North Maharashtra University
Jalgaon - 425 001

Syllabus
1993-94

Diploma in Printing Art
Yearly Pattern (full time)

K. S. Wani Institute of Advanced Studies
in Marathi's
Printing School
Unnatinagar, Nakane Road, Deopur,
Dhule - 424 002

North Maharashtra University,
Jalgaon.
Diploma in Printing Art
(1993-94)

Standard of Admission	:	Higher Secondary Certificate Examination of the Divisional Boards of Maharashtra State (H.S.C.) or it's equivalent.
Duration of the Course	:	2 years
Medium of Instruction and Examination	:	Marathi - English (Bilingual)
Pattern of Examination	:	Annual Pattern
No. of weeks in year	:	35 Weeks.

NORTH MAHARASHTRA UNIVERSITY, JALGAON
DIPLOMA COURSE IN PRINTING ART

TEACHING SCHEME

FIRST YEAR

Sub. Code	Subject	Lectures	Practicals
1.1	History of Printing Art and Communication Sckill	1	–
1.2	Printer's Science & Printing Processes	4	e 2
1.3	Printers Design	2	3
1.4	Computer Applications & Typesetting - I	3	6
1.5	Reproduction Photography - I	3	3
1.6	Surface Preparation - I	2	3
1.7	Press Work – I	3	6
		18 +	21 = 39

SECOND YEAR

2.1	Business Management & Administration	2	–
2.2	Accountancy, Costing & Estimating	2	–
2.3	Binding and Finishing	2	3
2.4	Typesetting - II	3	6
2.5	Reproduction Photography - II	3	3
2.6	Surface Preparation - II	3	3
2.7	Press Work – II	3	6
		18 +	21 = 39

* Period / week (45 min. each)
* Total 39 periods per week.
* Total 35 weeks per year.

NORTH MAHARASHTRA UNIVERSITY, JALGAON
DIPLOMA COURSE IN PRINTING ART

EXAMINATION SCHEME

FIRST YEAR

Sub. Code	Subject	Theory Ext.	Theory Term End.	Practicals Practical Exam Int.	Practicals Practical Exam Oral	Practicals Practical Exam Practical
1.1	History of Printing Art and Communication Skills.	80	20	20	—	—
1.2	Printer's Science and Printing Processes	80	20	50	20	30
1.3	Printers Design	80	20	50	20	30
1.4	Computer Application & Typesetting - I	80	20	50	20	30
1.5	Reproduction Photography - I	80	20	50	20	30
1.6	Surface Preparation - I	80	20	50	20	30
1.7	Press Work – I	80	20	50	20	30
		560	140	300	120	180

SECOND YEAR

2.1	Business Management & Administration	80	20	-	-	-
2.2	Accountancy Costing & Estimating	80	20	--	--	--
2.3	Binding and Finishing	80	20	50	20	50
2.4	Typesetting - II	80	20	50	20	50
2.5	Reproduction Photography - II	80	20	50	20	50
2.6	Surface Preparation - II	80	20	50	20	50
2.7	Press Work – II	80	20	50	20	50
		560	140	250	100	250

Total - 1200

NORTH MAHARASHTRA UNIVERSITY, JALGAON

DIPLOMA COURSE IN PRINTING ART

SYLLABUS

listory of Printing Art in India & Communication Skills

History of Printing art in India :

1. Preliminary Printing Stages of Indian scripts.
2. Priting progress of Indian scripts.
3. Printing progress of Devnagri script.
4. Printing Progress and Development in Maharashtra.

Communication skills

What is Communication?

Types of Communication?

1. The five skills of good writing.
   - i. Audience : Thinking of your Reader.
   - ii. Organisation
   - iii. Style
   - iv. Flow
   - v. Accuracy
2. Paragraph writing
   - i. General / Specific
   - ii. Process Description
   - iii. Problem solution
   - iv. Data comment.
3. Technical writing
   - i. Preparation
   - ii. Project Report
   - iii. Tendors.
4. Other types of Writing
   - i. Applications
   - ii. Memoranda
   - iii. Writing summaries
   - iv. Answring examination questions.

1.2 Printing Processes and Printer's Science

Printer's Science :

Units and Measurements

i. MKS and SI units - Unit need definition - Selection Fundtamental and derived quantities. MKS Units, SI units- base and Supplementary units conventions - advantages.

ii. Measurement Principle - need for accurate measurement, linear and angular measurement. Vernier principle or vernier measurement, using vernier, screw guage measurement using micrometer screw guage depth gauge.

iii. Errors and Significant figures - Errors - causes of errors - absolute error - percentage error - significant figures.

Optics

i. Lens, Types of lenses, Power of lens.

ii. Simple lens Mfg.

iii. Mirrors and prism, spectra

iv. Design of processlens, care and testing of process lens.

Acids, Alkalies and PH

i. Arrhenies and lewis concepts of Acids and Bases.

ii. Defination or PH & PH scale.

iii. Measurement of PH using indicators, camparators and meters.

iv. Significance of PH control in various process involved the printing.

