# B. E. PRINTING TECHNOLOGY (PART TIME)

## I - VII SEMESTERS CURRICULA AND SYLLABI

### SEMESTER I

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OBJECTIVES

- To facilitate the understanding of the principles and to cultivate the art of formulating physical problems in the language of mathematics.

UNIT I MATRICES


UNIT II FUNCTIONS OF SEVERAL VARIABLES


UNIT III ANALYTIC FUNCTION

Analytic functions – Necessary and sufficient conditions for analyticity – Properties – Harmonic conjugates – Construction of analytic function – Conformal Mapping – Mapping by functions w = a + z, az, 1/z, - Bilinear transformation.

UNIT IV COMPLEX INTEGRATION

Line Integral – Cauchy’s theorem and integral formula – Taylor’s and Laurent’s Series – Singularities – Residues – Residue theorem – Application of Residue theorem for evaluation of real integrals – Use of circular contour and semicircular contour with no pole on real axis.

UNIT V LAPLACE TRANSFORMS


TOTAL: 45 PERIODS

OUTCOMES

- To develop the use of matrix algebra techniques this is needed by engineers for practical applications.
- To familiarize the student with functions of several variables. This is needed in many branches of engineering.
- To develop an understanding of the standard techniques of complex variable theory so as to enable the student to apply them with confidence, in application areas such as heat conduction, elasticity, fluid dynamics and flow the of electric current.
- To make the student appreciate the purpose of using transforms to create a new domain in which it is easier to handle the problem that is being investigated.

BOOKS FOR STUDY

OBJECTIVE:
The objective of this course is to introduce the essential principles of physics for printing technology applications.

UNIT I       SURFACE TENSION
Surface tension - angle of contact - pressure difference across a liquid surface - excess pressure inside a liquid drop - shape of a liquid surface in a capillary tube - determination of surface tension by capillary tube method - bubble pressure method - Jaeger's method - effect of temperature - examples of surface tension - dynamic surface tension - surfactants - tensiometer.

UNIT II      VISCOILITY
Viscosity and coefficient of viscosity - streamline and turbulent flow - Reynold's number - Poiseuille's equation - Stoke's law and terminal velocity - experimental determination of n - Basic visco-elasticity - effect of temperature - measurement - visco-elastic flow - Newtonian and non-Newtonian fluids. Basic physical principles of ink-jet printer - ink droplet - ink gun (principles).

UNIT III     MAGNETIC/OPTICAL DATA STORAGE TECHNIQUES
Introduction - magnetic material parameters - magnetic disk memories - optical data storage - phase change recording - magneto-optical data storage - Hi-tech involved in system development - capacity of CD in normal use - advantages of CD - holographic storage - construction of a hologram - reconstruction of a hologram - photorefractive storage.

UNIT IV      OPTOELECTRONICS AND DISPLAY DEVICES

UNIT V       OPTICAL IMAGE PROCESSING
Introduction to Fourier optics - Fourier transforming properties of lenses - analog optical information processing - Abbe-Porter experiment - optical filters - optical spatial light modulators - conversion of incoherent image into coherent image basics of digital image processing.

TOTAL: 45 PERIODS

OUTCOMES:
- The students will have knowledge on the basics of physics related to properties of surface tension, viscosity, optical image processing etc., and they will apply these fundamental principles to solve practical problems related to materials used for engineering applications.
TEXT BOOKS:

PTCY8102 CHEMISTRY FOR PRINTING TECHNOLOGY L T P C
3 0 0 3

OBJECTIVES
The students should be conversant with
- Treatment of water for domestic and industrial purpose
- Applications of different kinds of Polymers, Lubricants and adhesives.
- Different kinds of alloys and powder metallurgy involving condensed systems.
- Principles and instrumentation of spectroscopic and microscopic analysis

UNIT I WATER TECHNOLOGY AND CORROSION 9
Water – Sources, properties, Characteristics imparted by impurities in water, significance of water quality parameters in terms of pH, conductivity, hardness, alkalinity, COD, BOD, iron, chloride and sulphate, Water treatment – Reverse Osmosis, ion exchange demineralization and zeolite processes; Corrosion - Types, Corrosion control; Paints-constituents and their functions- mechanism of drying of an oil paint.

UNIT II LUBRICANTS AND ADHESIVES 9
Lubricants and lubrication- functions- classification with examples- properties (viscosity index, flash and fire point, oiliness, carbon residue, aniline point, cloud and pour point)- greases (calcium based, sodium based, lithium based only)- solid lubricants- graphite and molybdenum sulphide.Adhesives – adhesive action – development of adhesive strength – physical and chemical factors influencing adhesive action – bonding process of adhesives – phenol formaldehyde resins, polyurethane, epoxy resins and urea formaldehyde.

UNIT III POLYMERS, COMPOSITES AND FOAMS 9

UNIT IV ALLOYS AND PHYSICAL METALLURGY 9
UNIT V  INSTRUMENTAL METHODS AND ANALYSIS  9

TOTAL: 45 PERIODS

OUTCOMES:
- Provides understanding of water technology applications for domestic and industrial purposes.
- Will gain a broad idea about commodity and specialty polymers, lubricants and adhesives.
- Is conversant with spectroscopic and microscopic techniques.

TEXT BOOKS:

REFERENCES:

PTGE8153  ENGINEERING MECHANICS  L T P C  3 0 0 3

OBJECTIVE
- To develop capacity to predict the effect of force and motion in the course of carrying out the design functions of engineering

UNIT I  BASICS AND STATIC S OF PARTICLES  9

UNIT II  EQUILIBRIUM OF RIGID BODIES  9
Free body diagram – Types of supports –Action and reaction forces –stable equilibrium – Moments and Couples – Moment of a force about a point and about an axis – Vectorial representation of moments and couples – Scalar components of a moment – Varignon’s theorem – Single equivalent force -Equilibrium of Rigid bodies in two dimensions – Equilibrium of Rigid bodies in three dimensions
UNIT III PROPERTIES OF SURFACES AND SOLIDS 9
Centroids and centre of mass - Centroids of lines and areas - Rectangular, circular, triangular areas by integration - T section, I section, - Angle section, Hollow section by using standard formula - Theorems of Pappus - Area moments of inertia of plane areas - Rectangular, circular, triangular areas by integration - T section, I section, Angle section, Hollow section by using standard formula - Parallel axis theorem and perpendicular axis theorem - Principal moments of inertia of plane areas - Principal axes of inertia - Mass moment of inertia - Mass moment of inertia for prismatic, cylindrical and spherical solids from first principle - Relation to area moments of inertia.

UNIT IV DYNAMICS OF PARTICLES 9

UNIT V FRICTION AND ELEMENTS OF RIGID BODY DYNAMICS 9
Friction force - Laws of sliding friction - equilibrium analysis of simple systems with sliding friction - wedge friction - Rolling resistance - Translation and Rotation of Rigid Bodies - Velocity and acceleration - General Plane motion of simple rigid bodies such as cylinder, disc/wheel and sphere.

TOTAL: 45 PERIODS

OUTCOMES:
- ability to explain the differential principles applies to solve engineering problems dealing with force, displacement, velocity and acceleration.
- ability to analyse the forces in any structures.
- ability to solve rigid body subjected to dynamic forces.

TEXT BOOKS:

REFERENCES:
OBJECTIVES:
The students should be made to:
- Learn the organization of a digital computer.
- Be exposed to the number systems.
- Learn to think logically and write pseudo code or draw flow charts for problems.
- Be exposed to the syntax of C.
- Be familiar with programming in C.
- Learn to use arrays, strings, functions, pointers, structures and unions in C.

UNIT I
INTRODUCTION

UNIT II
C PROGRAMMING BASICS

UNIT III
ARRAYS AND STRINGS

UNIT IV
FUNCTIONS AND POINTERS

UNIT V
STRUCTURES AND UNIONS
Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions – Storage classes, Pre-processor directives.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
- Design C Programs for problems.
- Write and execute C programs for simple applications.

TEXT BOOKS:
REFERENCES:

PTCE8252  STRENGTH OF MATERIALS                        L   T   P   C
(Common to Mechanical, Industrial, Printing and Manufacturing)  3   0   0   3

OBJECTIVE:
To understand the stresses developed in bars, compounds bars, beams, shafts, cylinders and spheres.

UNIT I  STRESS, STRAIN AND DEFORMATION OF SOLIDS  9

UNIT II  TRANSVERSE LOADING ON BEAMS AND STRESSES IN BEAM  9

UNIT III  TORSION  9
Torsion formulation stresses and deformation in circular and hollows shafts – Stepped shafts – Deflection in shafts fixed at the both ends – Stresses in helical springs – Deflection of helical springs, carriage springs.

UNIT IV  DEFLECTION OF BEAMS  9
Double Integration method – Macaulay’s method – Area moment Theorems for computation of slopes and deflections in beams - Conjugate beam and strain energy – Maxwell’s reciprocal theorems.

UNIT V  THIN CYLINDERS, SPHERES AND THICK CYLINDERS  9
Stresses in thin cylindrical shell due to internal pressure circumferential and longitudinal stresses and deformation in thin cylinders – spherical shells subjected to internal pressure – Deformation in spherical shells – Lame’s theory – Application of theories of failure.

