

ANNA UNIVERSITY, CHENNAI 600 025

UNIVERSITY DEPARTMENTS

R - 2013

B. E. PRINTING TECHNOLOGY (PART TIME)

I - VII SEMESTERS CURRICULA AND SYLLABI

SEMESTER I

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
PTMA8151	Applied Mathematics	3	0	0	3
PTPH8102	Physics for Printing Technology	3	0	0	3
PTCY8102	Chemistry for Printing Technology	3	0	0	3
PTGE8153	Engineering Mechanics	3	0	0	3
PTGE8151	Computing Techniques	3	0	0	3
	TOTAL	15	0	0	15

SEMESTER II

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
PTCE8252	Strength of Materials	3	0	0	3
PTEC8251	Electronics Engineering	3	0	0	3
PTEE8252	Basic Electrical Engineering and Measurements	3	0	0	3
PTGE8251	Environmental Science and Engineering	3	0	0	3
PTMA8251	Numerical Methods	3	0	0	3
	TOTAL	15	0	0	15

SEMESTER III

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
PTME8251	Mechanics of Machines	3	0	0	3
PTPT8301	Colour Reproduction	3	0	0	3
PTPT8302	Digital Data Handling	3	0	0	3
PTPT8303	Imaging Technology	3	0	0	3
PTPT8304	Paper and Board	3	0	0	3
	TOTAL	15	0	0	15

SEMESTER IV

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
PTPT8401	Microprocessor and Microcontroller	3	0	0	3
PTPT8402	Packaging Materials	3	0	0	3
PTPT8403	Printing Inks and Coatings	3	0	0	3
PTPT8404	Web Offset Technology	3	0	0	3
PRACTICALS					
PTPT8411	Microprocessor and Microcontroller Laboratory	0	0	3	2
TOTAL		12	0	3	14

SEMESTER V

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
PTPT8501	Electronic Publishing	3	0	0	3
PTPT8502	Flexographic Printing	3	0	0	3
PTPT8503	Packaging Technology	3	0	0	3
PTPT8504	Print Operations Management	3	0	0	3
PTPT8505	Quality Control in Printing	3	0	0	3
TOTAL		15	0	0	15

SEMESTER VI

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
PTPT8601	Digital Pre-Press and Printing	3	0	0	3
PTPT8602	Financial Management for Printing	3	0	0	3
PTPT8603	Gravure And Screen Printing	3	0	0	3
	Elective – I	3	0	0	3
	Elective – II	3	0	0	3
TOTAL		15	0	0	15

SEMESTER VII

CODE NO	COURSE TITLE	L	T	P	C
THEORY					
PTPT8701	Printing Machinery Maintenance	3	0	0	3
PTPT8702	Security Printing	3	0	0	3
	Elective – III	3	0	0	3
PRACTICAL					
PTPT8711	Project Work	0	0	9	6
TOTAL		9	0	9	15

Total No. of credits: 104

ELECTIVES FOR B.E. PRINTING TECHNOLOGY

CODE NO.	COURSE TITLE	L	T	P	C
PTGE8551	Engineering Ethics and Human Values	3	0	0	3
PTIE8071	Human Resource Management	3	0	0	3
PTMA8252	Probability and Statistics	3	0	0	3
PTME8073	Energy Conservation in Industries	3	0	0	3
PTME8074	Entrepreneurship Development	3	0	0	3
PTME8075	Reliability Concepts in Engineering	3	0	0	3
PTMF8075	Nanotechnology	3	0	0	3
PTMF8077	Total Productive Maintenance	3	0	0	3
PTMG8651	Total Quality Management	3	0	0	3
PTPT8001	Advertising Techniques	3	0	0	3
PTPT8002	Book Publishing	3	0	0	3
PTPT8003	Colour Management	3	0	0	3
PTPT8004	Electronic Communication	3	0	0	3
PTPT8007	Mass Communication	3	0	0	3
PTPT8008	Newspaper and Periodical Publishing	3	0	0	3
PTPT8009	Visual Communication	3	0	0	3
PTPT8014	3D Printing	3	0	0	3
PTPT8015	Digital Media Management	3	0	0	3
PTGE8071	Disaster Management	3	0	0	3
PTGE8072	Human Rights	3	0	0	3

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**9**

Characteristic equation – Eigenvalues and Eigenvectors of a real matrix – Properties of eigenvalues and eigenvectors – Cayley-Hamilton Theorem – Diagonalization of matrices - Reduction of a quadratic form to canonical form by orthogonal transformation.

UNIT II FUNCTIONS OF SEVERAL VARIABLES**9**

Partial derivatives – Homogeneous functions and Euler's theorem – Total derivative – Differentiation of implicit functions – Change of variables – Jacobians – Partial differentiation of implicit functions – Taylor's series for functions of two variables - Maxima and minima of functions of two variables.

UNIT III ANALYTIC FUNCTION**9**

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**9**

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**9**

Existence conditions – Transforms of elementary functions – Basic properties – Transforms of derivatives and integrals – Inverse transforms – Convolution theorem – Transform of periodic functions – Application to solution of linear ordinary differential equations with constant coefficients.

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

- Grewal B.S., Higher Engineering Mathematics, Khanna Publishers, Forty Second Edition, Delhi, 2012.
- Ramana, B.V. Higher Engineering Mathematics" Tata McGraw Hill Publishing Company, 2008.

REFERENCES

1. Glyn James, Advanced Modern Engineering Mathematics, Prentice Hall of India, Fourth Edition, 2011.
2. Veerarajan, T., Engineering Mathematics (For First Year), Tata McGraw-Hill Pub. Pvt. Ltd., New Delhi, 2007.

PTPH8102

PHYSICS FOR PRINTING TECHNOLOGY

L T P C

3 0 0 3

OBJECTIVE:

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

UNIT I SURFACE TENSION 9

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 VISCOSITY 9

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 9

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 9

Analog and digital modulation - electro optic modulators - magneto optic devices - optical switching and logic devices. Photoluminescence, cathode luminescence, electroluminescence, injection luminescence - plasma displays - organic LEDs - liquid crystals and LCD construction and working - photo detectors - junction photodiode - barcode generation - barcode reader.

UNIT V OPTICAL IMAGE PROCESSING 9

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:

1. Gaur R.K., and Gupta, S.L., Engineering Physics, Dhanpat Raj Publications, 2003.
2. Arumugam, M., Engineering Physics, Anuradha Publications, 2000.
3. Jasprit Singh, "Opto Electronics – As Introduction to materials and devices", McGraw-Hill International Edition, 1998.

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

Polymers – Classification; Commodity – Polyethylene, Polypropylene, Polyvinyl chloride, Polystyrene; Engineering – Polyamide, Polyethylene Terephthalate, Polycarbonate, Acrylonitrile Butadiene styrene, Specialty – polyether ether ketone, Polyether sulfone, polyphenylene oxide – Preparation, Properties, uses. Foams – Polystyrene, Polyurethane, Polyolefins – Characterization, Development, Processing, Applications. **Composites** - Introduction- definition - constitution- classification- applications of composite materials- fiber reinforced composites- properties of reinforced composites.