Materials used for image carriers

i. Relief process : Type alloys, original plates, Zinc and copper for blocks; Photopolymer plates. Duplicate plates : sterco and electro.

ii. Planography : Zinc, aluminium, anodized aluminium, bimetalic and tri-metalic plates, presensitised plates, photopolymer plates.

iii. Intaglio : Metals used for gravure cylinders and plating.

iv. Material used for other processes e.g. Flexography, screen, Dry offset, etc.

Printing Inks

i. Rawmaterials e.g. pigments, vehicles, driers, resins and other additive.

ii. Constituents of printing ink, general characteristics and requirements of printing inks for various printing processes.

ıi. Terminology used.

iv. Basic drying methods and their suitability for printing processes.

v. Three and four colour process inks.

vi. Different inks e.g. heat set, quickset inks, fugitive, metalic, news inks, magazine inks, gravure inks, flexo inks, screen inks, etc.

int Finishing materials

i. Securing material : Threads, tapes, wires etc.
ii. Adhesives - types and characteristics.
iii. Covering material : paper, cloth, rexine, leather, plastic, etc.
iv. Finishing material : gold leaf, colouring material.
v. Varnishing and lamination material.

ıbstrates

Fibrous and Non-fibrous raw materials used in paper and board, paper manufacturer, properties, characteristics.

Surface treatment related to ultimate use.

Varieties of papers and boards characteristics, sizes british & metric, classification, indentification, selection for different classes of print jobs and printing processes.

iv. Other substrates metal foil, plastic, cellophane.

rinting Processes :

A) The Defination of Graphic Reproduction & scope of term the main processes of reproduction.
i. Relief ii. Planographic iii. Intaglio iv. Screen Printing. (Stencil)

B) The manual methods of creating printing Images (surfaces) woodcuts, line cuts, copper plates, stone Images,, stencils etc. The role of photography in reproducing pictures & type matter.

C) The relief process (letterpress), creation of type & its use. Block making process, other releated methods or relief printing process.

D) Planographic process - stone and other material use for printing, collotype litho printing process, offset printing process, plate making process.

E) Intaglo process - The Monogrphic method of transfer of Image to copper cyllinders, etching processes, copper plates for manual process of duplicating, photogravure printing.

F) Optical principles and instruments cameras, lenses, screen, prism, lamps, mirrors, revresal process, either in prism or mirror. Optical principles lignt principles.

G) Screen Printing - History - stencil, Various methods of Screen Pritnting. Screen Printing material, inks. etc.

1.3 Printer's Design

Theory

1. Various kinds of printed products, their Format and Design Factors. Leaflets, pamphlets, booklets, cataloges, brochures, manuals, books.
2. Magazines and newspapers.
3. Business forms and commercial stationery.
4. Lables, cartons, point-of-sale displays, etc.
5. Factors to be considered in print planning, such as purpose, material etc.
6. Design : Fundamental and Principles :
   Identification of design terms : point, line, space, shape, mass, size and scale, colour, tone, texture, pattern, balance, contrast, proportion, unity, rhythm etc.
7. Typographic elements :
   Type fundamentals, main groups of type face designs, type series, type families. Choosing type face suitable to the subject or product, relation between type face and printing processes, type face and paper surfaces.
8. Legiblity and readability .
9. Colour elements :
   Colour theory, terms used to describe colour : warm and cold colours, hue, value, chroma etc. brightness, shade, tint and colour symbolism.
10. Colour wheel :
    Terms used to describe relationships between colours, complementary, analogous, split complementary colours.
11. Selection of colours :
    Two three - or four colour jobs, choice and effective use of colours.
12. Layout Preparation :
    Materials, equipment and techniques used in the preparation of layout and art work.
    Basic geometric shapes, disposition of elements and space; principles of symmetrical and asymmetrical arrangements; distincition between geometric and optical centres. Analysis of briefs stages and house style. Methods of producing different forms of layout. Page structures, and other parts of book and arrangements of illustrations, test matter. Dummy preparation.
13. Typography
    Methods of preparing a design in its various stages, for different classes of work : book, display, newspapers, magazines and otherkinds, typographic specification for different classes of work.
    Copy preparation for different classes of work in relation to typesetting systems, artwork preparation for different classes of work in relation to different printing processes, paper etc.

14. Planning for production
3. Seletction and co-ordination of production processes within the economic terms of jobs specification.
15. Display composition
Display setting, factors affecting display setting, effective use of white space, type face combinations, suitability use of borders, rules, and other decorative materials, use of initials, use of grid, indentions, arrangement to guide the 'eye'.
16. Monograms, trade-marks, and logotypes.