TOTAL: 45 PERIODS

OUTCOMES:
- Upon completion of this course, the students can able to apply mathematical knowledge to calculate the deformation behavior of simple structures.
- Critically analyse problem and solve the problems related to mechanical elements and analyse the deformation behavior for different types of loads.
TEXT BOOKS:

REFERENCES:

PTEC8251 ELECTRONICS ENGINEERING  L T P C
(Common to Mechanical, Industrial, Printing and Manufacturing) 3 0 0 3

OBJECTIVES:
• To provide knowledge in the basic concepts of Electronics Engineering including semiconductors, transistors, electronic devices, signal generators and digital electronics.

UNIT I SEMICONDUCTORS AND RECTIFIERS 9
Classification of solids based on energy band theory, Intrinsic semiconductors, Extrinsic semiconductors – P-type and N-type, P-N junction, VI Characteristics of PN junction diode, Half and Full wave rectifiers, Zener effect, Zener diode, Zener diode Characteristics, Zener diode as a regulator.

UNIT II TRANSISTOR AND AMPLIFIERS 9
Bipolar junction transistors – CB, CE, CC configurations and characteristics, Biasing circuits – Fixed bias, Voltage divider bias, CE amplifier, Concept of feedback, Negative feedback, voltage series feedback amplifier, Current series feedback amplifier.

UNIT III FET AND POWER ELECTRONIC DEVICES 9
FET – Configuration and characteristics, FET amplifier, Characteristics and simple applications of SCR, Diac, Triac and UJT.

UNIT IV SIGNAL GENERATORS AND LINEAR ICs 9

UNIT V DIGITAL ELECTRONICS 9
Boolean algebra, Logic Gates, Half and Full adders, Decoder, Encoder, Multiplexer, Demultiplexer, Flip flops, Digital to Analog converters - R-2R and weighted resistor types, Analog to Digital converters - Successive approximation and Flash types.

TOTAL: 45 PERIODS
OUTCOMES:
- ability to identify electronics components and use of them to design circuits.

TEXT BOOK:

REFERENCES:

PTEE8252 BASIC ELECTRICAL ENGINEERING AND MEASUREMENTS
L T P C
3 0 0 (Common to Mechanical and Printing)

AIM
To provide knowledge in the basic concepts of Electric Circuits, Electrical machines and Measurement techniques.

OBJECTIVE
To impart knowledge on
- Electric circuit laws
- Principle of Electrical Machines
- Various measuring instruments

UNIT I ELECTRICAL CIRCUITS

UNIT II ELECTRICAL MACHINES
Construction and Principle of operation DC machines- Characteristics of DC machines
Construction and Principle of operation of single phase transformers, synchronous machines, three-phase and single-phase induction motors

UNIT III MEASUREMENT AND INSTRUMENTATION
Classification of instruments – moving coil and moving iron meters – Induction type, dynamometer type wattmeters – Energy meter – Megger – Instrument transformers (CT & PT) –Wheatstone’s bridge for measurement of unknown resistance ,Maxwell’s bridge for unknown inductance and Schering Bridge for unknown capacitance

UNIT IV TRANSDUCERS
Classification of transducers, strain, RTD, thermocouples, Piezo-electric transducer, LVDT, Turbine and electromagnetic flow meters, level transducers ultrasonic and fiber optic transducers, type of sensors, elastic sensors, viscosity, moisture and pH sensors, Digital transducers, vibrating wire instruments like load cells, stress meter, etc.
UNIT V  SIGNAL CONDITIONING AND DISPLAY  9
Instrumentation amplifiers- Filters- A/D and D/A converters - Multiplexing and data acquisition - LED, LCD and CRT displays.

TOTAL: 45 PERIODS

OUTCOMES:
• Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance

TEXT BOOKS

REFERENCES

PTGE8251  ENVIRONMENTAL SCIENCE AND ENGINEERING  LT P C
(Common to Manufacturing, Mechanical, Printing, Production, 3 0 0 3 EEE, CSE, IT, Civil, Textile, Chemical, Industrial )

OBJECTIVES
To the study of nature and the facts about environment.
• To finding and implementing scientific, technological, economic and political solutions to environmental problems.
• To study the interrelationship between living organism and environment.
• To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
• To study the dynamic processes and understand the features of the earth’s interior and surface.
• To study the integrated themes and biodiversity, natural resources, pollution control and waste management.
UNIT I  ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

Definition, scope and importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.

Field study of common plants, insects, birds
Field study of simple ecosystems – pond, river, hill slopes, etc.

UNIT II  ENVIRONMENTAL POLLUTION

Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – soil waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides.

Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III  NATURAL RESOURCES

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.

UNIT IV  SOCIAL ISSUES AND THE ENVIRONMENT

UNIT V  HUMAN POPULATION AND THE ENVIRONMENT  6

TOTAL: 45 PERIODS

OUTCOMES:
Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.

- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters

TEXT BOOKS:

REFERENCE BOOKS:

PTMA8251  NUMERICAL METHODS  L  T  P  C
(Common to EEE, IT, Industrial, Automobile , Printing, Manufacturing)  3  0  0  3

OBJECTIVES:
To provide the mathematical foundations of numerical techniques for solving linear system, eigenvalue problems, interpolation, numerical differentiation and integration and the errors associated with them; To demonstrate the utility of numerical techniques of ordinary and partial differential equations in solving engineering problems where analytical solutions are not readily available.

UNIT I  SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS  9
UNIT II INTERPOLATION AND APPROXIMATION 9
Interpolation with unequal intervals - Lagrange interpolation – Newton’s divided difference interpolation – Cubic Splines - Interpolation with equal intervals - Newton’s forward and backward difference formulae – Least square method - Linear curve fitting.

UNIT III NUMERICAL DIFFERENTIATION AND INTEGRATION 9

UNIT IV INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS 9

UNIT V BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS 9
Finite difference methods for solving two-point linear boundary value problems. Finite difference techniques for the solution of two dimensional Laplace’s and Poisson’s equations on rectangular domain – One dimensional heat-flow equation by explicit and implicit (Crank-Nicholson) methods - One dimensional wave equation by explicit method.

TOTAL: 60 PERIODS

OUTCOMES:
- The students will have a clear perception of the power of numerical techniques, ideas and would be able to demonstrate the applications of these techniques to problems drawn from industry, management and other engineering fields.

TEXT BOOKS:

REFERENCES:
OBJECTIVES:
- To understand the principles in the formation of mechanisms and their kinematics.
- To understand the effect of friction in different machine elements.
- To analyze the forces and torques acting on simple mechanical systems.
- To understand the importance of balancing and vibration.

UNIT I KINEMATIC OF MECHANICS

UNIT II GEARs AND GEAR TRAINS

UNIT III FRICTION IN MACHINE ELEMENTS
Surface contacts – Sliding and Rolling friction – Friction drives – Friction in screw threads – Bearings and lubrication – Friction clutches – Belt and rope drives – Friction aspects in brakes – Friction in vehicle propulsion and braking.

UNIT IV FORCE ANALYSIS

UNIT V BALANCING AND VIBRATION

TOTAL: 45 PERIODS

OUTCOMES:
- Upon completion of this course, the students can apply fundamentals of mechanism for the design of new mechanisms and analyse them for optimum design.

TEXT BOOK:

REFERENCES:

STANDARDS:

PTPT8301 COLOUR REPRODUCTION L T P C
3 0 0 3

OBJECTIVE:
This course imparts the fundamental concepts of Colour Science & measurement and gives an overview of colour reproduction techniques. It gives an exposure to in-depth exploration of issues involved in colour reproduction in print media and concepts behind image adjustment techniques. It also introduces the basic concepts of colour Management Systems.

UNIT I COLOUR SCIENCE & MEASUREMENT 9
Light, colour, Light sources, Sample, Observer, Colour vision, Colour matching experiment, Tristimulus values, Chromaticity diagram, Colour spaces – CIELAB, CIELUV, CIELCH, Munsell; Colour difference equations, Spectrophotometer, Viewing conditions and standards.

UNIT II PRINCIPLES OF COLOUR REPRODUCTION 9
Additive and Subtractive colour theory, Colour Fusion, Colour originals for reproduction. Reproduction objectives, Image Acquisition – scanners, digital cameras; Colour separation techniques, Screen angles and moire patterns.

UNIT III SPECTRAL SENSITIVITIES, INK & PAPER 9

UNIT IV COLOUR CORRECTION & IMAGE ADJUSTMENTS 9
Masking and its principles, Balanced inks, Tone reproduction-Jones Diagram; Gray balance, Masking equations, Neugebauer equation, Look Up Table, Image Adjustments.
- Colour correction, White point & Black point, Colour cast removal, USM, Black generation- UCR, GCR, UCA.

UNIT V  COLOUR MANAGEMENT  9

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of the course, the student should be able to:
- Evaluate colour originals and choose appropriate reproduction method.
- Apply suitable compensation in prepress while color separation.
- Evaluate colour and other print attributes.
- Discuss the importance of colour management.