UNIT IV ALLOYS AND PHYSICAL METALLURGY 9

Alloys: Introduction- Definition- Properties of Alloys- Significance of alloying, Functions and effect of alloying elements- Ferrous alloys: iron – carbon phase diagram – heat treatment of steel - significance of the phases and microstructures in imparting characteristic properties to steels, alloy steels; Non-ferrous alloys: Importance – brass, bronze, aluminium alloys, solders, nickel alloys. Physical metallurgy- powder metallurgy- preparation of metal powders (mechanical pulverization, atomization, chemical reduction, electrolytic process and decomposition)- mixed and blending – compacting- sintering- uses, advantages and limitations of powder metallurgy.

UNIT V INSTRUMENTAL METHODS AND ANALYSIS 9

Principle- instrumentation- block diagram-data analysis and applications of: X-Ray diffraction analysis, Microscopic analyses: Scanning Electron Microscopy, Tunneling Electron Microscopy, Scanning Tunneling Microscopy and Atomic Force Microscopy. Thermal methods: Differential Scanning Calorimetry, Thermo-gravimetric analysis, Differential thermal analysis. Chromatography – column chromatography, HPLC.

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:

1. Jain P.C. & Monica Jain., “Engineering Chemistry”, DhanpatRai Publishing Company (P) Ltd, New Delhi, 2010.
2. Kannan P., Ravikrishnan A., “Engineering Chemistry”, Sri Krishna Hitech Publishing Company Pvt. Ltd. Chennai, 2009

REFERENCES:

1. Pahari A., Chauhan B., “Engineering Chemistry”., Firewall Media., New Delhi., 2010.
2. Sivasankar B., “Engineering Chemistry”, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2008.
3. Vairam S., Kalyani P., Suba Ramesh., “Engineering Chemistry”, Wiley India Pvt Ltd., New Delhi.,2011.

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 STATICS OF PARTICLES 9

Introduction – Units and Dimensions – Laws of Mechanics – Lami’s theorem, Parallelogram and triangular Law of forces — Vectorial representation of forces – Vector operations of forces -additions, subtraction, dot product, cross product – Coplanar Forces – rectangular components – Equilibrium of a particle – Forces in space – Equilibrium of a particle in space – Equivalent systems of forces – Principle of transmissibility .

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

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 9

Generation and Classification of Computers- Basic Organization of a Computer – Number System – Binary – Decimal – Conversion – Problems. Need for logical analysis and thinking – Algorithm – Pseudo code – Flow Chart.

UNIT II C PROGRAMMING BASICS 9

Problem formulation – Problem Solving - Introduction to ‘C’ programming – fundamentals – structure of a ‘C’ program – compilation and linking processes – Constants, Variables – Data Types – Expressions using operators in ‘C’ – Managing Input and Output operations – Decision Making and Branching – Looping statements – solving simple scientific and statistical problems.

UNIT III ARRAYS AND STRINGS 9

Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays. String- String operations – String Arrays. Simple programs- sorting- searching – matrix operations.

UNIT IV FUNCTIONS AND POINTERS 9

Function – definition of function – Declaration of function – Pass by value – Pass by reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic – Pointers and arrays- Example Problems.

UNIT V STRUCTURES AND UNIONS 9

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:

1. Pradip Dey, Manas Ghosh, “Fundamentals of Computing and Programming in C”, First Edition, Oxford University Press, 2009
2. Ashok N. Kamthane, “Computer programming”, Pearson Education, 2007.
3. Yashavant P. Kanetkar. “ Let Us C”, BPB Publications, 2011.

OUTCOMES:

- ability to identify electronics components and use of them to design circuits.

TEXT BOOK:

1. Malvino, 'Electronic Principles', McGraw Book Co., 1993.

REFERENCES:

1. Grob. B and Schultz. M.E. 'Basic Electronics', Tata Mcgraw Hill, 2003.
2. Thomas L. Floyd, 'Electronics Devices', Pearson Education, 2002.
3. Thomas L. Floyd, 'Digital Fundamentals', Pearson Education, 2003.
4. Millman, Halkias Jacob, Jit Christos and Satyabrata, 'Electronic devices and Circuits', Tata McGraw Hill, 2nd Edition.

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**9**

Ohms Law – Kirchoff's Law-Steady state solution of DC circuits – introduction to AC circuits – waveforms and RMS value – Power and power factor- Three phase balanced and unbalanced circuits-Three phase Power measurement.

UNIT II ELECTRICAL MACHINES**9**

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**9**

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**9**

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

1. Del Toro 'Electrical Engineering Fundamentals' Pearson Education, New Delhi, 2007.
2. V.K Mehta and Rohit Mehta ' Principle of Electrical Engineering' S Chand & Company,2008
3. Alan S. Moris, Principles of Measurements and Instruments, Printice-Hall of India Pvt. Ltd., New Delhi, 1999.
4. Smarjit Ghosh 'Fundamentals of Electrical and Electronics Engineering, Second Edition 2007

REFERENCES

1. Rajendra Prasad 'Fundamentals of Electrical engineering' Prentice Hall of India, 2006.
2. Thereja .B.L 'Fundamentals of Electrical Engineering and Electronics' S chand & Co Ltd, 2008.
3. Sanjeev Sharma 'basics of Electrical Engineering' S.K International Publishers, New Delhi 2007.
4. John Bird, Electrical Circuits theory and Technology, Elsevier, First India Edition, 2006.
5. Doebeling, E.O., Measurements Systems – Application and Design', McGrawHill Publishing Co, 1990.

PTGE8251 ENVIRONMENTAL SCIENCE AND ENGINEERING L T 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 14

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 8

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 10

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 7

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization- environmental ethics: Issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air (Prevention and Control of Pollution) act – Water (Prevention and control of Pollution) act – Wildlife protection act – Forest conservation act – enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT 6

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health – Case studies.

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:

1. Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education (2004).
2. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, (2006).

REFERENCE BOOKS:

1. R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media.
2. Cunningham, W.P. Cooper, T.H. Gorhani, 'Environmental Encyclopedia', Jaico Publ., House, Mumbai, 2001.
3. Dharmendra S. Sengar, 'Environmental law', Prentice hall of India PVT LTD, New Delhi, 2007.
4. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press (2005)

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

Solution of algebraic and transcendental equations - Fixed point iteration method – Newton-Raphson method- Solution of linear system of equations - Gauss Elimination method – Pivoting - Gauss-Jordan methods – Iterative methods of Gauss-Jacobi and Gauss-Seidel - Matrix Inversion by Gauss-Jordan method - Eigenvalues of a matrix by Power method and by Jacobi's method.

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
Approximation of derivatives using interpolation polynomials - Numerical integration using Trapezoidal, Simpson's 1/3 and Simpson's 3/8 rules - Romberg's method - Two point and three point Gaussian quadrature formulae - Evaluation of double integrals by Trapezoidal and Simpson's rules.