ıcticals

1. Collection and study of all varieties of printed products.
2. Classification of type faces : Roman letters, venetion, old face, transitional, modern and decorative types.
3. Layout procedures : Interpretation of copy and layout, rough and finished layouts.
4. Lettering for layouts : techniques. layout for simple title papes, letterheads, visiting cards, envelopes, greeting cards, invitation, certificates, advertisements and folders.
5. Designing of monograms and trade marks.
6. Study of colour and mixing of colours, two three- colour combinations.
7. Practicing layout and dummies for various class of work : book, display work/advertisement news, magazines, and other kinds of job work, Study of various kinds of originals used in printed materials.
8. Practicing the techniques of copy preparation.

1.4 Computer Applications & Typesetting - I

Theory

1. Computer Fundamentals :
Concept of a computer as a machine, Input, output, processing concepts, devices used for Input-output, concept of a language (mode of communication), different types of languages, translators, memory storage devices, software package (Introduction), Operating system functions.
2. Applications of computers in various fields :
Application in printing with introudtion to packages used for printing applications.
3. Analysis :
Flow charting and programming computer languages, Three languages used in programming, introdution to BASIC runing a programme, file handling, data base management systems, dBASE III, create, edit and single line commands, querry and report generation.
4. Applicaitons :
Applications of computers to typesetting, reproduction systems, platemaking systems, finishing systems and press control. Application of computers for office automation using dBASE III for payroll, inventory, personnel services, estimating mailing etc., and for automation of printing processes.
5. Graphic devices :
Plotters, printers, digitisers, mouse, lightpen, copmuter graphic, applications to printing.
6. Word processing
Screen editing, screen formating, find and replace (search) commands, print features, dot commands, file handling.
7. Introduction
Historical development of tyepsetting from Gutenberg to present. Review of various systems and their relationship with current production methods.
8. Preparation of Typeseeting
Typrographical units of measurement, Anglo-American point system, Units of set, measurement of length, preparation of copy, house-style, proof reading, casting off, and copy fitting.
9. Letter assembly system
Handsetting, mechanical typesetting, typewriter composition, Phototypeseeting, and computerized typeseting, Display composition by various system, editing, correction and page-make up in all systems.
10. Introdutction to Phototypesetting
Developement from the earliest to the present. Principles of first to present generations Photo Type Setting machines, their performances and usage.

.1. Imposition and planning

Page shapes, margins and size in relation to paper size, rules and imposition upto 32 page, accomodation of press and finishing requirements, sheet work and halfheet work,, gripper edge, signature and register marks.

:ticals

. Study of Hardware.
!. Study of Peripheral Devices and their functions.
3. Study of key board and their functions.
4. Practice in key board operations.
5. Study of the types and functions of storage devices.
6. Practice in transmission of computer generated information.
7. Comparative sutdy of pre-written and user wirtten software progammes.
8. Use, application software and packages.
9. Practice in handling and storage of disks and tapes.
10. Writing simple programmes in computers.
11. Introduction to word processing - study of hardware and software-system unit, study of keyboard, purpose of various functional keys-storage medium, operating system, loading formatting.
12. Invoking word processor - Menu, document name, edit screen, text entry, edit a document, insertion of words/lines, changing the format, underlining of words/lines, saving a document, printing a document, mailmerge-datamerge.
13. Documment preparation : commands, cursor movement, insertion deletion, find and replace, blocks, document saving, on screen formatting, Print controls.
14. Document printing : Print control options, page layout merging documents, using mailmerge/datamerge, interacting with database.
15. Utilities : Deleting a document, viewing the directory, changing the logged volume, spellcheck.
16. Printing processes for the word processed document.
17. Typesetting Routines :

Setting various kinds of work text poetry, table and tabular and display work by handsetting, mechanical composition and phototypesetting.

18. Make up of Pages :

Procedure for making up for differnet kinds of text pages which includes various components, such as headline and folio, foot notes, let in notes, cut in notes, table illustration with legends, etc. make up of preliminary pages and supplementary pages of books.

19. Display composition :

Setting up of display job as per the layouts, using suitable typesetting system for different kinds of display jobs.

20. Imposition

Imposition up to 32 page for upright and landscape pages, half sheet and sheet work, quirewise imposition.

Reproduciton Photography - I

ory

Original for Graphic Reproduction :

Definitions of Graphic Reproduciton, photograph, Photographic negative positive etc., Classifications of originals : Line original, tone original or continuous tone, Full colour Original - Reflection copy, Transparency, Desirable propertics of originals, Calculations and scaling the originals.

Optics :

Simple lenses, Lens aberrations, introduction of process lenses, Aperture and its functions, Relative aperture, Iris Diaphragm, Water house stops, Definitions of : Speed of lens, depth of focus, depth of field etc., Flare, Flare factor, lens flare, Bloomed up lenses, optical reversal : Straight line reversal.

Different types of process cameras and accessories :

Dark room camera, vertical dark room camera, vertical enlarger camera, horizontal dark room camera, computerised cameras, Evalution of modern cameras.