TEXT BOOKS:

REFERENCE BOOKS:

PTPT8302  DIGITAL DATA HANDLING  L T P C
3 0 0 3

OBJECTIVE:
To provide exposure to the basic components of digital print production workflow like networking, file formats, Database management & security issues.

UNIT I  WORKFLOW  9
Workflow – editorial, pre-press, production; Automated workflow - components, File Preparation, Preflighting, Digital Imposition – preRIP, postRIP, OPI, Trapping, Postscript, PDF, CIP4 – JDF, JMF.

UNIT II  NETWORKING  9
Data transmission fundamentals, Communication media, Data interfaces, Concepts and principles of computer networks, PAN, LAN, WAN, MAN, Network Topologies, Network protocols – FTP, TCP/IP, Network Node components – Hubs, Bridges, Routers, Gateways, Switches, Internet – principles, Client/Server model
UNIT III FILE FORMATS & COMPRESSION TECHNIQUES
File format – EPS, DCS, JPEG, GIF, TIFF, PNG, Comparison of file formats, Overview of Compression techniques - Lossy & lossless compression, RLE, Huffman compression, LZW, DCT, Wavelet, Fractal image encoding; Image quality evaluation

UNIT IV DATABASE MANAGEMENT
Database, Types, Database Management, Database Languages, Query processing, Data storage, Backup & recovery, Distributed databases, Data Warehousing, Data Mining, Security issues, Access Control, Digital Asset Management

UNIT V SECURITY ASPECTS

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
- Learn the digital print production workflow
- Choose suitable file format for images based on publishing mode
- Understand the basics about networking, security and database management

TEXT BOOKS

REFERENCE BOOKS:

PTPT8303 IMAGING TECHNOLOGY

OBJECTIVE:
To impart knowledge on laser typesetters, film processing, scanners, imagesetters, also give elaborate study of typographic parameters.

UNIT I INTRODUCTION TO TEXT COMPOSING
UNIT II   LASER TYPESETTERS  9
Laser source: Helium Neon, Argon ion, Violet Laser diodes, Choice and Selection of
laser, Principles of typesetters and printers, Modulation. Direct laser modulation,
Acousto-optic modulation. Deflection methods – Mechanical deflectors. Holographic
deflectors, Solid state deflectors, Polygon Scanning, Facet tracing optics and Scan-end
detection mechanism. Speed and resolution of laser typesetters.

UNIT III   IMAGE ACQUISITION AND FILM PROCESSING  9
Originals for reproduction, Scanner types – Drum, flatbed, Dynamic range, Resolution,
Storage, File formats, Line reproduction, Halftone reproduction, Theories of dot
formation. Action of light, Types of films – Development theory, variant in development,
sensitometry, Transmission densitometer. Lens and lens aberrations. Screening
technologies, Raster image processors, imagesetters.

UNIT IV   PLANNING & LAYOUT  8
Lithographic production – Introduction; planning layout – Information, type of work,
Preparing the layout; Imposition schemes; Book work – Margin calculations, Methods,
positive and negative assembly; Planning softwares

UNIT V   PLATE CHEMISTRY &PROCESSING  9
Base materials & properties – Aluminium, Stainless steel, Copper, Chromium, Nickel,
Poly masters and paper masters; Graining – types; Contact angle and wettability;
Anodisation – Process; Plate chemistry – dichromated colloids, diazo, and photopolymer
compounds, Thermal sensitive, Silver halide, Silver hybrid plates; Plate exposing unit;
Light source – Types – advantages, disadvantages, Platesetters, Plates for digital
imaging-, sensitivity, chemistry, mechanism of image formation and processing.
Processless plates. Desensitizing process, gum, developing inks, lacquers and
asphaltum, Quality Control Aids.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to
• Understand the pre-press workflow
• Learn typography, image acquisition and halftone screening methods
• Create imposition schemes for book work and other printed products
• Understand the plate chemistry and platemaking process

TEXTBOOKS:
1. A.L.Gatehouse and K.N.Roper, “Modern Film Planning and Platemaking”, 3rd

REFERENCES:
2. “Handbook of Modern Halftone Photography”, Perfect Graphic arts, Demarset,
U.S.A.
1998.
OBJECTIVE:
To impart knowledge on manufacturing processes, properties and testing of paper and board used for different printing processes and paper related problems in printing.

UNIT I RAW MATERIALS & PROCESSING 9

UNIT II PAPER AND BOARD MANUFACTURING 9
Paper making machines, Head boxes and inlets, Forming Section, Press and dryer section, wires, felts, automation; Calendering – types. Board manufacturing – cylinder machines.

UNIT III PAPER AND BOARD COATING & CLASSIFICATION 9
Paper and board coating – Pigments, binders and additives – Techniques; Main classes of paper and board; paper and board sizes; paper requirement for different printing processes; paper handling, de-Inking; recycling; end-use.

UNIT IV PAPER AND BOARD PROPERTIES 12
Structural – Formation, 2-sidedness, grain direction; Physical – GSM, caliper, bulk, porosity, smoothness, dimensional stability, curl, moisture content and relative humidity, Cobb tester, Optical -Gloss, brightness, colour, opacity; Chemical – pH, ash content; Mechanical – Tensile, burst, tear, internal bonding, fold endurance, stiffness, pick resistance, absorbency.

UNIT V PAPER PROBLEMS IN PRINTING 6
Fluff, hickey, picking, piling, slurring and doubling, curl, chalking set-off, mottle, poor ink drying, show through, strike through mis-register, static electricity, blistering, web break.

TOTAL: 45 PERIODS

OUTCOMES:
Learners should be able to:
- Get the fundamental knowledge on paper and board.
- Know about the various sources of paper and board, manufacturing processes, properties and testing of papers.
- Follow the standards used for testing of paper and board.
- Rectify the paper related problems in printing.

TEXT BOOKS:

REFERENCE BOOKS:
OBJECTIVE:
To impart knowledge on 8085 Microprocessor and 8051 Microcontroller and its applications. In addition the basic concepts and programming of 8085 Microprocessor and 8051 Microcontroller are introduced which are very much required in the emerging field of automation.

UNIT I 8085 MICROPROCESSOR

UNIT II TIMING DIAGRAM AND PROGRAMMING

UNIT III PERIPHERALS AND INTERFACING
Basic interfacing concepts-8255 Programmable Peripheral Interface- interfacing memory- Programmable Interval Timer 8253,USART-8251,key board/Display interface-8279

UNIT IV 8051 MICROCONTROLLER
Introduction- Architecture of 8051- Pin configuration- Ports- External Memory- counters and Timers- Serial and Parallel Data I/O- Interrupts – Assembly language programming

UNIT V APPLICATIONS USING INTEL 8085 AND 8051

TOTAL : 45 PERIODS

OUTCOMES:
• Upon completion of this course, the students will be able to understand the design, functioning and programming of microprocessors and other electrical and Electronics Circuits theoretically.

TEXT BOOKS:

REFERENCES:
OBJECTIVE:
- To introduce the fundamental knowledge in the types of packaging materials
- To impart knowledge in the selection of suitable material for various packaging applications.

UNIT I  PLASTICS
Polymers, Plastics in packaging – types, advantages; Flexible and Rigid packaging – Properties, applications; Thermoplastic Materials, Food grade plastics, Thermoset Materials – properties, processing methods, applications; Recycling; Biodegradable and Eco friendly packaging - Advantages and disadvantages.

UNIT II  WOOD, PAPER AND TEXTILE
Wood – Types, Materials, characteristic properties, application, Nature of wood, properties; Textile – Types of cloth, properties, application; Paper and Board – Types, Manufacturing, Properties, Specialty papers for Packaging, Folding board cartons and coated cartons, Corrugated Boards – Types, Applications, Specifications.

UNIT III  GLASS AND METALS
Glass – Types, Properties, use, Chemistry, coatings, defects and application areas; Metals – Tin, Steel, Aluminium – Cans, drums, sheet – Materials, properties, treatment, coatings, recycling process; Foil – Materials, characteristics, decoration, lamination and metallization methods.

UNIT IV  ANCILLARY MATERIALS
Label – types, materials, Label adhesives –Types, characteristic properties and uses; Collapsible tube – materials and properties. Closures and sealing – materials and properties; Cushioning Materials – properties and areas of application. Lacquers – properties, uses; Special additives for food grade films; Nano materials, Reinforcement – materials and properties.

UNIT V  MATERIAL TESTING
Mechanical – Tensile, Tear burst, impact; barrier properties, WVTR test, Adhesion test, Optical – Gloss, haze and clarity; Chemical Resistance test – solvents and chemicals, Migration test, Plastic material identification test, solvent retention; Hardness and corrosion test for metals; Clarity and brittleness test for glass.

TOTAL: 45 PERIODS

OUTCOMES:
Learners should be able to
- Get the fundamental knowledge of the materials used for packaging.
- Know the selection of suitable packaging material for various applications.
- Follow the standards used for testing of packaging materials.