UNIT IV INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS 9
Single step-methods - Taylor's series method - Euler's method - Modified Euler's method - Fourth order Runge-Kutta method for solving first and second order equations - Multi-step methods - Milne's and Adams-Bashforth predictor-corrector methods for solving first order equations.

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:

1. Grewal, B.S. and Grewal, J.S., "Numerical methods in Engineering and Science", Khanna Publishers, New Delhi, 9th Edition, 2007.
2. Sankara Rao, K. "Numerical methods for Scientists and Engineers", Prentice Hall of India Private Ltd., New Delhi, 3rd Edition, 2007.

REFERENCES:

1. Brian Bradie, "A Friendly Introduction to Numerical Analysis", Pearson Education Asia, New Delhi, 1st Edition, 2007.
2. Gerald, C.F. and Wheatley, P.O., "Applied Numerical Analysis", Pearson Education Asia, New Delhi, 6th Edition, 2006.
3. Laurene V. Fausett, "Applied Numerical Analysis using MATLAB", Pearson Education, New Delhi, 1st print, 2nd Edition, 2009.

7. Ghosh A. and Mallick A.K., "Theory of Mechanisms and Machines', Affiliated East-West Pvt. Ltd., New Delhi, 1988.
8. Rao J.S. and Dukkupati R.V. "Mechanisms and Machine Theory", Wiley-Eastern Ltd., New Delhi, 1992.
9. Hannah J. and Stephens R.C., "Mechanics of Machines", Viva Low-Prices Student Edition, 1999.
10. Grover. G.T., "Mechanical Vibrations", Nem Chand and Bros., 1996
11. Thomson W.T., Dahleh M.D. and Padmanabhan C., "Theory of Vibration with Application", 5th edition Pearson Education, 2011
12. V.Ramamurthi, "Mechanics of Machines", Narosa Publishing House, 2002.
13. Khurmi. R.S., "Theory of Machines", 14th Edition, S Chand Publications.

STANDARDS:

- IS 2458: 2001, Vocabulary of Gear Terms – Definitions related to Geometry.
 IS 3756:2002, Method of Gear Correction – Addendum modification for External cylindrical gears with parallel axes.
 IS 5267: 2002 Vocabulary of Gear Terms – Definitions Related to Worm Gear Geometry.
 IS 12328: Part 1: 1988 Bevel Gear Systems Part – 1 Straight Bevel Gears.
 IS 12328: 1988 Bevel Systems Part – 2 Spiral Bevel Gears.

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

Substrate – Whiteness, Brightness, Fluorescence, Gloss, Smoothness, Texture, Absorptivity; Ink – Pigment colour, transparency, opacity, masstone, undertone; Optics of ink film - first surface reflection, multiple internal reflections. Additivity and Proportionality rules; Light Source, colour filters, photographic emulsion.

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

Colour Management – Need, Open loop, Closed loop, Calibration, Characterization, Conversion, ICC, Profiles, Rendering intent, Gamut mapping. Device link and Dynamic device link profiles, Colour Servers, Digital proofing – Need & issues, Soft proofing, Remote proofing.

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:

1. Gary Field, "Color and its Reproduction", 3rd edition, GATF Press, 2004
2. Abhay Sharma, "Understanding Colour Management", Thomson Delmar, 2004

REFERENCE BOOKS:

1. Phil Green, "Understanding Digital Color", 2nd edition, GATF Press, 1999
2. R. W. G. Hunt, "The Reproduction of Colour", 6th Edition, Wiley, 2004.
3. Berns R S, "Billmeyer & Saltzman 's Principle of Colour Technology", 3rd Edition, Wiley, 2000
4. J.Michael Adams David, Fauz, Llyod, J.Rieber, "Printing Technology", 3rd Edition, Delmar Publishers, 1988.
5. John A.C. Yule, "Principles of colour reproduction applied to photomechanical reproduction, Colour photography and ink, paper and other related industries", John Wiley & Sons, U.K., 2001

**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 9

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 9

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 9

Security in Operating Systems, Principles of Network Security, Cryptography, Fire walls, Intrusion Detection Systems, Secure Email, Digital Rights Management

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

1. Abraham Silberschatz, Henry F. Korth, S.Sudharshan, “Database System Concepts”, Fourth Edition, Tata McGraw Hill, 2002
2. Phil Green, “Understanding Digital Color”, 2nd edition, GATF Press, 1999.

REFERENCE BOOKS:

1. Mani Subramanian, “ Network Management: Principles & Practice”, Addison Wesley, 1999
2. Sanjiv Purba, “Handbook of Data Management”, Viva Books Private Ltd., 1999
3. Douglas E. Comer, “Computer Networks & Internets”, 2nd Edition, Pearson Publications, 1999
4. Larry L. Pearson, Bruce S. Davie, “Computer Networks: A Systems Approach”, Third Edition, Morgan Kauffman Publishers Inc., 2003
5. Abraham Silberschatz, Henry F. Korth, S.Sudharshan, “Database System Concepts”, Fourth Edition, Tata McGraw Hill, 2002
6. Charles B. Pfleeger, Shari Lawrence Pfleeger, “Security in Computing”, Third Edition, Pearson Education, 2003
7. Helmut Kipphan, “Handbook of Print Media”, Springer Verlag, 2001

PTPT8303

IMAGING TECHNOLOGY

L T P C

3 0 0 3

OBJECTIVE:

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

UNIT I INTRODUCTION TO TEXT COMPOSING 9

Printer’s measurement system. Type series, Family, Typographic Parameters. Copy mark- up, Casting off, Copy editing. Proof reading marks. House style, Text composing techniques: Electrical & electronic typewriters, Word Processors. Founts – outline, truetype, opentype, Postscript; Early phototypesetters.

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 Edition, SITA Limited, 1990.
2. J. Michael Adams, David Faux and Loyds J. Reiber, “Printing Technology”, 3rd Edn. Delmar Pub, 1988.

REFERENCES:

1. Helmut Kipphan, “Handbook of Print Media”, 2001
2. “Handbook of Modern Halftone Photography”, Perfect Graphic arts, Demarset, U.S.A.
3. Phil Green, “Understanding digital colour”, Blueprint, 1995
4. David Bergsland, “Printing in a digital world”, Delmar Publishers 1997.
5. Frank Cost, “Pocket guide to digital Printing”, Delmar Publishers, 1997.
6. T.E. Schildgen, “Pocket guide to colour with digital application”, Delmar Publishers. 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

Sources, Kinds of cellulose fibres, De-barking, Pulping – Mechanical, Thermo-mechanical and Chemical processes – Bleaching techniques – Stock preparation – Beating & refining – Fillers, Sizing, Dyeing – Non-fibrous additives and consistency.

UNIT II PAPER AND BOARD MANUFACTURING 9

Paper making machines, Head boxes and inlets, Forming Section, Press and dryer section, wires, felts, automation; Calendaring – 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:

1. Lawrence H.Wilson, "What the printer should know about paper", GATF Press, Third Edition, 2000.
2. Lothar Gottsching & Heikki Pakarinen, "Paper making Science and Technology", Book-7, Fapet OY Publishing, 2000.

