Geometric Representation of signals, Power Efficiency and Bandwidth Efficiency, Hierarchy of digital modulation techniques-ASK, FSK, BPSK, DPSK, QPSK, MSK, QASK, M-ary QAM, M-ary PSK, Signal space diagram and spectra of the above systems, Effect of Intersymbol Interference, Bit symbol error probabilities, Synchronization.

UNIT- IV
SPREAD SPECTRUM MODULATION:
Generation of Pseudo noise sequence, Direct sequence spread spectrum with coherent BPSK, Jamming margin & Processing gain, Probability of error, Frequency Hopped spread spectrum, TDMA, CDMA.

TEXT/ REFERENCE BOOKS:

1. Proakis John G., "Digital Communication", 3rd Edition, Prentice Hall of India,1999
2. Taub Herbert & Schilling Donald N., "Principles of Communication", 2nd Edition, Tata McGraw Hill ,1994
3. Haykin Simon, "Communication Systems", John Wiley & Sons ,1996

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 subject is untainted to provide a strong background for analog & digital transformation, digital base band, digital passband transmission & spread spectrum modulation/ techniques.

UNIT – I ANALOG TO DIGITAL TRANSFORMATION: Sampling process, Aperture effect. Pulse Modulation-PAM, PWM, PPM, Quantization process, Quantization noise, PCM, μ Law and A- law compressors, Pulse Code Modulation, DPCM, DM, Adaptive Delta Modulation.

UNIT – II DIGITAL BASEBAND TRANSMISSION : A Baseband Digital Communication System, Line Coding and its Properties, Intersymbol interference, Nyquist criterion for distortionless baseband binary transmission-Ideal Nyquist channel and Raised cosine spectrum, Eye pattern, Basic concept of Equalization, Optimum Detection- Matched Filter and Correlation Filter.

UNIT - III DIGITAL PASSBAND TRANSMISSION: Geometric Representation of signals, Power Efficiency and Bandwidth Efficiency, Hierarchy of digital modulation techniques-ASK, FSK, BPSK, DPSK, QPSK, MSK, QASK, M-ary QAM, M-ary PSK, Signal space diagram and spectra of the above systems, Effect of Intersymbol Interference, Bit symbol error probabilities, Synchronization.

UNIT- IV SPREAD SPECTRUM MODULATION: Generation of Pseudo noise sequence, Direct sequence spread spectrum with coherent BPSK, Jamming margin & Processing gain, Probability of error, Frequency Hopped spread spectrum, TDMA, CDMA.

TEXT/ REFERENCE BOOKS:

1. Proakis John G., “Digital Communication”, 3rd Edition, Prentice Hall of India,1999 2. Taub Herbert & Schilling Donald N., “Principles of Communication”, 2nd Edition, Tata McGraw Hill ,1994 3. Haykin Simon, “Communication Systems”, John Wiley & Sons ,1996

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 V1 SEMESTER
COMPUTER COMMUNICATION NETWORKS
ECE-308

L	T	P
3	1	-

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

OBJECTIVE: The purpose of this course is to make a student conversant with the basics of physical layer, data link layer, network layer, transport layer & session layer, presentation layer & application layer covering entire spectrum of OSI model.

UNIT – I:
INTRODUCTION: Uses of Computer Networks, Network Hardware, Network Software, Reference models, Examples of Networks & Data communication Services, Network Standardization.

THE PHYSICAL LAYER: The Theoretical basis for Data communication, Transmission media, Wireless Communication, The Telephone System, Narrowband ISDN, Broadband ISDN and ATM, Cellular Radio, Communication Satellites.

UNIT – II:
THE DATA LINK LAYER: Data Link Layer Design issues, Error Detection & correction, Elementary Data Link protocols, Sliding Window Protocols, Protocol Specification & Verification, Example of Data Link Protocols.

THE MEDIUM ACCESS SUBLAYER: Aloha Protocols, LAN Protocols, IEEE Standards, Fiber optic Networks, Satellite Networks, Packet switching, Radio Networks.

UNIT – III:
NETWORK LAYER: Design issues, Routing algorithms, Congestion control algorithms, Internetworking.

TRANSPORT & SESSION LAYER: Protocol design issues, Connection Management, Remote procedure calls.

UNIT – IV:
PRESENTATION LAYER: Design issues, Abstract Syntax notation, Data compression technique, Cryptograph.

APPLICATION LAYER: Design issues, File transfer, Access and management, Electronic mail, Virtual terminals, Applications and examples.

TEXT /REFERENCE BOOKS:

1. Tanenbaum Andrew .S, "Computer Networks", 3rd Edition, Prentice Hall of India,1999
2. Forouzan Behrouz A, "Data Communications and Networking", 2nd Edition, Tata-Mc-Graw Hill, 2001.
3. Stallings William, "Data and Computer Communications", 7th Edition, Pearson Education, 2006
4. Ahuja Vijay, "Design and Analysis of Computer Communication Networks", McGraw Hill, 1982.

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-2)

P Time- 3 Hrs 3 1 - Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: The purpose of this course is to make a student conversant with the basics of physical layer, data link layer, network layer, transport layer & session layer, presentation layer & application layer covering entire spectrum of OSI model.

UNIT – I: INTRODUCTION: Uses of Computer Networks, Network Hardware, Network Software, Reference models, Examples of Networks & Data communication Services, Network Standardization.

THE PHYSICAL LAYER: The Theoretical basis for Data communication, Transmission media, Wireless Communication, The Telephone System, Narrowband ISDN, Broadband ISDN and ATM, Cellular Radio, Communication Satellites.

UNIT – II: THE DATA LINK LAYER: Data Link Layer Design issues, Error Detection & correction, Elementary Data Link protocols, Sliding Window Protocols, Protocol Specification & Verification, Example of Data Link Protocols.

THE MEDIUM ACCESS SUBLAYER: Aloha Protocols, LAN Protocols, IEEE Standards, Fiber optic Networks, Satellite Networks, Packet switching, Radio Networks.

UNIT – III: NETWORK LAYER: Design issues, Routing algorithms, Congestion control algorithms, Internetworking.

TRANSPORT & SESSION LAYER: Protocol design issues, Connection Management, Remote procedure calls.

UNIT – IV: PRESENTATION LAYER: Design issues, Abstract Syntax notation, Data compression technique, Cryptograph.

APPLICATION LAYER: Design issues, File transfer, Access and management, Electronic mail, Virtual terminals, Applications and examples.

TEXT /REFERENCE BOOKS :

1. Tanenbaum Andrew .S, “Computer Networks”, 3rd Edition, Prentice Hall of India,1999
2. Forouzan Behrouz A, “Data Communications and Networking”, 2nd Edition, Tata-Mc-Graw Hill, 2001. 3. Stallings William, “Data and Computer Communications”, 7th Edition, Pearson Education, 2006 4. Ahuja Vijay, “Design and Analysis of Computer Communication Networks”, McGraw Hill, 1982.

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-2)

B.TECH VI SEMESTER
LINEAR CONTROL SYSTEM
ECE-310

L	T	P
3	1	-

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

OBJECTIVE: This subject deals with the control system which is used in almost every project in the industries these days and also in our day to day life. The subject makes students aware of the cause and effect relationship between the instruments & equipments they use.

UNIT-I

INTRODUCTION:
The Control System-open loop & closed loop, Servomechanism, Stepper motor.

MATHEMATICAL MODELS OF PHYSICAL SYSTEMS:
Differential equation of physical systems, Transfer function, Block diagram algebra, Signal flow-graphs, Mason's gain formula & its application.

FEEDBACK CHARACTERISTICS OF CONTROL SYSTEMS:
Feedback and non-feedback systems, Effects of feedback on sensitivity (to parameter variations), Stability, Overall gain etc.

UNIT-II

TIME RESPONSE ANALYSIS:
Standard test signals, Time response of first order and second order systems, Steady-state errors and error constants, Design specification of second-order-systems.

STABILITY:
The concept of stability, Necessary conditions for stability, Hurwitz stability criterion, Routh stability criterion, Relative stability analysis.

THE ROOT LOCUS TECHNIQUE:
The Root locus concept, Construction/development of root loci for various systems, Stability considerations.

UNIT-III

FREQUENCY RESPONSE & STABILITY ANALYSIS:
Correlation between time and frequency response, Polar Plots, Nyquist plots, Bode Plots, Nyquist stability criterion, Gain margin & Phase margin, relative stability using Nyquist Criterion, Frequency response specifications.

UNIT-IV

COMPENSATION OF CONTROL SYSTEMS: Necessity of compensation, Phase lag compensation, Phase lead compensation, Phase lag lead compensation, Feedback compensation.

STATE VARIABLE ANALYSIS:
Concept of state, State variable and state model, State models for linear continuous time systems, Diagonalization solution of state equations, Concept of controllability and observability.

TEXT BOOK:

1. Nagrath I.J & Gopal M., "Control System Engg", 2nd Edition, New Age International, 1996

REFERENCE BOOKS:

1. Kuo Benjamin C, "Automatic Control Systems", 7th Edition, Prentice Hall of India, 1995.
2. Ogata Katsuhiko, "Modern Control Engg", 3rd Edition,. Prentice Hall of India, 1997
3. Gopal Madan, "Control Systems: Principles & Design", Tata McGraw Hill, 1998

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 VI SEMESTER LINEAR CONTROL SYSTEM ECE-310 L T P Time- 3 Hrs 3 1 -

Theory- 60 Sessional- 40 Credit- 3.5 OBJECTIVE: This subject deals with the control system which is used in almost every project in the industries these days and also in our day to day life. The subject makes students aware of the cause and effect relationship between the instruments & equipments they use.

UNIT-I INTRODUCTION: The Control System-open loop & closed loop, Servomechanism, Stepper motor. MATHEMATICAL MODELS OF PHYSICAL SYSTEMS: Differential equation of physical systems, Transfer function, Block diagram algebra, Signal flow- graphs, Mason's gain formula & its application. FEEDBACK CHARACTERISTICS OF CONTROL SYSTEMS: Feedback and non-feedback systems, Effects of feedback on sensitivity (to parameter variations), Stability, Overall gain etc.

UNIT-II TIME RESPONSE ANALYSIS: Standard test signals, Time response of first order and second order systems, Steady-state errors and error constants, Design specification of second-order-systems. STABILITY: The concept of stability, Necessary conditions for stability, Hurwitz stability criterion, Routh stability criterion, Relative stability analysis. THE ROOT LOCUS TECHNIQUE: The Root locus concept, Construction/development of root loci for various systems, Stability considerations.

UNIT-III FREQUENCY RESPONSE & STABILITY ANALYSIS: Correlation between time and frequency response, Polar Plots, Nyquist plots, Bode Plots, Nyquist stability criterion, Gain margin & Phase margin, relative stability using Nyquist Criterion, Frequency response specifications.

UNIT-IV COMPENSATION OF CONTROL SYSTEMS: Necessity of compensation, Phase lag compensation, Phase lead compensation, Phase lag lead compensation, Feedback compensation. STATE VARIABLE ANALYSIS: Concept of state, State variable and state model, State models for linear continuous time systems, Diagonalization solution of state equations, Concept of controllability and observability.

TEXT BOOK: 1. Nagrath I.J & Gopal M., "Control System Engg", 2nd Edition, New Age International, 1996

REFERENCE BOOKS: 1. Kuo Benjamin C, "Automatic Control Systems", 7th Edition, Prentice Hall of India, 1995. 2. Ogata Katsuhiko, "Modern Control Engg", 3rd Edition,. Prentice Hall of India, 1997 3. Gopal Madan, "Control Systems: Principles & Design", Tata McGraw Hill, 1998

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 VI SEMESTER
FUZZY LOGIC
ECE-312

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 student conversant with the basics of fuzzy relations, fuzzy system, fuzzy logic & their application in engineering.

UNIT -I
INTRODUCTION:
Background, Statistics & random processes, Uncertainity in information, Fuzzy sets and membership, Chances vs. ambiguity, Difference between fuzzy and probability.
Classical sets & fuzzy sets, their operation & properties, Linguistic variables.

UNIT-II
CLASSICAL RELATION AND FUZZY RELATION:
Cartesian product ,Crisp relations- its cardinality ,Operation ,Properties & Composition ,Fuzzy relations- its cardinality, Operation, Properties, Fuzzy Cartesian product & composition ,Crisp & fuzzy tolerance & equivalence relations ,Value assignment.

UNIT-III
FUZZY SYSTEM:
Membership function, its features, Standard forms & its boundary, Fuzzification -membership value assignment, Fuzzy arithmetic, Number, Vector & Extension principle .
Fuzzy to crisp conversion- Lambda- cuts for fuzzy sets, Lambda- cuts for fuzzy relations, Defuzzification method

UNIT -IV
FUZZY RULE BASED SYSTEM:
Natural language, Linguistic hedges, Rule based system, Canonical rule forms,
Decomposition of compound rules, Likelihood & truth qualification aggregation of rules, Graphical techniques of inference, Fuzzy decision making methods.

TEXT/ REFERENCE BOOKS:

1. Ross Timothy J., "Fuzzy Logic with Engineering Applications", McGraw Hill International, 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 purpose of this course is to make the student conversant with the basics of fuzzy relations, fuzzy system, fuzzy logic & their application in engineering.

UNIT -I INTRODUCTION: Background, Statistics & random processes, Uncertainity in information, Fuzzy sets and membership, Chances vs. ambiguity, Difference between fuzzy and probability. Classical sets & fuzzy sets, their operation & properties, Linguistic variables.

UNIT-II CLASSICAL RELATION AND FUZZY RELATION: Cartesian product ,Crisp relations- its cardinality ,Operation ,Properties & Composition ,Fuzzy relations- its cardinality, Operation, Properties, Fuzzy Cartesian product & composition ,Crisp & fuzzy tolerance & equivalence relations ,Value assignment.

UNIT-III FUZZY SYSTEM: Membership function, its features, Standard forms & its boundary, Fuzzification -membership value assignment, Fuzzy arithmetic, Number, Vector & Extension principle . Fuzzy to crisp conversion- Lambda- cuts for fuzzy sets, Lambda- cuts for fuzzy relations, Defuzzification method

UNIT -IV FUZZY RULE BASED SYSTEM: Natural language, Linguistic hedges, Rule based system, Canonical rule forms, Decomposition of compound rules, Likelihood & truth qualification aggregation of rules, Graphical techniques of inference, Fuzzy decision making methods.

TEXT/ REFERENCE BOOKS:

1. Ross Timothy J., “Fuzzy Logic with Engineering Applications”, McGraw Hill

International, 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 VI SEMESTER
DIGITAL COMMUNICATION PRACTICAL
ECE-316

L	T	P
-	-	3

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

LIST OF EXPERIMENTS:

1. To Study Pulse Amplitude Modulation and Time Division Multiplexing.
2. To Study Pulse Time Modulation and Demodulation (PWM and PPM).
3. Transformation of Analog message into Digital form and vice-versa using Pulse Code Modulation and Demodulation
4. To Study Delta Modulation and Demodulation.
5. To Study Adaptive Delta Modulation and Demodulation.
6. To Study the Amplitude Shift Keying Modulation & Demodulation.
7. To Study Frequency Shift Keying Transmission & Reception.
8. To Study Phase Shift Keying Modulation & Demodulation.
9. To Study Quadrature Phase Shift Keying Transmission & Reception.
10. Setting up a Fiber Optic Analog Link and Digital Link.Examine for Bending losses.

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 Pulse Amplitude Modulation and Time Division Multiplexing.
2. To Study Pulse Time Modulation and Demodulation (PWM and PPM).
3. Transformation of Analog message into Digital form and vice-versa using Pulse Code Modulation and Demodulation
4. To Study Delta Modulation and Demodulation.
5. To Study Adaptive Delta Modulation and Demodulation.
6. To Study the Amplitude Shift Keying Modulation & Demodulation.
7. To Study Frequency Shift Keying Transmission & Reception.
8. To Study Phase Shift Keying Modulation & Demodulation.
9. To Study Quadrature Phase Shift Keying Transmission & Reception.
10. Setting up a Fiber Optic Analog Link and Digital Link.Examine for Bending losses.

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 VI SEMESTER
ELECTRONIC DESIGN LAB
ECE-318

L	T	P
-	-	3

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

LIST OF EXPERIMENTS:

1. To design single stage RC coupled amplifier & plot its Gain vs Frequency plot.
2. To design two stage RC coupled amplifier & plot its Gain vs Frequency plot.
3. To design a RC phase shift oscillator using IC-741.
4. To design a square wave generator using IC-555.
5. To design a parity bit generator using IC-741.
6. To design a Digital to Analog converter using IC-741.
7. To design a Wein Bridge Oscillator using IC-741.
8. To design an Integrator circuit using IC-741.
9. To design a Differentiator using IC-741.
10. To design a 4:1 MUX and DEMUX using logic gates.

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 design single stage RC coupled amplifier & plot its Gain vs Frequency plot.
2. To design two stage RC coupled amplifier & plot its Gain vs Frequency plot.
3. To design a RC phase shift oscillator using IC-741.
4. To design a square wave generator using IC-555.
5. To design a parity bit generator using IC-741.
6. To design a Digital to Analog converter using IC-741.
7. To design a Wein Bridge Oscillator using IC-741.
8. To design an Integrator circuit using IC-741.
9. To design a Differentiator using IC-741.
10. To design a 4:1 MUX and DEMUX using logic gates.

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 VI SEMESTER
DIGITAL SIGNAL PROCESSING
ECE-320

L	T	P
-	-	3

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

LIST OF EXPERIMENTS:

1. Introduction to MATLAB functions used in programs
2. Representation of Basic signals (Unit step sequence, Exponential sequence, Unit impulse, ramp & sinusoidal sequence).
3. To plot Convolution of Two sequences.
4. To Compute the DFT of the sequence & plot magnitude & phase response.
5. To Design a Butterworth low pass filters for the given specification.
6. To Design a Butterworth high pass filter for the given specification.
7. To Design a Butterworth band pass filter for the given specification.
8. To Design a Butterworth band stop filter for the given specification.
9. To Design a Chebyshev-I low pass filters for the given specification.
10. To convert the analog filter into digital filter using Impulse Invariant Transformation.
11. To convert the analog filter into digital filter using Bilinear Transformation. .
12. To Design a Low pass FIR filter using.

    (i) Rectangular Window (ii) Blackman window.

    (iii) Hamming Window (V) Bartlett Window (V) Hanning Window.

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. Introduction to MATLAB functions used in programs

2. Representation of Basic signals (Unit step sequence, Exponential sequence, Unit impulse,

ramp & sinusoidal sequence).

3. To plot Convolution of Two sequences.

4. To Compute the DFT of the sequence & plot magnitude & phase response.

5. To Design a Butterworth low pass filters for the given specification.

6. To Design a Butterworth high pass filter for the given specification.

7. To Design a Butterworth band pass filter for the given specification.

8. To Design a Butterworth band stop filter for the given specification.

9. To Design a Chebyshev-I low pass filters for the given specification.

10. To convert the analog filter into digital filter using Impulse Invariant Transformation.

11. To convert the analog filter into digital filter using Bilinear Transformation. .

12. To Design a Low pass FIR filter using.

(i) Rectangular Window (ii) Blackman window.

(iii) Hamming Window (V) Bartlett Window (V) Hanning Window.

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.