TEXT BOOKS:
REFERENCE BOOKS:

PTPT8403 PRINTING INKS AND COATINGS

OBJECTIVES:
To study the raw materials, properties, manufacturing processes, testing, problems related to printing inks used for different printing processes and special inks.

UNIT I RAW MATERIALS
Colorants – Classification, preparation and properties; Inorganic – white and coloured, carbon black, metallic, ultramarine and fluorescent; organic - Diarylide yellow, Hansa yellow, Rhodamine, Lithol, Rubine; Dyestuffs and oils - Types, Preparation, Properties and uses; Resins – Natural Rosin and its derivatives and Gumarabic; Synthetic – Rosin modified fumaric, maleic and phenolic, Alkyds, hydro carbons, polyamides, Polyvinyl, Epoxy resins, Acrylic resins, Ethyl Cellulose and Nitro cellulose; Varnishes - types; Additives – Properties and applications – Driers, Waxes, Antioxidants, plasticizers, wetting agents, defoaming agents and Antiskinning agents.

UNIT II PRINTING INK FOR DIFFERENT PROCESSES

UNIT III INK TEST AND MEASUREMENTS

UNIT IV SPECIALITY INKS AND INK DRYING MECHANISMS
Water based inks; Ink jet printing inks; Radiation curable inks - IR, UV & EB – Raw materials, equipment used for drying; Security inks – Thermo chromic and Photo chromic; Ink drying mechanisms.

UNIT V COATINGS
Coating types - Oil based, water based, UV and EB coatings and nano emulsions, Roller coatings and Hybrid coatings - constituents, properties.

TOTAL: 45 PERIODS
OUTCOMES:
Learners should be able to
- Know the raw materials and properties used for the preparation of printing inks.
- Be familiar with the manufacturing process of inks.
- Follow the standards used for testing of printing inks.
- Rectify the problems related to printing inks on different printing process.
- Get adequate knowledge on special inks and different coating methods.

TEXT BOOKS:

REFERENCE BOOKS:
UNIT III INKING & DAMPENING SYSTEMS


UNIT IV DRYING, CHILLING, FOLDING AND SHEETING UNITS


UNIT V MAIL ROOM OPERATION

Products, sizes, formats, sections, Pagination, single/double/quadruple production, speed, time schedules, conveyor system, counter stackers, wrapping requirements, strapping requirements. Bundle addressing, system and control, online trimmers, copy counting mechanisms, Programming and Telescopic conveyor for truck loading, copy storage system, Inserting, Diverters & Kickers

TOTAL: 45 PERIODS

OUTCOMES:

At the end of the course, the student should be able to:

- Understand different configurations, components and mechanisms of a web offset machine
- Understand mailroom operations
- Understand issues related to runnability and printability

TEXT BOOKS:


REFERENCE BOOKS:

OBJECTIVE:
To impart knowledge and hands on training in 8085 processor and 8051 microcontroller to perform functions such as arithmetic operation and interfacing.

1. Study of 8085 Microprocessor and 8051 Microcontroller trainer kits and identifying the components.
2. 8085 and 8051 Assembly language programs
   i) Arithmetic operation ii) Ascending/descending order and finding largest/ smallest number in an array.
3. 8085 and 8051 Assembly Language Program for code conversion
   i) BCD to binary ii) binary to BCD
4. 8051 Assembly Language Program for timer operations.
5. Interfacing of 8 bit A/D and D/A converters using 8085 and 8051
6. Stepper motor interface using 8085 and 8051
   Display unit interface with 8085 and 8051

TOTAL: 45 PERIODS

OUTCOMES:
- Upon completion of this course, the students will be able to understand the design, functioning and programming of microprocessors and other electrical and Electronics Circuits practically.

OBJECTIVE:
To impart knowledge on application of electronic publishing in various areas, basic workflow followed in electronic publishing, softwares & tools needed and the emerging trends.

UNIT I INTRODUCTION

UNIT II PUBLISHING

UNIT III WORKFLOW
Authors, Publishers, e Publishing Companies; Workflow – Receiving Jobs (FTP), Pre-editing, Copy editing, Proof reading, Graphics, Pagination, Quality Control, Output – Print, Proof, Web, Handheld devices(file formats) ; Workflow softwares, Publishing Management System: Publication representation; Publication environments; Publication node structure; Version management; Content objects & processing objects; Publication naming; Information sharing Hypertext and its principle.
UNIT IV SOFTWARES & TOOLS
Conventional workflow, XML workflow, STM Typesetting softwares, Pagination softwares, Image manipulation softwares, Markup languages – fundamentals, Presentation technologies (HTML, CSS, WML, XSL/XSL-FO), Representation technologies (XML, DTD, W3C XML Schema), Transformation technologies (SAX, DOM, XSLT), Scripting languages (ASP, JS, Perl), Unicodes for non-English characters.

UNIT V EMERGING TRENDS
Future publishing Models, Digital Asset Management, Digital Rights Management, Business models in Internet, Marketing, Recent trends

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the students should be able to:
- Apply different layouts design for various digital gadgets.
- Choose proper software for web presentation and transformation language.
- Create and conceive different online publishing models.

TEXT BOOKS:

REFERENCE BOOKS:

PTPT8502 FLEXOGRAPHIC PRINTING

OBJECTIVE:
To introduce the basic principles of flexographic printing process, plate preparation & mounting methods, parts of a flexographic press and maintenance & quality control in flexo press.

UNIT I INTRODUCTION
Flexography – Basic principle, advantages, limitations, applications; Design considerations, screen angles, ink, substrates; Press types – stack, CI, inline, narrow web, wide web; Variations of press – coating, lamination, corrugated postprinting; environment & safety aspects
UNIT II    IMAGE CARRIER PREPARATION  
Moulded rubber plates; Photopolymer plates – Sheet photopolymer, liquid photopolymer, Direct Imaged Plates, Plate considerations – plate handling, storage, wrap distortion, Ink & solvent compatibility, quality.

UNIT III    MOUNTING AND PROOFING  
Plate mounting procedures, plate staggering, plate make ready; Manual Mounting, Video mounting, Sleeve mounting, Pin mounting, Proofing procedure.

UNIT IV    PRINTING PRESS  
Printing station – fountain rollers, anilox rollers, doctor blades, plate cylinders, impression rollers; Roll mechanics, unwind equipment, infeed, substrate treatment, web tension control, web guiding, inking systems, drying systems, cooling rolls, rewind equipment, web viewers, automatic viscosity controls.

UNIT V    QUALITY CONTROL  

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of the course, the student should be able to:
- Prepare artworks and plates for flexographic printing.
- Understand the variables in flexographic printing process.
- Troubleshoot print problems
- Implement quality control in flexographic printing workflow

TEXT BOOKS:

REFERENCE BOOKS:

PTPT8503    PACKAGING TECHNOLOGY  
L T P C  
3 0 0 3

OBJECTIVE:
- To understand the purpose of packaging design
- To study the different types of packaging process
- To understand the packaging testing methods
UNIT I INTRODUCTION
Need for packaging, functions of packaging-types and selection of package, packaging hazards, interaction of package and contents, shelf life-estimation, Packaging materials-selection criteria, Materials and machine interface, life cycle assessment

UNIT II PACKAGE DESIGN
Package design, Package specification types of design, structural, graphics, Factors influencing design, fundamentals of graphic layout design, Package colour-Selection criteria-applications, Types of load, unit load - safe stacking load, elements and principles of design, Structural design – cans, bottles, folding cartons, corrugated boxes, CAD applications

UNIT III MANUFACTURING PROCESS
Folding carton manufacturing – Cutting; creasing; die making-punching – Cartooning Machineries – types, flexible pouches forming machines, corrugated box manufacturing process, Rigid boxes manufacturing process, Drums – types, applications; Molded pulp containers: Three piece and two piece can; seam treatment types, Collapsible tubes, Flexible pouches forming machines; Metal foil packaging; bag making machinery-types; packaging line automation

UNIT IV SPECIALITY PACKAGING

UNIT V PACKAGE TESTING
Package Performance testing- test standards; drop test, inclined impact, Horizontal impact, vibration testing, stacking and compression test, corrugated board testing.

TOTAL: 45 PERIODS

OUTCOME:
- After completing the course, students will have theoretical knowledge about packaging materials, types and manufacturing process.

TEXT BOOKS:

REFERENCES BOOKS:
OBJECTIVE:
After this course the student should:
a. Understand the concepts of Scheduling and its importance in the printing Industry.
b. Should have complete knowledge of the various applications of inventory and project management with respect to the Printing Industry.

UNIT I
INTRODUCTION

UNIT II
SEQUENCING
Gantt chart, Algorithms for solving sequencing problems – Processing of N jobs through 2 machines, n jobs through 3 machines, n jobs on K machines, Assignments and transportation algorithms, Production Line Balancing

UNIT III
INVENTORY MANAGEMENT
Definition & purpose, Inventory classification, EOQ, Materials handling & Warehousing.

UNIT IV
MATERIALS & CAPACITY REQUIREMENT PLANNING
MRP, CRP–Concepts & applications, Aggregate planning & Master Scheduling, ERP–Concepts and systems.