REFERENCE BOOKS:

1. Bob Thompson, "Printing materials Science and Technology", Pira International Publications 2nd edition, 2004.
2. Herbert Holik, "Handbook of Paper and Board", Wiley – VCH, 2006.
3. Charles Finley, "Printing Paper and Ink", Delmar Publisher, 1997.
4. John Christopher Roberts, "Paper Chemistry", Springer – 1996
5. Christopher J. Biermann, "Handbook of Pulping and Papermaking", 1996.

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 9
Introduction-Architecture of 8085-Pin Configuration-Addressing Modes-Instruction set.

UNIT II TIMING DIAGRAM AND PROGRAMMING 9
Instruction cycle-machine cycle-T states and Timing diagram of 8085- Calculation of instruction cycle timings- Assembly Language Programming using 8085 instructions.

UNIT III PERIPHERALS AND INTERFACING 9
Basic interfacing concepts-8255 Programmable Peripheral Interface- interfacing memory- Programmable Interval Timer 8253,USART-8251,key board/Display interface-8279

UNIT IV 8051 MICROCONTROLLER 9
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 9
A/D and D/A Converters Interfacing.Temperature Control- Stepper Motor Control- Traffic Light Controller. Measurement and speed control of DC motor.

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:

1. Ramesh Gaonkar, "Microprocessor Architecture, Programming and Applications with 8085", Wiley Eastern, 1998.
2. Kenneth J.Ayala, "The 8051 Microcontroller, Architecture, Programming and applications",Thomson Delmar Learning, Indian Edition, 2007.

REFERENCES:

1. M.A. Mazidi and J.C. Mazidi, "The 8051 Microcontroller and Embedded systems", Pearson Education, 2006.
2. Douclas V.Hall, "Microprocessors and Interfacing, Programming and Hardware", Tata McGraw Hill, 1999.
3. L.A. Levental, Introduction to microprocessors Software and Hardware Programming", Prentice Hall Inc, 1978.
4. Aditya, P.Mathur, "Introduction to Microprocessors Software", Tata McGraw Hill, 1983
5. P.K.Ghosh and P.R.Sridhar, "Introduction to Microprocessors for Engineers and Scientists", Prentice Hall of India, 2001.

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 9

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 9

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 9

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 9

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 9

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:

1. Walter Soroka, Fundamentals of Packaging Technology, Institute of packaging professionals, Fourth Edition, 2009
2. S. Natarajan. M. Govindarajan, and B. Kumar “Fundamental of Packaging Technology” PHI, New Delhi, 2009

REFERENCE BOOKS:

1. A.S.Athayle, "Handbook of Packaging Plastics", Multi-tech Publishing Co., First Edition, 1999.
2. Aaron L. Brody & Kenneth S. Marsh, "Encyclopedia of Packaging Technology",
3. John Wiley Interscience Publication, II Edition, 1997.
3. Gunilla Johnson, "Corrugated Board Packaging", PIRA International, 1993.
4. Arthur Hirsch, "Flexible Food Packaging", Van Nostor and Reinhold, 1991.
5. A.S.Athayle, "Plastics in Flexible Packaging", Multi-tech Publishing Co., First Edition, 1992.

PTPT8403**PRINTING INKS AND COATINGS****L T P C
3 0 0 3****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**9**

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 INKS FOR DIFFERENT PROCESSES**9**

Offset Inks – Pigments, Resins, Vehicles, Plasticizers, Additives, Ink dispersion, Ink rheology and variables; Inks for sheet and web – Book printing, package printing, publication printing; Flexography Inks – colorants, pigments and dyes, selection criteria, Ink vehicle and its properties, resin types and selection criteria, Additives, Ink rheology, Inks for paper, plastics and foil; Gravure Inks – colorants, Vehicles, solvents, Ink additives, Publication gravure inks, Packaging and product inks, rheology; Manufacturing methods – Paste inks, Liquid inks, premixing, Flowchart - Ball mill, Bead mill and Triple roll mill.

UNIT III INK TEST AND MEASUREMENTS**9**

Viscosity, Tack, Colour, Gloss, Rub resistance, Length, Drying Characteristic, and Fineness of grind gauge, light fastness, Standards on environmental concerns, end use applications, Ink problems related to printing processes – Trouble shooting.

UNIT IV SPECIALITY INKS AND INK DRYING MECHANISMS**9**

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**9**

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:

1. R.H.Leach, "The Printing Ink Manual", 5th Edn., Chapman & Hall, London, 2002.
2. Philip Ruxton, "Printing Inks: Their Composition, Properties and Manufacture", General Books, 2010.

REFERENCE BOOKS:

1. Cliffwoof, "A Manual for Flexographic Inks", Fishburn Printing Ink Co.Ltd., Watford.
2. Charles Finley, "Printing Paper and Ink", Delmar Publishers, 1997.
3. Nelson R.Eldred, "What the Printer should Know about inks", 3rd Edition GATF Press, 2001.
4. Bob Thompson, "Printing materials Science and Technology", 2nd edition, 2004.
5. Arthur A. Tracton, "Coatings technology handbook", Taylor & Francis, 2005.
6. Ronald E.Tood, "Printing Inks – Formulation, Principles, Manufacture and Quality Control Testing", PIRA International 1996.

PTPT8404

WEB OFFSET TECHNOLOGY

L T P C
3 0 0 3

OBJECTIVE:

To understand the reel feeding mechanisms, web tension controls, dampening and inking systems, registering mechanisms and settings involved in a web offset printing machine.

UNIT I PRESS CLASSIFICATION AND INFEED UNITS 12

Development, Classification – blanket-to-blanket, in-line, common impression; Job suitability and factors to be considered for selection, presses – Full size, narrow web presses and continuous stationery; Roll stands; Automatic pasters – Zero speed and Flying pasters; Web pre-conditioners, infeed units, dancing roller types, design, tension control systems. Reel handling and storage; Requirements of paper-roll and web.

UNIT II PRINTING UNIT 10

Printing Unit – plate cylinder, blanket cylinder, lock-up mechanisms, cylinder pressure and timing, unit configuration, webbing up options; Automatic webbing up device, control of fan out using buzzle wheels and air guns; web aligner concepts; Web break detectors & Severers; Cylinder drives; Circumferential and lateral movement of plate cylinder; Automatic register control system, concepts and design; Shaft less drives, automation in closed loop controls.

PTPT8411	MICROPROCESSOR AND MICROCONTROLLER LABORATORY	L T P C 0 0 3 2
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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.

PTPT8501	ELECTRONIC PUBLISHING	L T P C 3 0 0 3
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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 9

Internet, WWW, Web2.0, Broadband, Print On-demand, e Book, eJournals, eNewspaper, internet advertising, Digital libraries, eReaders – elnk, Epaper, Electronic Publishing- Advantages, Issues.

UNIT II PUBLISHING 9

Areas of publishing – Legal, STM, Book Publishing – Manuscript, Anatomy of a book, Layout & Design, Journal Publishing – Layout & Design, Web Publishing – Layout & Design, Accessibility, usability, standards, Publishing on Handheld devices – Layout & Design , - Reference database – PUBMED etc. Index – author, volume, keyword.