Illuminants in Graphic Reproduction :

Classification of illuminants, units of illumination, lumen, luminous intensity, candle power etc. Inverse square law, Relative intensity, Colour temperature illumination requirements, artificial light source : thermal body radiators and electrical discharge lamps. Study and Evaluation of (lamps) White flame open arc lamps, enclosed arc lamps, incandescent lamps, photography tungston bulb, Photoflood lamps, quartz iodine lamps, mercury vapour lamps, metal hadide lamps, pulsed xenon lamps, Electronic Flash lamps etc.

Emulsion for Graphic reporduction photography :

Brief study of ingredients. Manufacture, Emulsion properties - High contrast, low contrast, speed, color sensitivity, structure of black and white emulsion, Erradiation and halation, Latent image theory, Reciprocity Failure, intermittency Effect, Herschal Effect, Clayden Effect etc. Lith Emulsion. Introduction to Rapid access material.

Processing

Developer's ingredients and their functions. Action of developer : physical development, Chemical Development, Varients in Development and control, lith Developer, Introduction to rapid access processing, after treatements : Reduction, intensification, chemical reversal.

Systematic working

Sensitomertic terms : Exposure, opacity, density, specular and diffuse density, callier coefficient etc., densitometers; visual and photoelectric study of sensitometric curves .

Exposure

Exposure systems used in Graphic reproudction Photography : Time scale (inverse system), Intensity scale (V/Ration system) Evaluation of both systems.

9. Line Photography :

   Factors affecting line exposure : Range magnification factor etc., Method of setting Basic Line exposure or certain film, Basic line exposure on compuuterised camera with on line or off line densitometers, Line seperation from black and white art work. Line negatives from coloured line origninal, Evaluation of Line negatives.

10. Halftone screens :

    Brief study of Halftone screen manufacutre, selection of screen, cross line glass screens; Gray, magenta, screens density gradient of contact screens. Negative positive, standard or universal contact screens, Comparative study of glass and contact screens, Auto screen film or prescreened emulsion.

11. Halftone photography

    Halftone Exposure : factors affecting the halftone exposure, Basic halftone exposure setting on ordinary cameras and on computerised cameras with online or off line densitometers, contrast control with glass screens, screen distance variation, single and multiple stop systems, Merits and demerits of each (Brief study)), contrast control with contact screens, Filters and Exposure calculation (Detail study). Auxiliary or supplementary exposures and contrast control, Flash exposure, Non screen exposure, exposure calculation, Line and halftone combination, Evaluation of halftone negative.

Practiclas

1. Introduction to different equipements, study of different working parts etc.
2. Preparation of processing chemicals.
3. Making line negative by different methods.
4. Line negatives from coloured tone originals.
5. After treatments - Reducers; Intensifiers - Chemical reversal.
6. Halftone negative making.
7. Use of Gray Scale :
   a) Contrat control by different methods.
   b) Practice on different contrasts.

Surface Preparation - I

ory

Substrates used for preparing base mechanicals.
Preparing mechanicals of screen tints.
Preparing layouts by various methods.
Preparing mechanicals for single and multicolour work, use of pin register systems.
Offset plates - Introduction to different plate making processes.
Light sources used for plate exposure study and analysis.
Detailed study of making a surface plate : Graining, counter etching, pre and pst treatments, coating, sensitivity of bichromated colloids, exposure, inking, development, desensitising, washout treatment, contact angle, dark and continuing reactions, Iso Electric point etc.
Light sources used for plate exposure study and analysis.
Detailed study of making a surface plate : Graining, counter etching, pre and post tereatments, coating, sensitivity of bichromated colloids, exposure, inking, development, desensitising. washout treatment, contact angle, dark and continuing reactions, Iso Electric point etc.
Wipe on process of plate making.
Troubles with negative working plates.
). Detailed study of deepetch plates : water and gum process coating, exposure, developing, staining, deepetching, cleaning, coppersing, lacquering, inking, powdering, stencil removing etc.
. Desensitising etches requirements and Formulations.
. Quality control aids and their applications.
. Removal and addition of work on plates.

icals

Making mechanicals for different surface preparation.
Making albumen platem.
Making wipe on plates.

1.7 Press Work - I

Theory

1. Machines for Relief Printing Process.
   i. Letter press machines - classification and brief description.
   ii. Plate machines - classification and brief despription.
   iii. Cylinder machines - classification and description,
   iv. Letter press Rotary machines - classification and working.
   v. Flexographic printing machines - characteristic and working.
   vi. Feeder and delivery system - drying of ink-web control equipment.
2. Machine for Intaglio Printing Process
   i. Sheet fed machines - description working.
   ii. Rotogravure machine - description
3. Machines for Planographic Printing Process :
   i. Sheet fed offset-single colour multicolour, prefecting machines - description and working.
   ii. Introduction to descritpion and working of web offset presses.
4. Machines for screen Printing Process :
   Types of machine available - description and working of each.
5. Printing Unit
   i. Printing units of machines for relief-platens, cylinder, rotaries, two colour, perfecting machines, and flexographic process - construction and working.
   ii. Printing units of intaglio printing machines, construction and working.
   iii. Printing units of planographic printing machine, sheet fed, web-offset plate cylinder, impression cylinder, description and working,
   iv. Printing units of screen printing machine : description and working.
6. Inking Unit :
   i. Inking rollers-kinds characteriistic qualities.
   ii. Inking units of relief printing machines - Platens, cylinders, rotaries and flexographic machines-system and description.
   iii. Inking units of intaglio printing machines - system and description.
   iv. Inking and dampening units of offset machines system and description.
7. Feeding Unit
   Automatic feeders for various printing machines - classification - working.
8. Delivery Units
   Sheets fed machines, rotary machines.
9. Press Work :
   Premake ready and make ready operation in letterpress printing, offset printing, flexographic printing, gravure printing and screen printing processes.

ticals

Letterpress (Demostration)

Automatic Platens and cylinder machines - make ready operations for text, line and halftone setting of feeding and inking delivery units, levelling the impression.

Simple imposition schemes.

Pre and post printing faults and their remedies.

Mounting and locking devices.

Offset

Adjustment of automatic feeders.

Mounting of plate on cylinder, fitting of offset blanket, preparing it for printing,

Preparation of fountain solution, dampening rollers.

Adjustment of inking and dampening roller, ink fountain setting.

Colour mixing and matching.

Make ready and printing of line and halftone one and two colour work.

Ink roller wash up, cleaning dampner, storing plates.

2.1 Business Management and Administration.

Theory

1. Forms of Business Organisation :
   Proprietory, Partnership joint stock company advantages and disadvantages of each.
2. State Enterprises in India :
   Govt. Deptt. Public corporation and Govt. company. The joint sector its concept of management.
3. Small Scale Industries :
   Definition, scope for self employment of printing photographic technicians.
4. Management.
5. Definition :
   Difference with administration, History and growth of scientific management.
6. General Management functions :
   Planning, Orgainisng, co-ordinating, motivating, directing and controlling.
7. Structure of an Organisation :
   Sales and Marketing production and administration-responsibilities.
8. Departmental Management :
   Management, Organisation and responsibilities, leadership, delegation and of authority.
9. Production Organisation :
   Production, planning and control system.
10. Productivity :
    Principles of method study, principles of work measurement, principles of job evaluation, principles of time study, incentive payment scheme.
11. Elements of Personnel Managemnt :
    Industrial psychology - behaviour and attitude, Employment job specification - selection tests and interview induction and training, General welfare amenities handling grievance ensuring uniformity of decision discipline, correcting the workers, employee counelling, absenteeism, labour turn over, joint consultation, works committee.
12. Banking :
    Functions of a bank, finance from bank, credit instruments.
13. Printer's Laws :
    Copy right act, Imprint Factorie's act, Industiral Laws, Shops & Establishment Act and other laws including press and registration act., Shop & Establishment Act, Misuse of National Symbols.
14. Factories Act – Provisions under Factory Act.
    Worker Welfare and Safty, Payment of Minimum Wages Act, Payment of Bonus Act, Industrial Disputes Act, Trade Unionism, ESIS, EPS Schemes.
15. Salesmandship and Advertising.

Principles of method study, principles of work measurement, principles of job evaluation, principles of time study, incentive payment scheme.

). Elements of Personnel Managemnt :

Industrial psychology - behaviour and attitude, Employment job specification - selection tests and interview induction and training, General welfare amenities handling grievance ensuring uniformity of decision discipline, correcting the workers, employee counelling, absenteeism, labour turn over, joint consultation, works committee.

). Printer's Laws :

Copy right act, Imprint Factorie's act, Industiral Laws, Shops & Establishment Act and other laws including press and registration set.

.. Salesmandship and Advertising.

2. Trade Unionism.

2.2 Accountancy, Costing & Estimating

Rationale

All productive activities in an industry are motivated by profit. An accountant analyses the financial aspect of a business to give a correct picutre a to whether it is running on profit or at a loss, as well as how that profit has been made or that loss sustained. People in printing management should be able to do this evaluation with a view of enhance the profit or eliminate the loss of an organisation.

Theory

1. Accountancy :

   Definition - object of Accountacny double entry system-Explanation of Terms - First principles of double entry.

   i. Journal :

   Rules of journalising - Division of Accounts - The importance of ledger - Balancing personal accounts - cash account - Goods Account - Closing of real accounts - Closing of Nominal Account - Capital Account - Drawings Account.

   ii. Sub Division of Journals :

   The cash Book - Bank Reconciliation statement. Journal proper and its objects - Rectification of errors.

   iii. Preparation of Trading Profit and Loss Account and Balance Sheet with necessary adjustments.

2. Introuduction to the object of costing.

   i. The factors likely to affect profitablity :

   Information sought in costing, Diferrence between absorption costing and double entry systme of accountacy.

   ii. Notional Expenses :

   The outline of British Printing Industries Federating system of costing.

   iii. A study of the Budget :

   Classification of expenditure - Base of allocation, apporrtionment and reapportionment cost ceners, calclation of cost recovery rates, Recovery of all budgeted costs, Assessment of Capital values, forecasting the life of Assets, methods of depreciation, cost sheet and estimate form.

3. Estimating :

   i. The importance of acccurate estimating :

   The Tools of an estimatior, output table.

   ii. Calculations:

   Of papers, boards etc. Making estimates for originals and duplicates. Estimating for letter assembly, various methods of surface preparation, Relief and other processes of printing, Estimating ink.

   iii. Estimating for the ware house.

.3 Binding and Finishing

heory

1. Introduction :
   i. Purpose, importance.
   ii. Parts of Book-physical, consitutional.
   iii. Book sizes - british & Metric.
   iv. Study of tools - uses.
   v. Materials - classification, characteristics & use.
   vi. Handling & care of printed material.
   vii.Preforwarding operation - planning, jogging, counting, cutting, slitting, folding, tipping plates.
   viii. Make-up of book - Gathering, insetting, interleaving, collating.
   ix. Folding, gathering, press - kinds, sewing frame, laying press, glue - pot etc.
2. Securing Operation :
   i. Use of thread, tape, cord, wire-stitching, loopig, gluing, pasting, covering pamphlet work.
   ii. Different kind of sewing, cord sewing and tape sweing hand sewing and machine sewing, two on and all along sewing, over casting for loose leaf works, suitablity for different styles of binding.
   iii. End papers : self, single, made end papers, reinforced cloth joint, leather joint, their object.
   iv. Wire stitching m/c, Book Sewing m/c. - working, kinds.
3. Forwarding Operations :
   i. Gluing the back, rounding and backing objects, care and precautions, reducing swelling in the back, flat backs, back lining - manual & by machines, Trimming - three knife trimmers.
   ii. Adhesive binding, thermoplastic, unsewn, threadless and perfect binding by machine.
   iii. Dimensional variation of boards, lining, cutting size warping of boards, prevention, attaching boards, lacing in, split board work, Straw board cutter.
4. Covering Operations :
   Different kinds of covering materials, covering styles, selecting cloth, rexine, leather, otehr materials, measuring and cutting to size and shape and applying adhesive and turning it, pressing, setting the groove or joints, setting the head, setting the bands, polishing, pressing and pasting down, checking & inspection, case making and casing-in-machine.
5. Finishing
   i. Decorating the cover of the book with the finishing tools, blind blocking, gold blocking machine, hand tools, fillets, pallets, rules and mitre. Lettering type holder, brass type, marking for tooling and lettering, heating, testing and pressing, cleaning, inlaying, lacing and bands open up and pressing,
   ii. Edge decorating, colouring, spraying, marbling, guilding, gauffering or tooling the edges, head bands etc.
6. Account Bookbinding :
   i. Ruling machines - kinds, patterns.
   ii. Account book making-up, end paper, sewing, pasting, spine gluing, split boards, tucketting, spring back, cutting, and attaching the boards covering full leather.
   iii. Banding : Single, double, cutguts.
   iv. Laces : holding, lacing.
   v. Account book finishing, indexing, numbering, edge decoration.
7. Publishers Binding :
   i. Folding, bundling, gathering, sewing, nipping, spine gluing, trimming, edge decoration, rounding and backing by machines.
   ii. Alternative forwarding techniques, board cutting and cloth cutting, cover decoration, casing-in, joint-burning-in, pressing by machines.
8. Book repairing work :
   Pulling a book, removing old groove, dry and wet cleaning, washing, mending, inlaying, straightening out of vellum leaves, pressing and binding, craftsmanship and skill.
9. Loose leaf mechanisms and mechanical systems of binding :
   Interscrew, ring metal, universal metal, end lockmetal, prong metal, metal back, ledger thong metal, covering loose leaf mechanisms, mechanical binding, wiro-comb.
10. Automation in bindery.
11. Materials consumption and calculation :
    Calculation of paper, calculation of boards, estimating covering materials; calico, mull and leather. Thread, tape, cord, stitching wire and adhesives.
12. Production control :
    Departmental pla nning and layout, modern production techniques and work flow sequence, prevention from deterioration; insects, fungi etc.

b) **Practicals :**

1. Study of tools and machinery, their uses and care in handling.
2. Materials and supplies essential for a book binding department.
3. Folding, counting, jogging, cutting, gathering, insetting, collating, and stitching & back full paste-up in limb-bound style.
4. Styles of binding (hard-bound books)
   i. Quarter bound cut-flash (Flexible sewing)
   ii. Quarter bound turned in (Library sewing / Two-on-sewing)
   iii. Quarter bound turned in (Sewing on tapes/cords)
   iv. Maintold book (Carbon duplicate/trplicate book)

Styles of binding :

i. Quarter bound turned in with squares (flexible sewing), quarter bound turned in with squares (two on sewing), case binding (overcast sewing) publishers binding (library sewing).

ii. Half bound : calico and marble with edge decoration, spine preparing, leather paring and gold blocking the spine, photo album with colour strings, full bound book, case making.

Account book binding :

i. Half bound : leather and calico, file making or loose leaf binding.

Rebinding - case binding.

Writing pad with gilt corners.

Exercise on sewing machine, exercise on stitching and cutting machine,

). Finishing processes :

Operation of ruling machine, operation of blocking machine, numbering machines : hand numbering and type - high numbering machine, operations, care and maintenance, finishing leather, calico cover with gold foil embossing, hand tooling and blind tooling method, bronzing, varnishing and other surface treatments.

.. Cutting machines :

Understanding of various types of automatic cutters, automatic spacing, fixing an changing of knives, safety on cuters, maintenance and regular routine work in handling and care of machine.

'. Folding machines :

Understaing of various types of automatic folders, knife folding and buckle folding, different folds, their names and purposes, adjustments, maintainance and regular routine work in handling and care of machines.

. Sewing machines :

Different types, methods of sewing, maintainance, routine work.

. Adhesives binding :

Automatic machines, understanding of various types, perfect binder.

. Mechanical and loose-leaf binding, machines used.

2.4 Typesetting - II

Theory

1. Image Generation System :
   Principle of Cathode Ray Tube, laser and light emitted diode, Phototypesetting system; comparison of performance and suitability for full page comparison.
2. Digital Storage :
   Digital storage of type fonts; outline shpes, spirascan system, vertical and horizontal scanning. Digital storage of line and half line graphics and the combined output of text and graphics.
3. Computerized Input System :
   Roll and function of the digital computer in PTS; front end system and intelligent terminals; intelligent and slave PTSs. Automatic justification, Hyphenation and spel check using logical rules and stored dictionary.
4. Editing and Corréction :
   Application of visual display equipment for correction and editing of type setting data prior to exposure use of line printers for proof correction.
5. Electronic page assembly :
   Page view terminals, pre-viewers, and front and systems for full page makeup.
6. Alternative input systems :
   Principles and applications of optical character recognition input system.
7. Word processing :
   Introduction to word processing, its application in industry and commerce, practical application of word processing software.
8. D.T.P. System :
   Apple D.T.P. system and IBM / PC compatible system, page make up software, graphic software, and merging of graphics and text, postscript laser printer and other kind of laser prints. Interfacing of DTP system with PTS systerm, Font availble in different systems, current trends and develoPemnt.

Practicals

1. Production of text, table and tabular matter and display jobs DTP system.
2. Trimming and pasting up of film / paer output for page make up and position on the layout sheet. Creating pages on DTP system, using diffrent software for text graphics.
3. Handling and care of laser printer and dot matrix printer.

ɔduction Photography - II

reproduciton :
citon to corpuscular and wave nature of light. Additive synthesis,
ive synthesis, Theory of colour vision, Mechanism of vision, colour
is and colour printing.
seperation essentials :
cation of filters, colour seperation filters : wide band and Narrow
ers effect of overlap in colour separation, filter factors and filter ratios
re calculations.
ıngles :
ıxtapositioning, colour printing and angular adjustment, causes of
Reproduction of pre-printed coloured originals.
control aids :
ale, colour control patches register punch, pin bars etc.
separation methods :
ınd Demerits of Direct and indirect colour separation methods.
ion of Direct and Indirect colour separations :
evaluation, tone evaluation.
; Dilema :
t errors in Trichromatism Proportonality failure, Additivity failure,
ıcies in the standard trichromatic inks, study of filtered densitometer
of standard inks, evaluation of uncorrected separation.
inciples of colour correction :
ıdy of introduction to colour correction methods; Manual photograhic
ctronic.
tudy of Hand retouching or manual colour Corection :
ouching, Dot etching staging etc.
raphic masking.
e Masking :
s of masking unsharp masks, Pan masking film, One stage negative
Masking Colour, transparencies in Contact frame, Camera back
g for reflection copy : variations.
Masks :
sk, Neo mask, Colour masking film Trimask multi masks advantages
advantages of colour masking films.
control in Masking :
et method, three aim point method, evaluation of correction with
e masking method.
rrection :
Highlight pre mask, shadow mask under colour removal, trapping, black separations for dry and wet on wet printing, U.C.R. mask for positive masking and negative masking.

15. Reproduction by Electronis scanning :
Classification of scanning systems : reciprocal motion, Rotating cylinder, Electronic flying spot introduction to modern scanners important components of the scanner. Photomultiplier tube, Analysing head, cross feed drive colour computer etc. Illuminants in scanning : Analysing, Light sources, Exposing light sources, Basic principles of electronic colour correction : Scanner output quality control, introduction to pre press proving.

Practicals

1. Colour separation from Reflection copy.
2. Manual colour correction, Dye staining etc.
3. Screening from continuous tone separation negatives and dot etching on positives.
4. Manual retouching excersies.
5. Indirect separation from Reflection copy.
6. Positive masking
   a. One stage positive overlay.
   b. Two stage positive over lay masking pre and final masks.
7. Highlight pre-mask from colour transparencies.
8. Different masking techniques
9. Pre press proving.

Surface Preparation - II

ory

. Powder less etching methods for magnisium, Zinc copper plates.
. Bi-metal and tri-metal plates
. Diffusion transfer plates.
. Dry offset plates.
. Pre sensitised plates.
. Photopolymer plates.
. Pre-sensetiesed photopolymer plates for gravure cylinder making.
. Methods of preparing Flexographic plates.
. Electronic engraving.
0. Laser exposed plates.
1. Xerox plates.
2. Direct image plate.
3. K.P.R. Plates.
4. Different machines used in the production of different plates.
5. Quality control in plate making.
6. Screen printing fabrics.
7. Fabric characteristics etc.
8. Modern techniques of screen making.

ticals :

. Making Deepetch plates. (20 Plates)
. Making P.S. Plates (15 plates.)
. Flexographic plate making (Demonstration)
. Gravure cuylinder making. (Demonstration)
. Powderless etching (Demonstration)

3.7 Press Work - II

Theory

1. Web fed printing machines for relief printing process :
   i. Letterpress rotary machines; various types, units, feeding system, tension control, delivery system, sheeters, inking system, registration control system, automatic plaster, automatic detector.
   ii. Flexographic printing machine : Feeding and delivery systems, sheeters, in setting, two colour and perfectors, registration control, make ready techniques, printing faults and remedies.
2. Web offset single or multi colour machines :
   i. Various types and sizes, feeding and delivery systems, inking and dampening systems, web tension control, web detectors, registration control, auto pasters, printing unit.
   ii. Conversion units for inline operations - numbering, slitting, perforation, punching.
   iii. Drying of printed sheets - various methods.
   iv. Various types of plate and blanket used, make ready operations.
3. Gravure printing :
   i. Sheet and web fed presses classification, construction.
   ii. Mounting of cylindes, minor corrections on cylinders, pre-proofing.
   iii. Press work operations.
   iv. Automatic controls and detectors.
   v. Gravure printing faults and their remedies.
4. Screen-Printing
   i. Frames, mesh and other materials used.
   ii. Stencil systems.
   iii. Screen cleaning.
   iv. Dry equipments.
   v. Ink, solvents, thinners, cleaners and retarders.

Practicals (Demonstration)

1. Web Offset
   Paper unwind unit; web end detector with automatic stop lateral adjustment of reel. Loading the reel on the machine webbing the paper from infeed to delivery.
2. Paper infeed station :
   Web tension controls - manual and electronic.
3. Printing Unit
   Adjustment of length register control. lateral register control, Dampening units and adjustment of dampening rollers, inking roller adjustements, Method of washing rollers ink-loading and adjustment on inkducts - automatic

pumping system. Blanket fixing and adjustment of pressure. Plate fixing and adjustment pressure.

Multipurpose or converting unit :

Hole punching numbering, hot carbon coating, spot glueing etc.

Finishing operaitons :

Edge trimming, length perfoating, cross perforation pressure adjustments of counter part cylinder changing perforation rules, circumferential register control print on the machine.

Delivery Station

Adjusting the machine for different sizes of fold methods of attaching rewind station. Switching the sheet cutting deveices, and methods of adjustments for various size web tension sensing devices, tension controls, slitting devices, antistatic devices web inspecting devices, marking devices counters and pre-set counter etc.

Main control panels and Electronic controls used on the electrical motors.

Lubrication system on the machine.

Others :

Web scanner - ultra violet or infra red device after each print station. Re-insertion device control light for register mark for inserter. Register mark reader Electronic control console - Web register adjustment, changin size gears, Photo cell.

Flexography :

i. Mounting the plates over the cylinder, pre make ready and pre proofing etc.

ii. Adjustment of plate cylinder and impression cylinder, selection control of gear wheels, etc., Impressions setting, preparation of ink and additives - filling up the tank, adjustment of anilox roller, transfer roller in relation to printing cylinder and gear wheel circumferential calculating etc., setting of fountain roll, doctor blades, etc.

iii. Paper unwind unit controls : Web end detector with automatic stop lateral adjustment of reel. Loading the reel on the machine, webing the paper from infeed to delivery.

iv. Web end detector - Web tension control - lateral register, circumferential register, etc.

v. Drying of printed sheet - connecting the heating elements to operating control of heat drying etc. control of hot air blowers Water cooling systems - Methods of brininging the circulating system in order.

vi. Delivery station : Paper rewinding unit - controls - adjusting the machine for different sizes of fold, methods of attaching rewind station, switching the sheet cutting devices and methods of adjustments for various sizes, web tension sensing devices, tension controls, slitting devices, antistatic devices, web inspecting devices, marking devices counters and pre-set counters, etc, sheet dielivery.

vii. Different kinds of papers, cellophane, foil plastic films, Laminates, carton boards, etc., running different kinds of materials - substrates on the machines.