UNIT V
NETWORK MODELS

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the students should be able to:
- Understand the operations of a printing press
- Apply various management concepts in managing a print establishment.
- Critically analyze the function of print organization and the print operations management concepts to solve management problems in a printing press.

TEXT BOOKS:

REFERENCE BOOK:
TEXT BOOKS:

REFERENCE BOOKS:

PTPT8601 DIGITAL PRE-PRESS AND PRINTING L T P C
3 0 0 3

OBJECTIVES:
Understand the principle of working of components of digital workflow

UNIT I IMAGE ACQUISITION 9

UNIT II DIGITAL WORKFLOW 9
Receiving jobs, Pre-flighting, Scanning, File formats, JDF, XML, AdsML, PDF. Electronic trapping and imposition software.

UNIT III DIGITAL PROOFING TECHNOLOGIES 9
Digital proofing – Need, Proofing technologies – Ink jet, Dye sublimation, Thermal Wax, Electro photography. Inks, Dyes, Toners, Quality and relative merits.

UNIT IV IMAGE SETTERS AND PLATE SETTERS 9
Imagesetter – Types – Capstan, internal, external and virtual drum, light sources, raster image processors, screening technologies. Platesetters – Flat bed, internal, external drum geometries, chemical, thermal plates, light sources.

UNIT V DIGITAL PRESSES 9
Direct imaging printing systems- once imageable, re-imageable masters, Comparison, inline finishing, applications, trends

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
• Process print jobs in digital workflow
• Preflight and produce proofs
• Create films and plates
• Print jobs in digital press

TEXT BOOKS:

REFERENCE BOOKS:

PTPT8602 FINANCIAL MANAGEMENT FOR PRINTING L T P C
3 0 0 3

OBJECTIVE:
To impart knowledge on
• Basic concepts of costing, pricing, estimating and investment analysis
• Estimating cost of printing materials and different processes for various print jobs

UNIT I COSTING AND PRICING 7
Costing systems - cost; profit; price; functions of costing; costing models; types of costing – marginal costing, job costing, budgeting costing; types of budgets; budgetary control; sales forecasts and budgets for printing and allied industries; relationship between cost control and budgetary control.

UNIT II ESTIMATING 7
Cost estimating, price estimating, estimator needs; procedure for selling, estimating, pricing and quoting for printing; estimating methods; production planning; computerized estimating.

UNIT III ESTIMATING PRINTING MATERIALS FOR PROCESSES 11
Paper- sheet and web; ink; toners; pre-press; machine printing – sheet-fed offset, web offset, flexography, gravure, screen printing, digital printing; post press; e-publishing.

UNIT IV COST ANALYSIS 11
Classification of cost; elements of cost; costing of direct materials; costing of machine operations; costing of manual operations; costing – typesetting, scanning, plate-making, printing, binding and finishing operations.
UNIT V INVESTMENT ANALYSIS

Time value of money, compound value, present value, annuities, pay back method, average rate of return and internal rate of return method; Depreciation, Return on Investment, Return On Capital Expenditure; Break even analysis – analysis, calculation of break even point, margin of safety, sensitivity analysis and profit graphs, Basics of Credit Management – AR, AP.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:

• Concepts on costing and pricing
• Knowledge on estimating the cost of different materials used in printing
• Calculate the composite machine hour rate (CMHR) for the machines used in printing
• Know the concepts on Investment analysis
• Knowledge on break even analysis and calculate breakeven point

TEXT BOOKS:

REFERENCE BOOKS:

PTPT8603 GRAVURE AND SCREEN PRINTING

OBJECTIVE:
To impart knowledge on

• The basic principles of Gravure printing process, cylinder preparation techniques & components of gravure printing unit.
• The basic principles of Screen printing process, stencil preparation methods & types of presses.
• Print problems & quality control in Gravure & screen printing process

UNIT I GRAVURE PROCESS AND IMAGE CARRIER PREPARATION

Process characteristics, cylinder construction – design, balancing, copper plating and polishing; reuse of cylinder; well formation; film positives; cylinder layout and film assembly; cross line screen, image carrier preparation techniques – diffusion etch
process, direct transfer process, electromechanical, laser and electron beam engraving process.

UNIT II GRAVURE PRINTING MACHINE

Doctor blade assembly – conventional, reverse angle, holder, loading, doctor and back-up blades; oscillation, positioning; impression rollers – types, loading, deflection; electrostatic assist impression system; inking system – types; dryer – types; Press design – types; in feed and out feed coating; lamination, inline solvent less lamination; inline converting operations; power transmission system.

UNIT III SCREEN PRINTING COMPONENTS

Process characteristics; essential components; Screen fabrics – types, fabric terminology, fabric selection; frames – types; fabric tension characteristics; tension measurement; squeegees – types, techniques, selection, maintenance and blade sharpening; substrates and inks; screen printed products.

UNIT IV STENCIL PREPARATION AND PRESSES

Stencil types – Direct stencil, indirect stencil, capillary film – stencil preparation; stencil selection; presses – graphic presses, textile presses, and container printing; dryers – types.

UNIT V PRINT PROBLEMS AND QUALITY CONTROL

Print problems and remedies; quality control aids; maintenance; health and safety issues; waste disposal and environmental safeguards.

TOTAL: 45 PERIODS

OUTCOMES:

At the end of the course, the student should be able to:

- Know the basic principles of gravure and screen printing
- Concepts on the image carrier preparation of gravure printing
- Prepare the image carrier for screen printing
- Knowledge on types of presses
- Knowledge on print problems and remedial measures in gravure and screen printing processes

TEXT BOOKS:


REFERENCE BOOKS:

OBJECTIVE:
To provide an overview of the printing machinery maintenance and maintenance management.

UNIT I MAINTENANCE MANAGEMENT PERSPECTIVE 9

UNIT II TOTAL PLANNED MAINTENANCE 9
System components, documentation, facility register, records, safety related issues. Spare parts management. Maintenance schedules and control system. Inspection and lubrication, purpose, lubricants, lubricating systems.

UNIT III TOTAL PRODUCTIVE MAINTENANCE 9

UNIT IV ERECTION AND TESTING 9
Foundation requirements, Condition based maintenance: Condition monitoring, Techniques, Vibration analysis, Thermography, Non destructive testing methods and diagnostic instruments.

UNIT V RECONDITIONING AND REPLACEMENT THEORY 9
Repairs and reconditioning methods for various parts, roller copperising, re-rubberizing. Replacement models - Replacement policy, replacement of items, Determination of average life.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:

- Understand the basic concepts of maintenance management
- Learn about the fundamentals of machine erection and testing
- Create a maintenance schedule based on criticality and economics
- Evaluate equipment effectiveness

TEXT BOOK

REFERENCE BOOKS
PTPT8702 SECURITY PRINTING  L  T  P  C
  3  0  0  3

OBJECTIVE
- To get an understanding of various security features, materials and methods involved in Security Printing.
- To know the appropriate Printing Techniques for different applications.

UNIT I INTRODUCTION

UNIT II INKS
Types of security printing inks, features - metal revealable, migrating, heat reactive, erasable, fugitive, copy-protection, thermal chromic, coin reactive, bleeding, pen reactive, irreversible, visible infrared, penetrating, chemical reactive and optically variable ink (OVI) Introduction, UV Curing, Photo chromic inks, Monochromic Inks, Invisible Phosphorescent inks, Water Resistant Inks.

UNIT III SECURITY SUBSTRATES
Security Fibres, Planchettes, Fluorescent Hilites, Iridescent coating, Security threads, Holographic foil, Colour centred paper, Chemical reactive, chemically void, toner fused paper, visible security fibers, invisible fluorescent fibers and other security papers.

UNIT IV SECURITY PRINTING TECHNOLOGY
Water marking – Digital Watermark -Holograms - UV-visible Printing, rainbow printing, micro lines, guilloches, numbering, Line-printing, stamp embossing, hot-foil-embossing, embossing / punching, customer - designed hologram, blind red printing, solvent colors, multi color UV-fluorescence stitching thread, holographic foil or lamination of a page, Principles of Bar coding, Types of Coding EAN 13 Code, Code 39 ACA etc

UNIT V APPLICATIONS

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
- Cognize the security features in printed products
- Develop security techniques as per the requirement
- Incorporate standards and specifications in security printing
TEXT BOOKS:

REFERENCES:
1. EIRI Board of Consultants and Engineers “Hand Book of Printing Technology” Engineers India Research Institute, New Delhi

PTPT8711 PROJECT WORK

OBJECTIVES:
- To develop the ability to solve a specific problem right from its identification and literature review till the successful solution of the same. To train the students in preparing project reports and to face reviews and viva voce examination.

A Project topic must be selected by the students in consultation with their guides. The aim of the project work is to deepen comprehension of principles by applying them to a new problem which may be the design and fabrication of a device for a specific application, a research project with a focus on an application needed by the industry/society, a computer project, a management project or a design project.

The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The project work is evaluated jointly by external and internal examiners constituted by the Head of the Department based on oral presentation and the project report.