UNIT III WORKFLOW 9

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 II IMAGE CARRIER PREPARATION 9

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 9

Plate mounting procedures, plate staggering, plate make ready; Manual Mounting, Video mounting, Sleeve mounting, Pin mounting, Proofing procedure.

UNIT IV PRINTING PRESS 9

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 9

Pressroom Practices, Press Characterization, Flexo QC targets, press optimization Troubleshooting, Case studies.

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:

1. "Flexography : Principles & Practices", 5th Edition, FTA, 2000.
2. "FIRST: Flexographic Image Reproduction Specifications & Tolerances", 3rd Edition, FTA, 2003.

REFERENCE BOOKS:

1. Frederick R.Boyle, "The Flexo Environment", Foundation of Flexographic Technical Association, 2002.
2. Anthony White, "High Quality Flexography", Pira reviews of Printing, Pira International, 1992.
3. Donna C.Mulvihill, "Flexography Primer", GATF Press, 1991.
4. Helmut Kipphan, "Handbook of Print Media", Springer Verlag, 2001
5. J.Michael Adams David, Fauz, Llyod, J.Rieber, "Printing Technology", 3rd Edition, Delmar Publishers, 1988

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 6

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 8

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 12

Folding carton manufacturing – Cutting; creasing; die making-punching – Cartoning 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 12

Aerosol packaging, blister packaging, anti-static packaging, Aseptic packaging, Child resistant packages - closures, Modified Atmospheric Packaging (MAP), Vacuum Packaging, Retort packaging, Food packaging - Advancement and developments in packaging; RFID in packaging, Eco-friendly packaging, Export packaging, Labels – Types, functions; Closures – application and types; Cushion Packaging – Need, types, Design Requirements; Wooden Packaging – Types, Requirements.

UNIT V PACKAGE TESTING 7

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:

1. Walter Soroka, Fundamentals of Packaging Technology, Institute of packaging professionals, Fourth Edition, 2009
2. Bill Stewart, "Packaging Design Strategies", Pira International Ltd, 2nd Edition 2004.

REFERENCES BOOKS:

1. Aaron L.Brody & Kenneth S.Marsh, "Encyclopedia of Packaging Technology",
2. John Wiley Interscience Publication, II Edition, 1997.
3. Walter Stern, "Handbook of Package Design Research", Wiley Interscience, 1981.
4. Paine, "Packaging Development", PIRA International, 1990.
5. Arthur Hirsch, "Flexible Food Packaging", Van Nostor and Reinhold, New York, 1991.
6. E.P.Danger, "Selecting Colour for Packaging", Grover Technical Press, 1987.
7. Susan E.M.Selke & et al, Plastics Packaging, Hansar, 2nd edition 2004.
8. S. Natarajan. M. Govindarajan, and B. Kumar "Fundamental of Packaging Technology" PHI, New Delhi, 2009

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 11

Organization Structure – Sole Proprietor, Partnership, Limited Company, Administrative office routine, Forms used, Processing orders; Facility location decision making – Economic analysis – Qualitative factor Analysis – Layout of the factory – Analysis & selection; Human Factors - Consideration O' man & machine job-design, Ergonomics – Working Working environment – Worker safety.

UNIT II SEQUENCING 11

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 8

Definition & purpose, Inventory classification, EOQ, Materials handling & Warehousing.

UNIT IV MATERIALS & CAPACITY REQUIREMENT PLANNING 6

MRP, CRP–Concepts & applications, Aggregate planning & Master Scheduling, ERP– Concepts and systems.

UNIT V NETWORK MODELS 9

Introduction, PERT & CPM models, Network construction, Problems, Resource analysis & allocation, Replacement analysis, Application & case studies.

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:

1. N.D.Vohra, "Quantitative techniques in management", Tata McGraw Hill Publishing Co.Ltd., 2003.
2. Joseph G.Monks, "Operations Management – Theory and Problems", Mc Graw Hill International Ltd., 2003.

REFERENCE BOOK:

1. U.K.Srivastava, G.V.Shenory & S.C.Sharma, "Quantitative techniques for Managerial decisions", New Age international (P) Ltd., Publishers – Formerly Wiley Eastern Ltd., 2001.

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TEXT BOOKS:

1. Miles Southworth & Donna Southworth, "Quality and Productivity in the Graphic Arts", Graphic Arts Publishing Company, 1990
2. Douglas C. Montgomery, "Introduction to Statistical Quality Control", John Wiley, 1985.

REFERENCE BOOKS:

1. Brian Rothery, ISO 9000, "Productivity & Quality", Publishing Private Ltd., 1992
2. Kelvin Tritton, "Colour Control for Lithography", PIRA International, 1992
3. Mortimer, A., "Colour Reproduction in Printing Industry", PIRA International, 1991.
4. Ken Holmes, "Implementing ISO 9000", 2nd edition, PIRA International, 1995
5. Phil Green, "Quality Control for Print Buyers", Blue Print, 1992.
6. Ronald E. Todd, "Printing Inks – Formulation Principles, Manufacture and Quality Control Testing Procedures", PIRA International, 1994.
7. Apfelberg, H.L., Apfelberg, M.J., "Implementing Quality Management in Graphic Arts", GATF, 1995.

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

Scanner types – Drum, flatbed. Dynamic range, Resolution, Storage, File formats. Digital Camera – Principles, mechanisms, types, resolution, memory.

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

UNIT V INVESTMENT ANALYSIS**9**

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:

1. Hugh Speirs, "Print Estimator's Handbook", 2nd edition, Pira International Ltd., 2004
2. Prasanna Chandra, Financial Management, Theory and Practice, Tata McGraw Hill, New Delhi, 6th Ed. 2004.

REFERENCE BOOKS:

1. "Cost Accounting for Printers", Part I and Part II, British Printing Industries Federation, 1982
2. K. S. Venkataraman and K. S. Balaraman, "Estimating Methods and Cost Analysis for Printers", Ramya Features and Publications, 1987
3. Dipl.-Ing. B. D. Mendiratta, "Printer's Costing and Estimating", Printing India Publications Pvt. Ltd., 1999.
4. Hugh M. Speirs, "Print Estimators – The Handbook", BPIF, 1996.
5. N. D. Vohra, "Quantitative Techniques in Management", Tata McGraw Hill
6. Publishing Company Limited, 1990
7. James C. Van Hrone & John M. Wachowicz Ja, Fundamentals of Financial management, Prentice Hall India Pvt. Ltd., Eastern Economy Edition, New Delhi 2004, 11th Edition.

PTPT8603**GRAVURE AND SCREEN PRINTING****L T P C
3 0 0 3****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**12**

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 10

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 7

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 9

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 7

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:

1. “Gravure: Process and Technology”, Gravure Education Foundation, 2003
2. Kaj Johansson, Peter Lundberg, Robert Ruberg, “A Guide to Graphic Print Production”, Wiley, 2002

REFERENCE BOOKS:

1. Harry B. Smith, “Modern Gravure Technology”, Pira reviews of Printing, Pira International, 1994
2. Samuel B. Hoff, “Screen Printing – A Contemporary Approach”, Delmar Publishers, 1997.
3. Ingram, Samuel, “Screen Printing Primer”, GATF press, 2nd Edition, 1999.
4. William Appleton, “Screen Printing”, PIRA International, 1994.
5. NIIR Board, “Screen Printing Technology Handbook”, Asia Pacific Business Press Inc., 2004

OBJECTIVE:

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

UNIT I MAINTENANCE MANAGEMENT PERSPECTIVE 9

Objectives and functions, Problems and challenges, Organisation, Maintenance methods, Criticality determination, Categorization, Economic aspects of maintenance. Emerging trends.

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

Six big losses, measuring the losses. Evaluating equipment effectiveness. Prepress maintenance, Press maintenance, Printing and allied equipment maintenance. Electrical components maintenance: Motors, Electric brakes. Mechanical components maintenance: Bearings, Clutches, Drives.

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

1. Venkataraman.K, "Maintenance Engineering and Management", Printice-Hall of India Private Limited., 2007.
2. P.Goplakrishnan, A.K.Banerji, "Maintenance and Spare Parts Management", Printice- Hall of India, 1977.

REFERENCE BOOKS

1. H.P.Garg, "Industrial Maintenance", S.Chand & Company Ltd., 1990.
2. Kenneth E.Rizzo, "Total Production Management", Second Edn., GATF Press.
3. N.D.Vohra, "Quantitative Techniques in Management", Tata McGraw – Hill Publishing Co. Ltd.
4. Herschell L. Apfelberg, "Maintaining Printing Equipment", GATF Press.

5. Lidley R.Higgins.P.E., L.C.Morrow, "Maintenance Engineering", Handbook, McGraw – Hill Publishing Co. Ltd.

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

9

Need for Security printing – special issues, counterfeiting -Creation & Graphics, Making of a bank note, Circulation & Bank maintenance- RBI specifications- General security aspects of currencies- Importance of Academic and industrial security- types of products – Suitable Printing techniques for various applications

UNIT II INKS

9

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

9

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

9

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

9

Security design and processes for various print products: Barcodes, Holograms, cheque printing- MICR cheques and Reserve Bank of India (RBI) specifications, finishing, paper specifications- Manufacturing process of – Bank Notes – Business forms – Certificates- Passports – Packaging - Card printing. Different types of machines used for producing various security products. Recent trends and developments in security printing.

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:

1. Martin Monestics, "The Art of Paper Currency", Quarlet Books Ltd., 1983.
2. Leibigner, "Numbering Machines & Systems", Company Leibigner Numbering Systems.

REFERENCES:

1. EIRI Board of Consultants and Engineers "Hand Book of Printing Technology" Engineers India Research Institute, New Delhi
2. Indian Institute of Bankers (1999) "Bank Credit Card Business" Macmillan, Delhi
3. William H. Erdei, "Barcode - Design, Printing & Quality Control", McGraw Hill Inc., 1998.
4. R. Narayanan, "Computer Stationery & MICR – Cheque Production" Association for Research & Development in Printing, 1998.

PTPT8711**PROJECT WORK**

L	T	P	C
0	0	9	6

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
(Common to CSE, EEE, ECE, Civil, Mechanical, Industrial,
Textile, Printing and Automobile)

L	T	P	C
3	0	0	3

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 10

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time– Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality.

UNIT II ENGINEERING ETHICS 9

Senses of 'Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION 9

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 9

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk – The Three Mile Island and Chernobyl Case Studies
Collegiality and Loyalty – Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination

UNIT V GLOBAL ISSUES 8

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership – Sample Code of Conduct

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

1. Mike W. Martin and Roland Schinzinger, "Ethics in Engineering", Tata McGraw Hill, New Delhi, 2003.

REFERENCES:

1. Charles B. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering Ethics – Concepts and Cases", Thompson Wadsworth, A Division of Thomson Learning Inc., United States, 2000
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001

WEB SOURCES:

1. www.onlineethics.org
2. www.nspe.org
3. www.globalethics.org
4. www.ethics.org

PTIE8071	HUMAN RESOURCE MANAGEMENT	L	T	P	C
	(Common to Industrial and Printing)	3	0	0	3

OBJECTIVE:

To introduce the basic principles of group dynamics and associated concepts required for Human resource management in organizations

UNIT I INDIVIDUAL BEHAVIOR 9

Personality –Types –Influencing Personality – Learning Process, Attribute – Perception –Motivation Theories

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

Employee Training-Career Development-Performance Appraisal-Compensation-safety and Health-Employee Relation-Management Development – Employee retention.

TOTAL: 45 PERIODS

OUTCOMES:

- To understand the process of effective Human Resource Management.

TEXT BOOKS:

1. Stephen R. Robbins, “Organizational Behavior”, PHI, 1998.

REFERENCES:

1. David A. Decenzo & Stephen R. Robbins, “Personnel/Human Resources Management”, PHI, 1997.
2. Fred Lutherans, “Organizational Behavior”, Oxford University Press, 2000.

PTMA8252	PROBABILITY AND STATISTICS	L	T	P	C
	(Common to EEE, Textile, Mechanical, Industrial, Printing and Manufacturing)	3	0	0	3

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

Sampling distributions - Tests for single mean, proportion, Difference of means (large and small samples) – Tests for single variance and equality of variances – χ^2 -test for goodness of fit – Independence of attributes – Non-parametric tests: Test for Randomness and Rank-sum test (Wilcoxon test).

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:

1. Milton, J. S. and Arnold, J.C., "Introduction to Probability and Statistics", Tata McGraw Hill, New Delhi, 4th Edition, 3rd Reprint, 2008.
2. Johnson, R.A. and Gupta, C.B., "Miller and Freund's Probability and Statistics for Engineers", Pearson Education, Asia, 8th Edition, 2011

PTME8073 ENERGY CONSERVATION IN INDUSTRIES L T P C
(Common to Mechanical and Industrial) 3 0 0 3

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
- utilise the available resources in optimal ways

UNIT I INTRODUCTION 8

Energy - Power – Past & Present scenario of World; National Energy consumption Data – Environmental aspects associated with energy utilization –Energy Auditing: Need, Types, Methodology and Barriers. Role of Energy Managers. Instruments for energy auditing.

UNIT II ELECTRICAL SYSTEMS 12

Components of EB billing – HT and LT supply, Transformers, Cable Sizing, Concept of Capacitors, Power Factor Improvement, Harmonics, Electric Motors - Motor Efficiency Computation, Energy Efficient Motors, Illumination – Lux, Lumens, Types of lighting, Efficacy, LED Lighting and scope of Encon in Illumination.

UNIT III THERMAL SYSTEMS 12

Stoichiometry, Boilers, Furnaces and Thermic Fluid Heaters – Efficiency computation and encon measures. Steam:Distribution &Usage: Steam Traps, Condensate Recovery, Flash Steam Utilization, Insulators & Refractories

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 carryout energy accounting and balancing
- Can suggest methodologies for energy savings

TEXT BOOK:

1. Energy Manager Training Manual(4 Volumes) available at www.energymanagertraining.com, a website administered by Bureau of Energy Efficiency (BEE), a statutory body under Ministry of Power, Government of India.2004.

