

Maharshi Dayanand University, Rohtak

(A State University established under Haryana Act No. XXV of 1975)

(NAAC Accredited 'A+' Grade)

Scheme of Studies and Examination

B.Tech (PRINTING TECHNOLOGY)

4th Year

Scheme effective from 2021-22

Course code and definitions:

Course Code	Definitions
L	Lecture
T	Tutorial
P	Practical
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSMC	Humanities and Social Sciences including Management courses
PCC	Professional Core Courses
LC	Laboratory Courses
MC	Mandatory Courses
PT	Practical Training
S	Seminar
TH	Theory
PR	Practical

General Notes:

1. Mandatory courses are non-credit courses in which students will be required passing marks in internal assessments.
2. Students will be allowed to use non programmable scientific calculator. However, sharing of calculator will not be permitted in the examination.
3. Students will be permitted to opt for any elective course run by the department. However, the department shall offer those electives for which they have expertise. The choice of the students for any elective shall not be binding for the department to offer, if the department does not have expertise. To run the elective course a minimum of 1/3rd students of the class should opt for it.

Scheme of Studies and Examination
B.Tech (Printing Technology) – 7th Semester
w.e.f. 2021-22

Sr. No.	Category	Course Code	Course Title	Hours per week			Credit	Examination Schedule (Marks)				Duration of Exam (Hours)
				L	T	P		Internal Assessment	Theory	Practical	Total	
1		PTG-401G	Entrepreneurship Development	3	1	-	3	25	75	-	100	3
2		PTG-403G	Quality Control	3	1	-	3	25	75	-	100	3
3		PTG-405G	Colour Separation Techniques	3	1	-	3	25	75	-	100	3
4		PTG-407G	Computer Graphics In Printing	3	1	-	3	25	75	-	100	3
5		PTG-409G	Book Publishing	3	1	-	3	25	75	-	100	3
6		PTG-411G	Continuous Stationary & Security Printing	3	1	-	3	25	75	-	100	3
7		PTG-413G	Quality Control Lab.	-		2	1	25	-	25	50	3
8		PTG-415G	Colour Separation Lab.	-		2	1	25	-	25	50	3
9		PTG-419G	Seminar				1	50	-		50	3
Total							21	250	450	50	750	

Scheme of Studies and Examination
B.Tech (Printing Technology) – 8th Semester
w.e.f. 2021-22

Sr. No.	Category	Course Code	Course Title	Hours per week			Credit	Examination Schedule (Marks)				Duration of Exam (Hours)
				L	T	P		Internal Assessment	Theory	Practical	Total	
1		PTG-402G	Packaging Technology	3	1		3	25	75		100	3
2		PTG-404G	Printing Machinery Maintenance	3	1		3	25	75		100	3
3		PTG-406G	News Paper Technology	3	1		3	25	75		100	3
4		PTG-408G	Printer's Costing And Estimating	3	1		3	25	75		100	3
5		PTG-410G	Digital Printing	3	1		3	25	75		100	3
6		PTG-412G	Printing Plant layout	3	1		3	25	75		100	3
7		PTG-414G	Packaging Lab.			2	1	25		25	50	3
8		PTG-416G	News Paper Lab.			2	1	25		25	50	3
9		PTG-418G	Project			1	1	50		50	100	
Total							21	250	450	100	800	

Course code	PTG-401G				
Category					
Course title	Entrepreneurship development				
Scheme and Credits	L	T	P	Credits	Semester 7th
	3				
Class work	25 Marks				
Exam	75 Marks				
Total	100 Marks				
Duration of Exam	3 Hours				

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 6 parts of 2.5 marks each from all units and remaining eight questions of 15 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit – I

Entrepreneurship: A Perspective: Recognition of the need for entrepreneurship and selfemployment development, Entrepreneurship spirits, Significance of entrepreneur in Economic Development, Scope and trends of small enterprises, Small business/enterprise-the driving force for national growth, Types of small enterprises, Economic, social and psychological need for entrepreneurship, characterization, qualities and pre-requisites of entrepreneur, Selection of a potential entrepreneur, Identifying & Evaluating Business opportunities.

Unit-2

Quick Start Method: Methods and Procedures to start and expand one's own business, life cycle of new business, Franchises, creating your own franchise, Multilevel marketing schemes, Buying an existing business.

Business Planning Process: Why is a good business plan required? Business Plan-the major benefits, sub plan, Business plan-blue print to success and financing, Small manufactures business plan, Feasibility Study, Preparation of Feasibility Reports, Project Reports.