OUTCOME:
- On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

PTGE8551 ENGINEERING ETHICS AND HUMAN VALUES

OBJECTIVES:
- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.
UNIT I  HUMAN VALUES

UNIT II  ENGINEERING ETHICS

UNIT III  ENGINEERING AS SOCIAL EXPERIMENTATION
Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law – The Challenger Case Study

UNIT IV  SAFETY, RESPONSIBILITIES AND RIGHTS

UNIT V  GLOBAL ISSUES

TOTAL: 45 PERIODS

OUTCOMES:
• Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society

TEXTBOOK

REFERENCES:

WEB SOURCES:
1. www.onlineethics.org
2. www.nspe.org
3. www.globalethics.org
4. www.ethics.org
OBJECTIVE:
To introduce the basic principles of group dynamics and associated concepts required for Human resource management in organizations

UNIT I  INDIVIDUAL BEHAVIOR  9

UNIT II  GROUP BEHAVIOR  9
Group Organization, Group Dynamics, Emergence of Informal Leader, Leadership Styles-theories, Group decision making, Inter personal Relations, Communication - Team.

UNIT III  DYNAMICS OF ORGANIZATIONAL BEHAVIOR  9
Organizational Climate, the Satisfactory – Organizational change – the Change Process & Change Management.

UNIT IV  HUMAN RESOURCES PLANNING  9
Requirements of Human Resources – HR audit, Recruitment-Selection-Interviews

UNIT V  HUMAN RESOURCES DEVELOPMENT  9

OUTCOMES:
• To understand the process of effective Human Resource Management.

TEXT BOOKS:

REFERENCES:

OBJECTIVES:
• To make the students acquire a sound knowledge in statistical techniques that model engineering problems.
• The Students will have a fundamental knowledge of the concepts of probability.

UNIT I  RANDOM VARIABLES  9+3
Discrete and Continuous random variables – Moments – Moment generating functions – Binomial, Poisson, Geometric, Uniform, Exponential, Gamma, Weibull and Normal distributions – Functions of a random variable

UNIT II TWO-DIMENSIONAL RANDOM VARIABLES 9+3
Joint distributions – Marginal and Conditional distributions – Covariance – Correlation and Linear regression – Transformation of random variables – Central limit theorem (for independent and identically distributed random variables).

UNIT III TESTS OF SIGNIFICANCE 9+3

UNIT IV DESIGN OF EXPERIMENT 9+3
Completely randomized design – Randomized block design – Latin square design - 22-factorial design - Taguchi’s robust parameter design.

UNIT V STATISTICAL QUALITY CONTROL 9+3
Control charts for measurements (X and R charts) – Control charts for attributes (p, c and np charts) – Tolerance limits - Acceptance sampling.

TOTAL: 60 PERIODS

OUTCOMES:
After successfully completing the course, students should be able to do the following:
- Use statistical methodology and tools in the engineering problem-solving process.
- Compute and interpret descriptive statistics using numerical and graphical techniques.
- Understand the basic concepts of probability, random variables, probability distribution, and joint probability distribution.
- Compute point estimation of parameters, explain sampling distributions, and understand the central limit theorem.

TEXT BOOKS:

PTME8073 ENERGY CONSERVATION IN INDUSTRIES 3 0 0 3
(Common to Mechanical and Industrial)

OBJECTIVES:
At the end of the course, the student is expected to
- understand and analyse the energy data of industries
- carryout energy accounting and balancing
- conduct energy audit and suggest methodologies for energy savings and
- utilisethe available resources in optimal ways

UNIT I INTRODUCTION 8

UNIT II  ELECTRICAL SYSTEMS  12

UNIT III  THERMAL SYSTEMS  12

UNIT IV  ENERGY CONSERVATION IN MAJOR UTILITIES  8
Pumps, Fans, Blowers, Compressed Air Systems, Refrigeration and Air Conditioning Systems – Cooling Towers – D.G. sets

UNIT V  ECONOMICS  5
Energy Economics – Discount Rate, Payback Period, Internal Rate of Return, Net Present Value, Life Cycle Costing –ESCO concept

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of this course, the students can able to analyse the energy data of industries.
- Can carry out energy accounting and balancing
- Can suggest methodologies for energy savings

TEXT BOOK:

REFERENCES:
OBJECTIVE:
- Study of this subject provides an understanding of the scope of an entrepreneur, key areas of development, financial assistance by the institutions, methods of taxation and tax benefits, etc.

UNIT I ENTREPRENEURSHIP

UNIT II MOTIVATION
Major Motives Influencing an Entrepreneur – Achievement Motivation Training, self Rating, Business Game, Thematic Apperception Test – Stress management, Entrepreneurship Development Programs – Need, Objectives.

UNIT III BUSINESS

UNIT IV FINANCING AND ACCOUNTING

UNIT V SUPPORT TO ENTREPRENEURS

TOTAL: 45 PERIODS

OUTCOMES:
- Upon completion of the course, students will be able to gain knowledge and skills needed to run a business successfully.

TEXT BOOKS:

REFERENCES:

PTME8075 RELIABILITY CONCEPTS IN ENGINEERING (Common to Mechanical and Printing) L T P C

OBJECTIVE:
- To impart knowledge in reliability concepts, reliability estimation methods and reliability improvement methods

UNIT I RELIABILITY CONCEPT 9
Reliability definition – Reliability parameters- f(t), F(t) and R(t) functions - Measures of central tendency – Bath tub curve – A priori and posteriori probabilities of failure – Component mortality - Useful life.

UNIT II LIFE DATA ANALYSIS 9

UNIT III RELIABILITY ESTIMATION 9
Series parallel configurations – Parallel redundancy – m/n system – Complex systems: RBD approach – Baye’s method – Minimal path and cut sets - Fault Tree analysis – Standby system.

UNIT IV RELIABILITY MANAGEMENT 8

UNIT V RELIABILITY IMPROVEMENT 10

TOTAL: 45 PERIODS

OUTCOMES:
- Upon successful completion of this course, the students can able to apply the concept for reliable component production

REFERENCES:

PTMF8075 NANOTECHNOLOGY L T P C
OBJECTIVES:
At the end of this course the students are expected to understand the general issues relating to nanotechnology and nanofabrication.

- Methods for production of Nanoparticles
- Characteristic techniques of Nanomaterials

UNIT I  INTRODUCTION TO NANOMATERIALS  9

UNIT II  SYNTHESIS OF NANOMATERIALS  12

UNIT III  CHARACTERISATION OF NANOMATERIALS  9

UNIT IV  APPLICATIONS OF NANOMATERIALS  9
Applications in Mechanical, Electronics engineering industries – Use of nanomaterials in automobiles, aerospace, defense and medical applications – Metallic, polymeric, organic and ceramic nanomaterials.

UNIT V  NANO FABRICATION AND MACHINING  9
LIGA, Ion beam etching, Molecular manufacturing techniques – Nano machining techniques – Top/Bottom up Nano fabrication techniques - Sub micron lithographic technique, conventional film growth technique, Chemical etching, Quantum materials.

TOTAL: 45 PERIODS

OUTCOME:
At the end of this course

- The student will be able to produce nanomaterials using various techniques
- Use this knowledge to characterize nanomaterials
- Use this knowledge to fabricate nano-scaled products

TEXT BOOKS:

REFERENCES:

PTMF8077 TOTAL PRODUCTIVE MAINTENANCE (Common to Manufacturing and Printing) L T P C

OBJECTIVE:
- To teach the students basic concepts of Total Productive Maintenance. Expose the students to the objectives, maintenance models, group activities, logistics, condition monitoring and implementation of Total Productive Maintenance.

UNIT I MAINTENANCE CONCEPTS
Introduction - Objectives and functions – Productivity, Quality, Reliability and Maintainability (PQRM) - Terotechnology – Reliability Centered Maintenance - Predictive Maintenance - Condition Based Maintenance – maintainability prediction – availability and system effectiveness- maintenance costs – maintenance organization.

UNIT II MAINTENANCE MODELS
Minimal repair – As Good As New policy – maintenance types – balancing PM and breakdown maintenance- PM schedules: deviations on both sides of target values – PM schedules: functional characteristics – replacement models.

UNIT III TOTAL PRODUCTIVE MAINTENANCE

UNIT IV MAINTENANCE LOGISTICS

UNIT V ONLINE MONITORING

TOTAL: 45 PERIODS

OUTCOMES
- Implementation the concept of total productive maintenance to the industries
- Effectively use the total productive maintenance for online monitoring of processes
TEXT BOOKS:

REFERENCES:

PTMG8651 TOTAL QUALITY MANAGEMENT L T P C
(Common to Manufacturing, Mechanical, Printing, Production, CSE, Industrial, ECE, IT,EEE, Industrial, Leather, Automobile) 3 0 0 3

AIM
To provide comprehensive knowledge about the principles, practices, tools and techniques of Total quality management.

OBJECTIVES
- To understand the various principles, practices of TQM to achieve quality.
- To learn the various statistical approaches for Quality control.
- To understand the TQM tools for continuous process improvement.
- To learn the importance of ISO and Quality systems

UNIT I INTRODUCTION

UNIT II TQM PRINCIPLES
Quality statements - Customer focus –Customer orientation, Customer satisfaction, Customer complaints, Customer retention - Continuous process improvement – PDCA cycle, 5s, Kaizen - Supplier partnership – Partnering, Supplier selection, Supplier Rating.