REFERENCES:

1. L.C. Witte, P.S. Schmidt, D.R. Brown, "Industrial Energy Management and Utilisation" HemispherePubl, Washington, 1988.
2. Callaghn, P.W. "Design and Management for Energy Conservation", Pergamon Press, Oxford, 1981.
3. I.G.C. Dryden, "The Efficient Use of Energy" Butterworths, London, 1982
4. W.C. turner, "Energy Management Hand book" Wiley, New York, 1982.
5. W.R. Murphy and G. Mc KAY "Energy Management" Butterworths, London 1987.

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 9

Entrepreneur – Types of Entrepreneurs – Difference between Entrepreneur and Intrapreneur – Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth.

UNIT II MOTIVATION 9

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 9

Small Enterprises – Definition, Classification – Characteristics, Ownership Structures – Project Formulation – Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno Economic Feasibility Assessment – Preparation of Preliminary Project Reports – Project Appraisal – Sources of Information – Classification of Needs and Agencies.

UNIT IV FINANCING AND ACCOUNTING 9

Need – Sources of Finance, Term Loans, Capital Structure, Financial Institution, management of working Capital, Costing, Break Even Analysis, Network Analysis Techniques of PERT/CPM – Taxation – Income Tax, Excise Duty – Sales Tax.

UNIT V SUPPORT TO ENTREPRENEURS 9

Sickness in small Business – Concept, Magnitude, causes and consequences, Corrective Measures – Government Policy for Small Scale Enterprises – Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Sub Contracting.

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:

1. S.S.Khanka “Entrepreneurial Development” S.Chand & Co. Ltd. Ram Nagar New Delhi, 1999.
2. Kuratko & Hodgetts, “Enterprenuership – Theory, process and practices”, Thomson learning 6th edition.

REFERENCES:

1. Hisrich R D and Peters M P, “Entrepreneurship” 5th Edition Tata McGraw-Hill, 2002.
2. Mathew J Manimala, “Enterprenuership theory at cross roads: paradigms and praxis” Dream tech 2nd edition 2006.
3. Rabindra N. Kanungo “Entrepreneurship and innovation”, Sage Publications, New Delhi, 1998.

4. EDII “ Faulty and External Experts – A Hand Book for New Entrepreneurs Publishers: Entrepreneurship Development” Institute of India, Ahmadabad, 1986.

PTME8075 RELIABILITY CONCEPTS IN ENGINEERING L T P C
(Common to Mechanical and Printing) 3 0 0 3

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

Data classification – Non parametric methods: Ungrouped, Grouped, Complete, Censored data – Time to failure distributions – Probability plotting: Exponential, Weibull - Goodness of fit tests – Survival graphs.

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

Reliability testing: Failure terminated test – Time terminated test – Upper and lower MTBFs – Sequential Testing – Reliability growth monitoring – Reliability allocation.

UNIT V RELIABILITY IMPROVEMENT 10

Analysis of downtime – Repair time distribution – Maintainability prediction – Measures of maintainability – Availability definitions – System Availability – Replacement decisions – Economic life.

TOTAL: 45 PERIODS

OUTCOMES:

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

REFERENCES:

1. An Introduction to Reliability and Maintainability Engineering, Charles E.Ebeling, TMH, 2000.
2. Roy Billington and Ronald N. Allan, Reliability Evaluation of Engineering Systems, Springer, 2007.

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

Amorphous, crystalline, microcrystalline, quasi-crystalline and nano-crystalline materials. Classification of Nanomaterials – Size Effects – Surface to volume ratio, Strain confinement, Quantum Effects – Properties – Mechanical, Thermal, Electrical, Optical, Magnetic, Acoustic.

UNIT II SYNTHESIS OF NANOMATERIALS 12

Methods of production of Nanoparticles – Top–Down processes, Bottom-Up Processes - Sol-gel synthesis, Inert gas condensation, Sonochemical processing, Molecular self assembly, High energy Ball milling, Plasma synthesis, Electro deposition, Chemical vapour deposition, Physical vapour deposition, and other techniques. Synthesis of Carbon Nanotubes – Solid carbon source based production techniques, Gaseous carbon source based production techniques - Issues in fabrication of nanomaterials Nano wires.

UNIT III CHARACTERISATION OF NANOMATERIALS 9

Scanning Probe Microscopy (SPM) – Scanning tunneling microscope, Transmission electron microscope, Scanning transmission electron microscope, Atomic force microscope, Scanning force microscopy, Electrostatic force microscopy, Dynamic force microscopy, Magnetic force microscopy, Scanning thermal microscopy, Piezo force microscopy, scanning capacitance microscopy, Nano indentation - Issues in characterization of nanomaterials.

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:

1. Bhushan B., “Handbook of Nanotechnology”, Springer, Germany, 2004.
2. Ashby M.F., Ferreira P.J. and Schodek D.L., “Nanomaterials, Nanotechnologies and Design”, Elsevier Ltd., 2009.

REFERENCES:

Need for ISO 9000- ISO 9000-2000 Quality System – Elements, Documentation, Quality auditing- QS 9000 – ISO 14000 – Concepts, Requirements and Benefits –Quality Council – Leadership, Employee involvement – Motivation, Empowerment, Team and Teamwork, Recognition and Reward.

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:

1. Dale H.Besterfield, et al., “Total Quality Management”, Pearson Education Asia, Third Edition, Indian Reprint , 2006.

REFERENCE BOOKS:

1. James R. Evans and William M. Lindsay, “The Management and Control of Quality”, (6th Edition), South-Western (Thomson Learning), 2005.
2. Oakland, J.S. “TQM – Text with Cases”, Butterworth – Heinemann Ltd., Oxford, Third Edition , 2003.
3. Suganthi,L and Anand Samuel, “Total Quality Management”, Prentice Hall (India) Pvt. Ltd., 2006 .
4. Janakiraman,B and Gopal, R.K, “Total Quality Management – Text and Cases”,Prentice Hall (India) Pvt. Ltd., 2006.

PTPT8001

ADVERTISING TECHNIQUES

L T P C
3 0 0 3

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 9

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 9

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

UNIT III ADVERTISING MEDIA AND MEDIA PLANNING 9

Media concept, structure of media, media characteristics, publication media, TV and Radio, 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.

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:

1. D. Raghavan, "An introduction to Book Publishing", Institute of Book Publishing, New Delhi, 1988
2. John P. Dessauer, "Book Publishing", R. R. Bowker Company, New York & London, 1981

REFERENCE BOOKS:

1. Roy Paul Nelson, "Publication Design", Wm.C.Brown Company Publishers, Dubuque, Iowa, 1983
2. Charles Clark, "Publishing Agreement", George Allen & Unwin, London, 1984
3. "British Production Practice", 2nd Edition, Publishers Association, British Printing Industries Federation, 1984
4. Hugh Williamson, "Methods of Book design", Yale University Press, 1983
5. John Peacock, "Book Production", Blueprint, 1995

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:

1. Abhay Sharma, "Understanding Colour Management", Thomson Delmar, 2004.
2. Phil Green, Michael Kriss, "Color Management: Understanding and Using ICC profiles", The Wiley-IS&T Series in Imaging Science and Technology, 2010

REFERENCE BOOKS:

1. Green P., "Understanding Digital Colour", 2nd. Ed. GATF Press, 1999.
2. Berns R.S, "Billimeyer & Saltzman's Principles of Colour Technology", 3rd Ed. Wiley, 2000.'
3. Bruce Fraser, Chris Murphy, & Fred Bunting, "Real World Color Management", 2nd Edition, Peachpit Press
4. Mark D.Fairchild, "Color Appearance Models", Second Edition, John Wiley & Sons Ltd., 2005
5. Phil Green, Lindsay MacDonald, "Colour Engineering", John Wiley & Sons Ltd., 2002

REFERENCES:

1. Roddy and Coolem, "Electronics and Communication", 4th Edition Prentice Hall, 1999.
2. Roy Blake, "Electronic communication systems", Thomson – Delmar, 2005.
3. Luuis E. Frenzel Jr., "Principles of Electronic Communication System", McGraw Hill, 2002.
4. William Schweber, "Electronic Communication System", Prentice-Hall of India, 2005.
5. B.P. Lathi, "Modern Digital and Analog Communication System", Oxford University press, 2003.

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

1. Denis McQualil, "Mass Communication Theory; An Introduction to Theories of Mass Communication", 5th Edition, Melvin L.De Fluer, Sandra Bale-Rokeach, Sage Publications, 1999.
2. Stanley J.Baran, Dennis K.Davis, "Mass Communication Theory Foundations, Ferment and Future", 3rd Edition, Wadsworth Publishing, 2002.

REFERENCE BOOKS

1. Jennings Bryant, Dolf zillmann, "Media Effects; Advances in Theory and search, 2nd Edition, Lea Publishers, 2002.
2. Melvin L.Deflear, Sandra Bale-Rokeach, "Theories of Mass Communication", 5th Edition, Allyn and Bacon Publishers, 1999.
3. Arthur Asa Berger, "Essentials of Mass Communications Theory", SAGE Publications, 1995.

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 9

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 11

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 6

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 11

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

8

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

1. Daryl R. Moen, "Newspaper Layout & Design: A Team Approach ",Iowa State Press, 2000
2. Carter Nancy M. ,"The Computerization of Newspaper Organizations", University Press of America , 2002

REFERENCE BOOKS

1. Melvin Mencher, "Basic News Writing", Wm.C.Brown Company Publishers, Dubuque, Iowa, 1983.
2. William L.Rivers, "News Editing in the 80's", Wadsworth Publishing Company,Belmont, California, 1983.
3. Helmut Kiphhan, "Handbook of Print Media", Springer Verlag, 2001
4. William L.Rivers, "Magazine Editing in the 80's", Wadsworth Publishing Company,Belmont, California, 1983.
5. Robert H.Bohle, "From News to Newsprint", Prentice Hall Inc., 1992
6. James E. Pollard, "Principles Of Newspaper Management", Mcgraw-Hill Book Company, Inc, 1937

PTPT8009

VISUAL COMMUNICATION

**L T P C
3 0 0 3**

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

6

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	11
Psychology of human vision, How the eye and brain process image, Visual grammar, Color form, Depth and movement, Visual theories, Perception, Semiotics, Visual story creation.		
UNIT III	VISUAL ANALYSIS	9
Visual persuasion and propaganda, visual image analysis, stereotypes and the media, Ethics of visual story telling.		
UNIT IV	PRINCIPLES OF DESIGN	9
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	10
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:

1. Paul Martin Lester, “Visual Communication; Images with Messages”, 3rd Edition, Thomson/Wadsworth, Belmont, California, 2003.
2. Kosternics, Charles and David Roberts, “Designing Visual Language”, 2nd Edition, Allyn & Bacon, 1999.

REFERENCE BOOKS:

1. Horn, Robert, “Visual Language”, Macro UV Publishers, 1999.
2. Gregg Beryman, “Notes on Graphic Design & Visual Communication”, Crisp Publications, 1990.
3. Gunther R.Krers, Theo Van Ceeuwen, Routledge, Gunther R.Grers, “Reading Images – The Grammer of Visual Design”, Routledge Publishers, 1995.

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

Processes – Extrusion, Wire, Granular, Lamination, Photopolymerisation; Materials - Paper, Plastics, Metals, Ceramics, Glass, Wood, Fiber, Sand, Biological Tissues, Hydrogels, Graphene; Material Selection - Processes, applications, limitations;

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;

TOTAL: 45 PERIODS

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

1. Ian M. Hutchings, Graham D. Martin, “Inkjet Technology for Digital Fabrication”, John Wiley & Sons, 2013.
2. Christopher Barnatt, “3D Printing: The Next Industrial Revolution”, CreateSpace Independent Publishing Platform, 2013.

REFERENCES

1. Ibrahim Zeid, “Mastering CAD CAM” Tata McGraw-Hill Publishing Co.2007
2. Joan Horvath, “Mastering 3D Printing”, APress, 2014
3. Chua, C.K., Leong K.F. and Lim C.S., “Rapid prototyping: Principles and applications”, second edition, World Scientific Publishers, 2010.

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 :

1. Mark Hedges, "Digital Asset Management in Theory and Practice", Facet Publishing, 2014.
2. Bill Rosenblatt, Bill Trippe, "Digital Rights Management: Business and Technology", Hungry Minds Inc, 2001

RESOURCES:

1. David Austerberry, "Digital Asset Management", Focal Press; 2 edition, 2006.
2. Dr. Andreas Mauthe, Dr. Peter Thomas, "Professional Content Management Systems: Handling Digital Media Assets", Wiley, 2004.
3. Joan Van Tassel, "Digital Rights Management by Protecting and Monetizing Content", Focal Press, 2006.

4. Wenjun Zeng, Heather Yu, Ching-Yung Lin, "Multimedia Security Technologies for Digital Rights anagement", Academic Press Inc, 2006.

PTGE8071

DISASTER MANAGEMENT

L T P C
3 0 0 3

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

9

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)

9

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 Processes 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

9

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

9

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 IV**9**

Human Rights in India – Constitutional Provisions / Guarantees.

UNIT V**9**

Human Rights of Disadvantaged People – Women, Children, Displaced persons and Disabled persons, including Aged and HIV Infected People. Implementation of Human Rights – National and State Human Rights Commission – Judiciary – Role of NGO's, Media, Educational Institutions, Social Movements.

TOTAL : 45 PERIODS**OUTCOME :**

- Engineering students will acquire the basic knowledge of human rights.

REFERENCES:

1. Kapoor S.K., "Human Rights under International law and Indian Laws", Central Law Agency, Allahabad, 2014.
2. Chandra U., "Human Rights", Allahabad Law Agency, Allahabad, 2014.
3. Upendra Baxi, The Future of Human Rights, Oxford University Press, New Delhi.