Unit-3

Forms of Ownership: Different forms of ownership-sole partnership, partnership, joint stock company, Selling, Selling your venture, planning for succession, Valuation of a business, Responsibility of a good employer, Risk management, What risks does your business face

Unit-4

Instructional Models: Govt. support to new enterprise, incentives, sources of finance. Entrepreneurship Development Centre, Role of Govt. and promotional agencies in entrepreneurship development, Entrepreneurship development programmers, Role of various institutions in developing entrepreneurship in India.

Recommended Books:

Entrepreneurship Development - Colombo Plan Staff College for Technician Education.
 Entrepreneurship Development & Management - **Jose Paul, N. Ajith Kumar.**
 Entrepreneurship Development Programmers' & Practices - **Jasmer Singh Saini.**

Course code	PTG-403G				
Category					
Course title	QUALITY CONTROL				
Scheme and Credits	L	T	P	Credits	Semester 7th
	3				
Class work	25 Marks				
Exam	75 Marks				
Total	100 Marks				
Duration of Exam	3 Hours				

Unit-1

Introduction

Definition of Quality, Quality control, its meaning and purpose setting up a Quality Control Programmed and establishing necessary System and procedures, economic consideration.

Unit-2

Management Consideration

Quality Control as an attitude and management tool, management's responsibility, organization and personnel functions, getting everybody involved. Total Quality Control. Quality Control procedures and methods. Different shapes of quality control.

Unit-3

Materials Control

Establishing clear specifications and standardization of materials to be purchased - particularly paper, ink, plates, blankets and rollers, Inspection and testing of incoming materials as part of quality control; importance of proper handling and maintaining records of performance of materials sampling and sampling plans.

Establishing Quality control programmed in different departments of printing organization

Unit-4

Quality Control Instrumentation

Paper and paper board testing instruments for testing printability, print quality and end-user requirements, Ink testing instruments for testing optical and working properties and end-user requirements Process control instruments, devices and aids used in the galley and dark-room, striping department, plate room and press room for specific processes and for general purposes Press sheet control devices used for production of multi-colour printing jobs Basic principles of these instruments and devices how they function and what they measure, minimum instrumentation necessary to produce a product consistent with the appropriate quality level.

Introduction to ISO: 9000 and ISO: 14000 series.

Recommended Books:

1. W.H. Banks, Inks, Plates and Print Quality, Pergamum Press
2. Quality Control for quality printing, Graphic Arts, Technical Foundation

Course code	PTG-405G				
Category					
Course title	COLOUR SEPARATION TECHNIQUES				
Scheme and Credits	L	T	P	Credits	Semester 7th
	3				
Class work	25 Marks				
Exam	75 Marks				
Total	100 Marks				
Duration of Exam	3 Hours				

Unit-1

Introduction to color

Basic color theory, additive and subtractive colors, process colors, application of the color theory to color reproduction. Overview of color reproduction from original to printing.

Planning for color work

Unit-2

Choosing a Transparency for Reproduction:- Exposure level, color balance, memory colors;

gainers, contrast; highlight retouched original transparency, evaluation the transparency.

Color Reproduction: - Essential requirements of cameras, lens, illuminations filters and half tone screen for color reproduction work Tone and color controls Gray scale and color control patches the ink/paper/color interaction Measurement and control of color printing using the densitometers.

Unit-3

Color separating methods: -Basic principles of color separation Direct separation method and

Indirect color separation method, procedure followed for each method Methods and procedures followed for making the black printer negative for the indirect method, for making continuous tone positives and the making of final screened negatives and positives establishing a color reproduction procedure.

Color correction:- Objectives of color correction ; Hand correction, Purposes and procedure followed; retouching techniques; correcting colors, tones and shades given inks and paper. Dot etching, purposes and procedure, flat etching, staging and etching, local reduction, blending; Masking; purposes of masking types of masking; their clarification and uses; Electronic color separation and correction.

Unit-4

Color proofing:-Press proofing methods and various pre-press proofing systems; uses and limitations of prepress sheet Interpreting pre press proofs and predicting, press results Control devices for proofing systems.

Introduction & Working of image capturing techniques of Drum, Flat Bed Scanners & Image Setters.

Recommended Books :-

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1. Dr. R.W.G. Hunt :- The reproduction of color. Fountain Press, 4th edition.
2. Miles South worth & Donna South worth :- Color Reproduction. Graphic Arts Publishing, 3.1 edition.
3. Gary G. Field :- Tone & Color correction (GATF).

Course code	PTG-407G				
Category					
Course title	COMPUTER GRAPHICS IN PRINTING				
Scheme and Credits	L	T	P	Credits	Semester 7 th
	3				
Class work	25 Marks				
Exam	75 Marks				
Total	100 Marks				
Duration of Exam	3 Hours				

Unit-1

Basic Concept:

Introduction, The origin of computer graphics, working of interactive - graphics display, New display devices, General purpose graphics software, The user-interface, display of solid objects, Line drawing displays - Display devices and controllers, Display devices, The CRT-Electron guns, Deflection system, Phosphors, Beam penetration CRT, Shadow mask CRT. Inherent-memory, devices - Direct view storage tube, Plasma panel, Laser-scan display, The storage-tube display, The refresh line - drawing display. Two dimensional transformations, Transformation principles, concatenation, matrix representations - matrix formulation of transformations, Concatenation of matrix transformations, efficiency. The clipping & windowing - A line clipping algorithm, Midpoint subdivision, clipping other graphic entities, polygon clipping, viewing transformations, The windowing transformation. Three dimensional graphics - Realism in three dimensional graphics - Molecular modeling, CAD, Animation, Simulation. Techniques for achieving realism - parallel projections, Perspective projection, Intensity curves, Stereoscopic views, Kinetic depth effect, hidden - line elimination, shading with hidden surfaces removed, 3D images. Modeling three dimensional scenes - coordinate system, modeling objects, cube representation, representing topology & geometry, structured three dimensional models, constructing models. Modeling and realism.

Unit-2

Animation:

Conventional animation, computer assistance animation, interpolation, simple animation effects, animation languages - Linear-list notations, general purpose languages, graphical languages, Methods of controlling animation- full explicit control, procedural control, constraint-based system, tracking live action, actors, kinematics and dynamics, physically based animation. Basic rules of animation. Problems peculiar to animation. Summary.

Unit-3

Basics of Digital image processing:

Introduction. Digital image representation, basic steps of image processing, elements of image processing system - image acquisition, storage, processing, communication, display. Fundamental concepts of digital image processing - introduction, objectives, visual perception - structure of human eye, image formation in the eye, brightness adaptation and discrimination. A simple image model. Sampling and quantization - uniform sampling and quantization, non uniform sampling and quantization. Basic relations between pixels - Neighbours of pixel, connectivity. Labeling and connected components. Relations, equivalence and transitive closure. distance measures. arithmetic/logic operations. image geometry - basics of transformations. perspective transformations. camera model, camera calibration. Photographic film - film structure and exposure, film characteristics, contrast, speed, graininess, resolving

power.

Unit-4

Introduction to computer graphics, scope and limitations

CorelDraw, Different facilities available, working in CorelDraw environment.

Introduction to illustrator-simple lines, stylish lines, drawing and filling of images, gradation tools, blenders pattern with a difference, filling rectangular and non rectangular shapes of pallets and color, system matrices, justifying text and application of path finder's.

Introduction to Photoshop-how you can differentiate it from illustrator, different types of the formats, their compatibility to different software, introduction of tool box, uses of different filters, masking and working on images, creating a presentation using software.

Quark express : PageMaker up, formatting and editing in the software.

Flash : Introduction of 2-D animations, study of tool box, menu bar, how you can use them in your industry, how you can create different effects like moving on selected path, masking of images, etc.

Recommended Books:

Computer graphics principles & practice 2nd edition - **Van Dam, Foley, Fiener Hughes.**

Principle of Interactive Computer Graphics 2nd edition - **William N. Newman, Robert S.Sprull.**

Computer graphics - **Hearn & Backer.**

Procedure elements for computer graphics - **David F. Rogers.**

Digital imaging techniques (Block I)

Digital Imaging techniques (Block II)

Digital image processing - **Gonzalez, Woods, Chandra,**

Digital image processing and analysis -**Majumdar**

Digital image processing and computing- **Schalkoff**

Course code	PTG-409G				
Category					
Course title	BOOK PUBLISHING				
Scheme and Credits	L	T	P	Credits	Semester 7th
	3				
Class work	25 Marks				
Exam	75 Marks				
Total	100 Marks				
Duration of Exam	3 Hours				

Unit-1

Book Publishing

Definition and concept, parts of a book, basic steps in book publishing, areas of publishing - general publishing, educational publishing, professional publishing and reference publishing house - the role of commissioning editor, the desk editor, the designer, the production manager, the sale/marketing manager, the publicity manager, the warehouse or distribution department, the accounts department, the management.

Press Organization

Hierarchy - editorial organization, mechanical aspects of organization - composition, printing , basic operations business aspects of organization, flowcharts of staff in organization, Circulation and Advertisement departments, distribution channels.

Unit-2

Production & Estimating in Book Publishing

First copy cost, manufacturing cost, overheads, and economics of publishing - net book, nonnet book, variations in price of same size books, published price of book Technical aspects of production from receipt of manuscript to completion of book, gestation period, and calculating break-even point.

Introduction to Booking and Circulation methods used in publishing houses.

Unit-3

Marketing and Distribution in Book Publishing

Home market, export market, closed market, advertising and publicity, types of distribution, conventional and modern channels of distribution. International book trade and barriers. Import and export of books. Relationship of the Editor with the manuscript. Evaluation procedures. External review and its associated problems.

Editorial Organization in Publishing:-The editorial functions in newspapers, journals, magazines and books.

Unit-4

Legal Aspects in book Publishing

Copyright, types of agreement between author and publishers the outright sale of the copyright, profit sharing agreement, the royalty system, commission agreements The press and the law-libel, defense against libel, mitigation & damages.

Subsidy in the Publication of Books

Importance and need of subsidy in the publication of books. Salient features of the subsidy scheme. Procedure of getting subsidy.

Course code	PTG-411G				
Category					
Course title	CONTINUOUS STATIONARY & SECURITY PRINTING				
Scheme and Credits	L	T	P	Credits	Semester 7 th
	3				
Class work	25 Marks				
Exam	75 Marks				
Total	100 Marks				
Duration of Exam	3 Hours				

Unit-1

Introduction:

Trends in the Computer Forms stationery - Demands for the computer forms.

Designing of Computer forms:

Basic designs of various types of forms for input and output - Fan fold forms, Computer letters and Mailers. Computer envelopes, Snap-out-forms, Tags and labels, Computer envelope, MICR cheques etc., Typography - designing of forms with computer based machines etc.,

Unit-2

Paper used for the Production of forms:

Specifications, requirements, storage conditions, etc., Carbon papers - varieties, specifications and manufacturing process.

Manufacture of computer forms:

Different types of Web-Offset Printing Presses. Construction and configuration -on-line operations such as numbering, perforating, sprocket hold punching and Zigzag folding etc.,

Finishing Machines for computer forms:

Different types of collators - Roll to Roll -Roll to pack and pack to pack-Programmable outers for continuous web-MICR cheque binding system. Machines used for packing and Dispatch.

Unit-3

Principles of stochastic screening:

Spot patterns. Graininess or noise. Combining AM and FM screening. Screen angles. Spot size. Claimed benefits for FM screening. Absence of rosettes and moiré patterns. Improved rendition of detail. Smoother tonal transition. Photographic smoothness. Improved process color simulation of spot colors. No restriction on reproducible grey levels. Tone value stability with increased inking. Smaller file size and speedier output through image setter. Decreased register sensitivity. Limitations associated with FM screening. Film imaging. Film contacting. Plate making. Photomechanical proofing. High levels of dot gain. Fine screen rulings versus FM screening.

Unit-4

Practical experiences with offset litho printing:

Plate making. Exposure and tone transfer. Using FM and AM screening together. Vacuum contact and Newton's rings. Negative working plates. Proofing. Negative proofing. Printing. Dot gain in printing. Influence of FM screening spot size. Influence of different screening algorithms. Tone value stability when printing. Sensitivity to register shifts. Color shifts

Recommended Books:

Forms for the 80's. How to design and produce them - **Gar Raines**.
Stochastic Screening - **Kelvin Triton**.

Course code	PTG-413G				
Category					
Course title	QUALITY CONTROL LAB.				
Scheme and Credits	L	T	P	Credits	Semester 7th
			2		
Class work	25 Marks				
Exam	25 Marks				
Total	50 Marks				
Duration of Exam	3 Hours				

QUALITY CONTROL LAB.

1. Paper testing checking grain direction.
2. Tensile strength of paper, burst strength of paper.
3. Substance, caliper, porosity test, cobb sizing value test.
4. Tearing testing of paper, brightness test of paper.
5. Operating test, gloss test, lighting color filter sensor.
6. G.S.M. testing, folding endurance.
7. Moisture contents test, ash contents test.
8. Hot air oven tester, absorbing test.
9. Pick strength, humidity control test, room temp testing.
10. Ink film thickness test.
11. Investigation of pigment properties.
12. Investigation of solvent properties.
13. Measurement of viscosity, tack measurement.
14. Test a printed sheet - proof printing and measurement of colour using spectro photometer, resistance testing of prints.
15. Measurement of ink film thickness.

Course code	PTG-415G				
Category					
Course title	COLOUR SEPARATION LAB.				
Scheme and Credits	L	T	P	Credits	Semester 7th
			2		
Class work	25 Marks				
Exam	25 Marks				
Total	50 Marks				
Duration of Exam	3 Hours				

COLOUR SEPARATION LAB.

1. Making of Half tone negative using process camera.
2. Making of own color control patches.
3. Gray Scale (Drawing).
4. Drawings spectrophotometer curve by using spectro densitometer.
5. How to make color separation negative of a four colored original by using Electronic color separation system.
6. Working of Image Setter and obtaining output on Image Setter.
7. Color Correction by using photography masking.
8. Six Color Wheel.
9. Planning for four Color Newspapers designs.
10. Software for color separation Photoshop, CorelDraw, quark express.
11. Preparation of originals for separation - reflection type and transparency.
12. Demonstration of various masking methods using reflection copy, by OHP/ Slides, video etc.
13. Exposing tonal correction mask, making UCR mask/GCR mask etc.
14. Comparison of camera separation and scanned separation.
15. Cut out and mixing jobs.
16. Use of different Quality Control Aids. New developments in Electronic Imposition & DTP etc

SEMINAR (PTG- 419G)

Each student will prepare a seminar report and will present in the examination on the selected topic under guidance of seminar guide (faculty member).

Course code	PTG-402G				
Category					
Course title	PACKAGING TECHNOLOGY				
Scheme and Credits	L	T	P	Credits	Semester 8th
	3	1	-	3	
Class work	25				
Exam	75				
Total	100				
Duration of Exam	3 Hours				

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 6 parts of 2.5 marks each from all units and remaining eight questions of 15 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit – I

Basics of Packaging: Introduction, Function of a package, Factors influencing design of a package, Computer Aided Package Design, Packaging Cycle, Product Package Relationship, Product life curve, Elements of Package Design. Classification of Packaging - Flexible package type, Rigid package types. Hazards on package - Mechanical, Climatic, Biological and other hazards. Markings on package - Handling marks, routing marks, information marks. Tests on Package- Mechanical test - Drop test, Vibration test, Compression test, Inclined impact test, Rolling test, Climatic tests - Rain test, Sand and dust test, Salt spray test, Fungus resistance test. Shelf life, Cushioning Materials - Functions, properties. Classifications - space fillers, resilient cushioning materials, non resilient cushioning materials.

Unit-2

Packaging Media: Effect of moisture on wood, preservation of wood, advantages. Boards-types, paper types. Glass- properties, advantages, types, basic approaches to designing a bottle, thermal shock test, pressure test, impact test, density test. Plastics-BOPP, HDPE, LDPE, LLDPE, PVC, PP, PET, Polyolefin's, Cellulosic, Polyimides, advantages, functions & applications. Tests on plastics, Metals - functions, uses. Aluminium foils - Manufacturing of foil, properties, applications, and methods of laminating foil to film or paper.

Unit-3

Carton Production: Carton styles. Folding cartons - Production steps, types. Corrugated containers - classifications, components in a corrugated board, flutes, and stages in preparation in corrugated boards. Plastic corrugated boards - features & advantages.

Innovative Packaging Techniques/Processes: Gas packaging - MAP & CAP, Vacuum packaging, shrink packaging, stretch wrapping, blister packaging, skin packaging, strip packaging, Aerosol packaging container, working principle. Injection Blow Moulding, Extrusion blow moulding, Extrusion. Injection Molding, Compression molding, Thermo forming. Vacuum forming, Pressure forming, Matched mould forming.

Unit-4

Future Trends: Futuristic trends in packaging. Advancements in food packaging. Environmental

implications of packaging - recycling, Legal aspects in packaging. Designing-Cans, metal tubes, Plastic tubes. Closures-Screw caps, Snap-on caps, Plug closures, Lids, Threaded closures, Crowns. Adhesive tapes - Fabric tapes, Paper tapes, Film tapes, Foil tapes, Foam tapes, Two faced tapes. Labels - Basic elements of correct labeling, Purpose, Types. Ancillary Materials : Sealing tapes Strapping and stripling labels and labeling, Adhesives and packaging.

Recommended Books:

Packaging design and performance - Frank Paine Advances in plastic packaging technology - John Bristol.

Packaging designs an introduction - Laszlo Roth.

Packaging Technology - Volume I – IIP

Packaging Technology - Volume II - IIP

Packaging Technology - Volume III – IIP

Course code	PTG-404G				
Category					
Course title	PRINTING MACHINERY MAINTENANCE				
Scheme and Credits	L	T	P	Credits	Semester ^{8th}
	3	1	-	3	
Class work					
Exam	75				
Total	100				
Duration of Exam	3 Hours				

Unit-1

Drive and Control Systems Transmission systems such as AC and DC motors, belt, chain, gear, cranks, connecting rods, paul and ratchet mechanisms, Hydraulic, Pneumatic, Electrical, Electronic and mechanical controls.

Erecting and Testing Equipment needed for erection - selection of location and environmental conditions - erection procedure for various prepress printing and finishing equipments and machinery - loading and transport of raw materials and printed product with respect to layout design- commissioning.

Unit-2

Repairs and Reconditioning Principles of reconditioning -repair methods for various parts - Roller copperising and rerubberising - ebonite covering damping and inking systems - paper transport systems and feeder head.

Unit-3

Cylinders, Bushes and Bearings Cylinder construction - testing run out and taper - cylinder bearing supports - eccentric bushes - removal and fixing of bushes - changing of oil seals maintenance of bushes and bearings.

Identification & rectification of faults. Maintaining different types of Letterpress, Offset, and Gravure & Flexo Machine.

Unit-4

Maintenance procedures Need and importance of maintenance - Definition, types, Maintenance policies - Maintenance organization - Maintenance of pumps and compressor - Lubricants, their types and Characteristics, Lubricating methods - Central lubrication with return oil Manual lubricating Greases, oils, Greases, oils, grades - preventive maintenance, break down maintenance.

Recommended Books:-

1. Electrical Engg. **By B.L. Thareja Part I & II**
2. Theory of Machines **By Khurmi & Gupta S.Chand Publisher New Delhi**

Course code	PTG-406G				
Category					
Course title	NEWS PAPER TECHNOLOGY				
Scheme and Credits	L	T	P	Credits	Semester 8th
	3	1	-	3	
Class work	25				
Exam	75				
Total	100				
Duration of Exam	3 Hours				

Unit-1

Introduction to Newspaper organization: Newspaper Hierarchy - editorial organization, sources of news; mechanical aspects of newspaper organization -composition, printing the newspaper, basic operations business aspects of newspaper organization, flow charts of staff in newspaper organization, Circulation and Advertisement departments, distribution channels. Policy of a newspaper. Headlines. History and their significance. Functions of headlines, kickers, blurbs. The grammar of headlines. Unit count in headlines. Treating photographs; crop ping. Captions for photographs.

Unit-2

Basics of Design: The aesthetics of desing. Achieving symmetry/asymmetry, balance/offbalance, use of colour, place ment of various elements in design. The written word and illustration. Principles of adapting content to form. Attracting attention.

Unit-3

Newspaper layout & designing: Difference between design and layout. The various kinds of layout. The importance of visual appeal in page- making. Playing up/down a story. Colour, boxing, verbal and non-verbal languages in design. Graphics/dia grams and illustrations and their importance.

Unit-4

Flow of stories into a newspaper office: The various sources and copy for each page. Reporters, correspondents, agencies, syndicates, columnists, readers. Fascimiles copy & photographs. Editorial content and news. The OP-ED page. The gatekeeping function.
Editorial Organization Newspaper Publishing: Sources of news wire services, syndicates The role of copy editors, city editors, news editors, editorial cartoonist, artists, Sunday editors, sports editor, business editor, journalist & reporters, Information to a printer by editor.

Recommended Books :

News Reporting and writing - **Melvin Mecher The Journalist;**

Handbook - **M. V. Kamath Editing**

A Handbook for Journalists - **TJS George Editing;**

A Handbook for Journalists - **TJS George, Indian Institute of Mass communication, Delhi.**

Telling Stories, Taking Risks - **Klement/Mataline**

Journalism in India - **R. Parthasarathy**

Headlines and Deadlines - **Baskette, Floyd**

Course code	PTG-408G				
Category					
Course title	PRINTER'S COSTING AND ESTIMATING				
Scheme and Credits	L	T	P	Credits	Semester 8th
	3	1	-	3	
Class work	25				
Exam	75				
Total	100				
Duration of Exam	3 Hours				

Unit-1

Printing Company Organization: Printing management, principles, functions, Organizational criteria, Skills requirements, Types of business, Printing company management structures, Management team responsibilities, Business plan, Management styles, Management decisions, Communications, Print marketing and sales - marketing, sales.

Unit-2

Human Resource Management Concepts: HRM for printing, employment policy, evaluation of skills requirements for printing occupations, recruitment, job evaluation, staff appraisal, motivation training, human resources factors that limit productivity, staff flexibility. Manning and training requirements, States of industry, Analysis and development of human resources strategy. Management personal skills and development, job satisfaction through involvement.

Unit-3

Estimating: Purpose and functions of estimating from printer point of view & customers point of view. Difference between costing & estimating. Qualifications of an estimator, working environment, estimators tools, estimating paper - selection of paper, allowance for waste, allowance for trimming, weight of loose sheets, weight of a reel of paper. Estimating Ink - Ink consumption formula, Ink allowance for spoilage. Estimating binding materials - Board requirement, estimating covering materials, estimating sewing thread, estimating stitching

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wire, estimating adhesives. Terms and conditions-approved by AIFMD. Estimate Form and Computer Aided Estimating.

Unit-4

Costing: Job costing, its need and procedures. Elements of cost and their method of recovery. Cost sheet. Daily Docket. Work Instruction Ticket and their importance in costing.

Recommended Books:

Principles of Accounting - **B. S. Raman**

Fundamentals of Financial Management - **Prasanna Chandra.**

Cost Accounting - **B. R. Bhar**

Print Management - **Derek Porter**

Printer's Costing & Estimating - **B. D. Mendiratta**

Management Aspect of Printing Industry - **T. A. Saifuddin.**

Estimating Methods and Cost Analysis for Printers - **K. S. Venkataraman, K. S. Balaraman.**

Printing Estimating Principle & Practice - **Philip Kent Ruggles**

Print Production Management - **Gray G. Field**

Principles of Applied Costing for Printing Industry - **K. S. Venkataraman**

Course code	PTG-410G				
Category					
Course title	DIGITAL PRINTING				
Scheme and Credits	L	T	P	Credits	Semester 8th
	3	1	-	3	
Class work	25				
Exam	75				
Total	100				
Duration of Exam	3 Hours				

Unit-1

Digital Documents: Introduction to Digital Printing fundamentals Pixel image, Digital image, Digitization, Half toning color reproduction, color jumps, resolution and its qualities.

AC squiring: Scanning of different original, Selection of technology of Programme. Transfer of Digital Photographs.

Documentation: Image file formats TIFF, EPS JPEG files text files and past description languages.

Unit-2

Digital Printing Processes: Silver falderal, Penal, Inkjet, electrostatic processes. Rendering Type line Art and images.

Color management: Introduction and future, Characterizing input and output device use of CIELAB, CMS

Market & Applications: Introduction. Defining «On demand». Defining Digital Printing. Defining variable printing. Typical lengths. Short- run process color printing. On demand printing & Publishing concepts. Future on-demand. Market research Where are pages created. Number of originals and run length. New technologies shift existing methods. Economics of on demand printing - Economics of long run. Advantage for the buyer. Efficiencies of Digital on demand work flow. Short run pricing paradox.

Unit-3

Database Marketing's Role:

Customizing traditional print. Customized on-demand print. The future. Other forces of change -Interactivity advantage. Online interactivity advantage. Interactive TV. Demographics. Advantages of search & Retrieval. Alternative media-CD-ROM's. Manufacturing costs-Paper mailing. Alternative media-online. Commercial online services. Commercial applications - Just in 65 time. Appropriate applications for on demand & DP. Advertising. Author reprints. On demand products. In-appropriate applications. Marketing and Selling On-Demand Ser vices - TV programming and ATM cards. Value added. Advantages of on demand. Selling factors. Accepting digital files - File transfer for on-demand.

Unit-4

Networking:

Networks for printing. Networks for publishing. Networks for Inhouse. Ideal Network. WAN (Wide Area Net works). Flexibility. Changing Markets for Print. Market projections, Projection of changes in the no.of colors. Moving towards shorter runs.

Recommended Books :

Digital Printing –**Frank J. Romano.**

On Demand Printing - **Howard M. Fenten**

Course code	PTG-412G				
Category					
Course title	PRINTING PLANT LAYOUT				
Scheme and Credits	L	T	P	Credits	Semester 8th
	3	1	-	3	
Class work	25				
Exam	75				
Total	100				
Duration of Exam	3 Hours				

Unit-1

Site Selection: Strategic issues of location. The supply-distribution system, Dynamic nature of plant location, location strategy-factors influencing choice of location. State regulations on location. Backward areas and Industrial policy. Govt. Policies for decentralization, Industrial estates, comparison of locations-urban v/s rural areas advantages, sub-urban area. Economic survey of site selection. Analytical approach.

Unit-2

Plant Layout: Objectives of good plant layout, principles of plant layout, importance of plant layout, situations in which layout problem may arise, factors influencing plant layout, Methods

66 of plant and factory layout-operation process chart, flow process chart, flow diagrams, string diagrams, machine data cards, templates three dimensional models, correlation chart, travel chart, load path matrix method. Types of plant layout -product layout or live layout - process layout or functional layout-combination layout - static layout or fixed position layout. Symptoms of bad layout. flow pattern-line flow, L type flow, circular flow, U type flow, S or inverted S combination of U and line flow pattern. Characteristics and place of application. Factors governing flow patterns: Combination of line flow and S type of pattern. Combination of line flow and circular type. Processing upwards. Retraction type, Inclined flow. Workstation design-Storage Space requirements.

Unit-3

Plant layout procedure: Accumulate basic data, Analysis and coordinate basic data, decide the equipment and machinery required, Select the material handling system, sketch plan of the plot for making factory building. Determine a general flow pattern, Design the individual workstation. Assemble the individual layout into the total layout calculate storage space required, Make flow diagrams In work stations and allocate them to areas on plot plan, Plan and locate service areas, make master layout. Check final layout, Get official approval of the final layout, install the approved layout.

Plant layout-An analytical approach: Heuristic and other methods of line balancing. Planer single facility location problems. Minimum examples, insights for minimum problem, minimum location problem with distance. MLP with Euclidean distance.

Unit-4

Factory Building (Press Building): Introduction, Advantages of a good factory building, Factors affecting the factory building - nature of manufacturing process-flexibility-expandability-service facilities-employee facilitieslighting-heating-ventilating-air conditioning-appearance- durable construction-security measuresnoise control. Types of factory building - single story building, high bay and monitor type buildings, multi storey buildings, building of special types. Comparison between single storey and multistorey building. Types of construction of factory

building Wood frame construction, Brick construction, Slow burning mill construction, Steel frame construction, Reinforced concrete construction, Precast concrete construction. Specific parts of factory building-roof, walls, floor.

Recommended Books :

Facility layout and location-**Richard L. Francis, John A. White.**

Computer Aided Production Management - **Mahapatra**

Production and Operations Management - **Mchelmann Oakland, Lockyer**

Practical Plant Layout - **Herold B. Maynard**

Industrial Engineering Management System- **Dr. S. Dalela, Dr. Mansoor Ali**

Industrial Engineering & Management - **O. P. Khanna**

Industrial Engineering and Production Management-**M. Mahajan.**

Materials handling for Printer - **A. John Geis, Paul L. Addy.**

Course code	PTG-414G				
Category					
Course title	PACKAGING LAB.				
Scheme and Credits	L	T	P	Credits	Semester 8th
			2	1	
Class work	25				
Exam	75				
Total	100				
Duration of Exam	3 Hours				

PACKAGING LAB.

1. Designing and preparation of various flexible packages.
2. Designing and preparation of various rigid packages.
3. Preparation of Jigged die & unit die for a package design.
4. Study and operation of various packaging machines.
5. Manufacturing of various types of corrugated boards.
6. Cutting, creasing and building up corrugated boxes.
7. Designing & preparation of various designs of paper bags.
8. Testing of raw materials like wood, paper, plastic.
9. Test conducted on Cartons, Corrugated packages, wooden packages.
10. Drop test, Vibration test, Inclined impact test, Compression test.
11. Rolling test, Drum test

Course code	PTG-416G				
Category					
Course title	NEWS PAPER LAB.				
Scheme and Credits	L	T	P	Credits	Semester 8th
			2	1	
Class work	25				
Exam	25				
Total	50				
Duration of Exam	3 Hours				

1. Introduction to type of Web Presses as per the configuration & end products.
2. Study of various units & their setting.
3. Study of pre-make ready & make-ready operations.
4. Printing single & multicolor jobs.
5. Introduction to Digital presses & their working.

PROJECT (PT 418G)

Project will be an innovative working model of machine/equipments used in Printing Industry with required modifications and will be demonstrated during examination with the help of project report by a group of maximum ten students under the guidance of project guide.
(Faculty member)