UNIT III TQM TOOLS & TECHNIQUES I

UNIT IV TQM TOOLS & TECHNIQUES II

UNIT V QUALITY SYSTEMS

TOTAL: 45 PERIODS

OUTCOMES:
- The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

TEXT BOOK:

REFERENCE BOOKS:

PTPT8001 ADVERTISING TECHNIQUES

OBJECTIVE:
To Enable the student to understand
a. The concepts of Advertising.
b. Role of the media
c. Advertising Production and Business in detail

UNIT I INTRODUCTION
Advertising concept, development and scope of advertising, economic and Social roles of advertising, legal aspects of advertising, major institutions Involved in advertising. Meaning of consumer behavior. How marketing firms use consumer behavior, characteristics of advertising communications, achieving desired responses, stimulating attention and facilitating retention, human needs as a basis for appeals. Role of printing presses in advertising.

UNIT II ADVERTISING PLANNING
Factors involved in advertising planning decision making, basis for advertising Objectives, Methods of Measuring Advertising Effectiveness.

UNIT III ADVERTISING MEDIA AND MEDIA PLANNING
Media concept, structure of media, media characteristics, publication media, TV and Ratio, direct mail and POP, out of home advertising. Media planning concept, media decision tools, media plan, media plan strategy, media buying and scheduling. Internet and Mobile Phone Advertising.
UNIT IV  ADVERTISING PRODUCTION  
Copy concept, copy structure, essentials of a copy, creative approaches and styles, copy testing criteria, types of copy testing, validity and reliability of copy test. Advertising design, layout, visualization, principles of advertising design, contribution of visual elements, what to picture, how to choose colour, test of a good layout, production of print advertising, production of TV/Radio commercials.

UNIT V  ADVERTISING BUSINESS AND COORDINATION  
Historical development, advertising agencies, special service groups. Coordination with personal selling and distribution channels, cooperative advertising and public relation, advertising and product management. Advertising campaign concept, planning and execution of campaign, evaluation of the campaign.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
- Able to understand the principle of advertising.
- Analyze the functionary of an advertising agency
- To use the advertising production knowledge to create advertisements
- Develop media planning solutions

TEXT BOOKS:

REFERENCE BOOKS:

PTPT8002  BOOK PUBLISHING  
L T P C  3 0 0 3

OBJECTIVE:
To impart knowledge on
- Areas of publishing, editorial process, production management, distribution methods and legal aspects involved in book publishing

UNIT I  PUBLISHING ORGANISATION  
Areas of publishing – general publishing, educational publishing, professional publishing and reference publishing; Publishing house – the role of commissioning editor, the desk editor, the designer, the production manager, the sales/marketing manager, the publishing manager.

UNIT II  EDITORIAL PROCESS AND DEVELOPMENT  
Copy editing, Page makeup, Proofs; the book editor – multipurpose functions; Discussion with author, editing educational material, decision making role; editorial technique – style sheet, reference aids; the author and his manuscript – unsolicited
manuscripts, author – publisher, professional guides and societies, the literary agency, 
author publisher relationship, writing textbooks for children

UNIT III PRODUCTION & ESTIMATING IN BOOK PUBLISHING 10
Pre-production planning, manuscript, layout & design, imposition, composition, anatomy 
of books; printing techniques; production process; technical aspects of production; 
Quality control – proofing stage; financial aspects; first copy cost, manufacturing cost, 
overheads; economics of publishing – net book, non-net book, variation in price, 
published price of the book

UNIT IV PROMOTION CHANNELS, DISTRIBUTION OUTLETS AND SALES 
TECHNIQUES 10
Direct promotion techniques, mail order advertising, subscription books, direct mail 
promotion, library purchases, export and import of books, publishers and booksellers 
catalogues, publicity campaign, paperback distribution, the central book clearing house, 
economics of distribution, the role of booksellers, book marketing council, book 
development council

UNIT V DIGITAL PUBLISHING AND LEGAL ASPECTS OF BOOK 
PUBLISHING 9
Software needs, manuscript formats and file management, editing tools, web design and 
publishing; copy right, types of agreement between author and publishers, agreement of 
sale of translation rights, illustration and artwork agreement, the outright sale of the 
copyright, profit sharing agreement, the royalty system, commission agreement.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the students should be able to:
• Understand the responsibilities and functions of publishing house.
• Cognize the author publisher relationship and editor’s functions.
• Ascertain book distribution and apprehend copyright & agreement.

TEXT BOOKS:
Delhi, 1988
1981

REFERENCE BOOKS:
Dubugue, Lowa, 1983
Industries Federation, 1984
OBJECTIVE:
To give an insight into the advanced concepts of Colour management & an overview of various color management workflows.

UNIT I  COLOUR MANAGEMENT  9
Need for colour management, device characteristics, closed and open loop colour control, Steps in CMS - calibration, characterization, conversion; International colour consortium – standards, profiles, profile types, profile structure, Color measurement, viewing conditions.

UNIT II  CREATION OF PROFILES  9
Test targets, Devices, Calibration and characterization of scanner, digital camera, monitor, Press and Proofer; Issues, Profiling softwares

UNIT III  CONVERSION  9
CMM, Gamut boundaries, Rendering Intent, Gamut mapping – influencing factors, algorithms

UNIT IV  WORKFLOW  9
Colour Management workflows – RGB workflow, CMYK workflow, embedded workflow, assumed workflow, Internet workflow, Soft proofing, Hardcopy proofing, Colour management in software applications (Photoshop), Operating System

UNIT V  ADVANCES IN COLOUR MANAGEMENT  9
Dynamic Device link profiles, Profile editing, profile quality, ECI, Colour appearance modeling, Case studies.

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of the course, the student should be able to:
- Create profiles for display, input and output devices.
- Apply appropriate color management settings in pre-press.
- Reproduce and match colour across various devices and software applications
- Understand advanced concepts in colour management

TEXT BOOKS:

REFERENCE BOOKS:
5. Phil Green, Lindsay MacDonald, “Colour Engineering”, John Wiley & Sons Ltd., 2002
OBJECTIVE:
To impart knowledge of basic communication system, noise, modulation, wave propagation, digital communication and working of transmitters and receivers.

UNIT I AMPLITUDE MODULATION: TRANSMISSION AND RECEIPTION 9
Principles of amplitude modulation - AM envelope, frequency spectrum and bandwidth, modulation index and percent modulation, AM power distribution, Low level AM modulator, medium power AM modulator, AM transmitters – Low level transmitters, high level transmitters, receiver parameters, AM reception – AM receivers – TRF, super heterodyne receiver, double conversion AM receivers.


UNIT II ANALOG AND PULSE MODULATION 9
Amplitude modulation – Modulation index – Frequency modulation – Phase modulation – DSB-SC, SSB, Vestigial side band. PAM, PWM, PPM, PCM.

UNIT III RADIATION AND PROPAGATION OF WAVES 9

UNIT IV DIGITAL COMMUNICATION 9

UNIT V COMMUNICATION SYSTEM 9
Radio communication – AM and FM transmitter and receiver – Microwave communications – Satellite communication – Fibre optic communication (block diagram representation). TDM and FDM, Cellular communication.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
- Understand the principle of electronic communication systems
- Identify components of a communication system

TEXT BOOKS:
REFERENCES:

PTPT8007 MASS COMMUNICATION L T P C
3 0 0 3

OBJECTIVE:
To enable the student to understand
- The concepts of verbal and non-verbal communication
- The concepts of journalism

UNIT I INTRODUCTION 9
Verbal and non-verbal communication, personal communication and mass communication, theories, principles and techniques of communication, history and role of mass media in society.

UNIT II NEWS REPORTING AND EDITING 9
Fundamentals of reporting, news gathering, evaluation, news writing & newsroom procedures, Depth reporting, Trend reporting, Investigative reporting, Economic and Science reporting, Preparation of news copy for publication, Copy reading, Rewriting, Proof reading, Page making, Typography, Picture editing.

UNIT III WRITING 9
Newspaper feature and magazine, non-fiction writing, writing editorials, analytical articles, reviews, columns, commentaries & analysis.

UNIT IV BROADCAST JOURNALISM 9
Gathering & reporting news for radio & television. The structure, functions and administration of a news and public affairs department in a broadcast station. Radio/TV station management.

UNIT V AUDIO-VISUAL COMMUNICATION 9
Audio-visual aids & techniques, use of non-projected and projected aids as black boards, Charts, Graphs, etc. Film appreciation, principles and techniques of various types of communication research.

TOTAL: 45 PERIODS

OUTCOME:
At the end of the course, the student should be able to:
- Understand the various aspects of News report
- Analyze the functionary of Radio and Television Media
- Use the various tools and techniques for audio visual communication.
TEXT BOOKS

REFERENCE BOOKS

PTPT8008 NEWSPAPER AND PERIODICAL PUBLISHING L T P C
3 0 0 3

OBJECTIVE:
This course provides a detailed knowledge on the operations of newspaper and magazine companies, including their organizational structure, management functions, editorial process, production workflows and the legal issues.

UNIT I NEWSPAPER ORGANISATION & MANAGEMENT
Organizational structure & functions - Owner, editorial organization, management, Incoming materials, financial aspects, Production, advertising, distribution and promotion. The role of copy editors, city editors, news editors, editorial cartoonist, artists, Sunday editor, sports editor, business editor, journalist & reports; editorial responsibilities.

UNIT II NEWS AND EDITING
Basic determinants of News; Impact, unusual and prominent; Additional determinants of news; Conflict, proximity, timeliness, currency, gathering the news, sources of news; Beat system, interviewing, wire services, syndicate, news writing, copy preparation, features & reviews, editorial and opinion column, sports, photo production; Editing - manuscript editing, creative and substantive editing, technical editing.

UNIT III PERIODICAL PUBLISHING
Types of magazines, Difference between writing for a magazine & newspaper, structure of a magazine’s editorial department & roles, Designing a layout for magazine, story design, page design, web design; Redesigning.

UNIT IV PRODUCTION & WORKFLOW
Manuscript from editorial organization: Layout & design, composition; Advertisements, Digital Newsroom, Archival of news; Press & web publishing workflows, RSS, Distributed production workflow; Press, Paper, Finishing; Off-prints and re-prints.
UNIT V  LEGAL ASPECTS

The press and the law libel, defence against libel, mitigation & damages, Digital Rights Management, Watermarking, Readership strategies & trends, Distribution model for newspapers & magazines, Future developments

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
- Knowledge on the operations of newspaper and magazine companies
- Know the organizational structure
- Concepts on news and editing
- Concepts on writing for a magazine and newspaper
- Knowledge on production and workflow of newspaper and magazine companies

TEXT BOOKS

REFERENCE BOOKS

PTPT8009 VISUAL COMMUNICATION

OBJECTIVE:
To enable the student to
a. Understand the Importance of Visual Communication
b. Understand the vehicles of visual communication and its analysis.
c. Understand the applications of visual communication

UNIT I  INTRODUCTION
Visual arts history from cave drawings to video painting, identifying and analyzing hidden languages in various media and cultures.
UNIT II PRINCIPLES OF VISUAL COMMUNICATION

UNIT III VISUAL ANALYSIS
Visual persuasion and propaganda, visual image analysis, stereotypes and the media, Ethics of visual story telling.

UNIT IV PRINCIPLES OF DESIGN
Balance, Emphasis, Simplicity, Repetition, Rhythm, Proportion, Unity, Variety, The application of design principles in creating visual images, Case studies.

UNIT V APPLICATION OF VISUAL COMMUNICATION
Overview of print, Photography, Video and Audio media, Study of techniques and methods of applying visual communication in newspapers, magazines, video, internet, advertising and public relations. Analysis of a visual event – film, TV, photo exhibit, advertisements, etc. Case studies

TOTAL: 45 PERIODS

OUTCOME:
At the end of the course, the student should be able to:
• Understand and apply the principles of visual communication to various media.
• Create Design using the various visual communication theories.
• Apply Visual Communications in day to day usage.

TEXT BOOKS:

REFERENCE BOOKS:
OBJECTIVE:
The students should be made to:
- Understand the basic concepts and nuances of 3D Printing Technology

UNIT I INTRODUCTION 9
Introduction; Design considerations – Material, Size, Resolution, Process; Modelling and viewing - 3D; Scanning; Model preparation – Digital; Slicing; Software; File formats

UNIT II PRINCIPLE 9

UNIT III INKJET TECHNOLOGY 9
Printer - Working Principle, Positioning System, Printhead, Printbed, Frames, Motion control; Printhead Considerations – Continuous Inkjet, Thermal Inkjet, Piezoelectric Drop-On-Demand; Material Formulation for jetting; Liquid based fabrication – Continuousjet, Multijet; Powder based fabrication – Colorjet;

UNIT IV LASER TECHNOLOGY 9
Light Sources – Types, Characteristics; Optics – Deflection, Modulation; Material feeding and flow – Liquid, powder; Printing machines – Types, Working Principle, Build Platform, Printbed Movement, Support structures;

UNIT V INDUSTRIAL APPLICATIONS 9
Product Models, manufacturing – Printed electronics, Biopolymers, Packaging, Healthcare, Food, Medical, Biotechnology, Displays; Opensource; Future trends:

OUTCOMES:
Upon completion of the course, the student should be able to:
- Learn 3D printing workflow
- Understand the basic types of 3D Printing, materials used and their applications
- Select appropriate method for designing and modeling applications

TEXT BOOK

REFERENCES
OBJECTIVE:
The students should be made to:
- Understand the basic concepts of managing digital content.

UNIT I    DIGITAL MEDIA 9
Overview of multimedia contents, Content acquisition & development, Product development & design- Designing Publications, Designing content Components, Digital Media Storage, Marketing (Circulation management, Single copy sales), Pricing, Distribution – crossmedia, file download security and sharing.

UNIT II    DIGITAL ASSET MANAGEMENT 9
DAM Components, Functions, Relationships with other systems, including ERP, DCM, ECM, DMM, WCM, CMS, CRM and DRM, Metadata, cataloguing, indexing and retrieval- standards for production and content description, Accounting for Authors, Accounting for Acquisition sources.

UNIT III    CONTENT PROTECTION TECHNIQUES 9
Encryption, steganography, watermarking, robustness and implementation, considerations, examples of media protection schemes, CCS, CGMS, HDCP, Type of contents, copyrights, patents, trade marks, trade secrets, licensing agreements, web posting policies, copyright and patent laws, fair uses, privacy regulations, piracy, DMCA, ISP obligations and liabilities.

UNIT IV    DIGITAL RIGHT MANAGEMENT 9
Digital right models, transactions, types of rights and licenses, DRM system architecture, content server, license server, secure platform. Digital Millennium Copyright Act

UNIT V    CURRENT ISSUES AND DEVELOPMENT 9
Copyright laws, balance between rights enforcement and fair uses, changing landscape in content distributions, recent enforcement cases. Security Applications-OS, Network, Web page, Online transactions.

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of the course, the student should be able to:
- Understand the principles of digital media dissemination and distribution process.
- Learn about Content Management System and intellectual property rights.

TEXTBOOKS:

RESOURCES:
OBJECTIVES:

- To provide students an exposure to disasters, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction.
- To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR).
- To enhance awareness of institutional processes in the country and
- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity.

UNIT I INTRODUCTION TO DISASTERS
Definition: Disaster, Hazard, Vulnerability, Resilience, Risks – Disasters: Types of disasters – Earthquake, Landslide, Flood, Drought, Fire etc - Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc.- Differential impacts- in terms of caste, class, gender, age, location, disability - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change- Dos and Don'ts during various types of Disasters.

UNIT II APPROACHES TO DISASTER RISK REDUCTION (DRR)
Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), States, Centre, and other stake-holders- Institutional Processess and Framework at State and Central Level- State Disaster Management Authority(SDMA) – Early Warning System – Advisories from Appropriate Agencies.

UNIT III INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT
Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc.- Climate Change Adaptation- IPCC Scenario and Scenarios in the context of India - Relevance of indigenous knowledge, appropriate technology and local resources.

UNIT IV DISASTER RISK MANAGEMENT IN INDIA
Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, Disaster Management Act and Policy - Other related policies, plans, programmes and legislation – Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.
UNIT V  DISASTER MANAGEMENT: APPLICATIONS AND CASE STUDIES
AND FIELD WORKS

Landslide Hazard Zonation: Case Studies, Earthquake Vulnerability Assessment of
Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal
Flooding: Storm Surge Assessment, Floods: Fluvial and Pluvial Flooding: Case Studies;
Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for
Disaster Mitigation and Management and field works related to disaster management.

TOTAL: 45 PERIODS

OUTCOMES:
The students will be able to

- Differentiate the types of disasters, causes and their impact on
  environment and society
- Assess vulnerability and various methods of risk reduction measures as
  well as mitigation.
- Draw the hazard and vulnerability profile of India, Scenarios in the Indian
  context, Disaster damage assessment and management.

TEXTBOOK:
2. Tushar Bhattacharya, “Disaster Science and Management”, McGraw Hill India
3. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk
   Management, NIDM, New Delhi, 2011

REFERENCES
1. Govt. of India: Disaster Management Act, Government of India, New Delhi, 2005

PTGE8072 HUMAN RIGHTS

OBJECTIVES:
- To sensitize the Engineering students to various aspects of Human Rights.

UNIT I

Human Rights – Meaning, origin and Development. Notion and classification of Rights –
Natural, Moral and Legal Rights. Civil and Political Rights, Economic, Social and
Cultural Rights; collective / Solidarity Rights.

UNIT II


UNIT III

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance.
UNIT IV
Human Rights in India – Constitutional Provisions / Guarantees.

UNIT V

TOTAL : 45 PERIODS

OUTCOME :
• Engineering students will acquire the basic knowledge of human rights.

REFERENCES: