5.1 EMPLOYABILITY SKILLS – I

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-	-	2

RATIONALE

The present day world requires professionals who are not only well qualified and competent but also possess good communication skills. Our diploma students not only need to possess subject related knowledge but also soft skills to get good jobs or to rise steadily at their work place. The objective of this subject is to prepare students for employability in job market and survive in cut throat competition among professionals.

DETAILED CONTENTS

1. Writing skills (08 hrs)

   i) Official and business correspondence
   ii) Job application - covering letter and resume
   iii) Report writing - key features and kinds

2. Oral Communication Skills (20 hrs)

   i) Giving advice
   ii) Making comparisons
   iii) Agreeing and disagreeing
   iv) Taking turns in conversation
   v) Fixing and cancelling appointments

3. Generic Skills (04 hrs)

   i) Stress management
   ii) Time management
   iii) Negotiations and conflict resolution
   iv) Team work and leadership qualities

5.2 IMAGE CARRIER PREPARATION

L T P
4 – 4

RATIONALE

Offset plate, wipe on process of plate, photo-polymer plates, Pre sensitized and flexography plates are often used in printing industry. Diploma holder in printing technology should acquire in depth knowledge about various plate making processes. Also, they should developed the skill in making surface plates and pre sensitized plates in different combinations. This subject will develop competencies about surface preparation techniques for printing industry.

DETAILED CONTENTS

1. Off-set plate making and equipments (10 hrs)

Graining, grain structure and basic principle. Surface tension, contact angle, its importance Photomechanical principle and image formation system. Graining machine, whirlers, printing down frames/ light integrating meter/Illuminants flip top frames, step and repeat meter and plate reader.

2. Film assembly and Quality Control Aids (8 hrs)

Use of lining-up table, layout preparation, film assembly and window making. Densitometer, exposure scale, colour control bar, dot gain scale, star target, use of registration marks.

3. Wipe-on-process (6 hrs)

Wipe on process of plate making and plate trouble with remedies e.g. streaked and chalky coating, fibers/tint in, dried coating, weak image, scummy background, etc.

4. Pre-sensitized plate preparation (4hrs)

Preparation of both negative and positive working plates, short run plates, long run plates, baking of Pre-sensitized plates, use of automatic plate processor.

5. Deep etch plate/multi metal plate making process (8 hrs)

Various steps in making deep etch plates/ wet and dry methods . Deep etch plate defects and their remedies. Use of bi-metal and tri-metal plates, multi metal plates.

6. Gravure surface preparation (6 hrs)

Different methods of gravure cylinder preparation, faults in preparation of cylinders and their remedies.

7. Photo-polymer plate making process (6 hrs)

Chemistry of photo polymerization, rigid and flexible photopolymer plates, solvent based plates and eco friendly water washable photopolymer plates for dry and letter press

8. Flexography plate and letter press (4hrs)

Use of rubber plates and synthetic plate their preparation, defects in making plates and their remedies.

1. Screen Printing image carrier preparation (4 hrs)

Different methods of stencil preparation, defects and their remedies.

10. Computer to Plate: (4hrs)

Making of thermal pre-sensitized plate and ultraviolet plates. Their advantages and disadvantages. Principles of digital imaging system.

11. Latest trends in surface preparation area (4hrs)

LIST OF PRACTICALS

1. Making of flat/ paste-ups and windows using both positive/negative.
2. To know the working of flip-top exposing machine
3. Making of text and graphics-Combination wipe on negative working plates.
4. Making positive working pre-sensitized plate.
5. Use of punch registers system.

NOTE: Practical is to be often repeated during the work semester.

RECOMMENDED BOOKS

1. Printing Technology by Adams Faux Rieber; Publihers M/S Galgotia *Book* Source, New Delhi.
2. Printing and Packaging Technology by Offset plate making, Publishers M/S GATF USA. *GATF Publication, USA*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	10	16
2.	8	12
3.	6	10
4.	4	6
5.	8	12
6.	6	10
7.	6	10
8.	4	6
9.	4	6
10.	4	6
11.	4	6
Total	**64**	**100**

5.3 PRESS WORK (PRESS TECHNOLOGY)

L	T	P
4	–	8

RATIONALE

For faster printing work and jobs of huge quantities such as newspapers. magazines, etc web fed machines are required. These machines are also suitable for multi-colour works. This subject deals with the operational features of web-fed presses for offset printing, flexo printing, gravure printing and screen printing. An understanding of application of these machines/processes is very essential for a printing diploma holder.

DETAILED CONTENTS

1. Review of sheet fed printing operations e.g. adjustment of feeder, making unit, damaging unit, make-ready and printing (6 hrs)

2. **Web Offset Machines** (16 hrs)

   2.1 Configuration and types of printing units blanket to blanket, arch type perfecting unit, satellite multi-colour unit.
   2.2 Elements of in feed unit and their adjustment
   2.3 Elements of printing unit and their adjustment
   2.4 Inring and dampening systems and their adjustments
   2.5 Elements of out feed unit and their adjustment
   2.6 Drying Technology
   2.7 Ancillary operation : Punching, numbering, sheeting, slitting and rewinding and Automation
   2.8 Safety precautions in the operation of web offset machines. Noise protection encapsulation.

3. **Flexography Printing** (16 hrs)

   3.1 Principle of flexography printing, kinds and sizes of flexo machines.
   3.2 Basic parts of flexo machine-fountain roll, Anilox (Ink metering roller), plate cylinder, impression cylinder.
   3.3 Inking, feeding and delivery system of flexography machine; registration control and drying system.
   3.4 Safety devices and quality control.
   3.5 Trouble shooting: Printing defects, their causes and remedies.

4. Gravure Printing (12 hrs)

   4.1 Principle, kinds, sizes classification of gravure machines, sheet fed and web fed presses.
   4.2 Feeding system: Sheet/web control during printing, detectors.
   4.3 Study and operational features of different parts of gravure machines, colour printing and register control devices on gravure machines.

4.4 Mounting of cylinder, minor correction on cylinder, pre-proofing.
4.5 Running defects, causes and remedies.

5. Silk Screen Printing (14 hrs)

5.1 Principle, different methods, equipment and material used in screen printing.
5.2 Stencil system: Hand cut, photographic stencil, types; and construction of frame; fabric; mesh count, mesh strength, mesh opening, stretching of screen fabric preparation of base.
5.3 Study and operational features of semi-automatic and automatic screen printing machine; drying equipment for printing of multi colour jobs.
5.4 Ink and substrates; used for different printing jobs.
5.5 Quality control and running defects, their causes and remedies.

LIST OF PRACTICALS

1. Adjustments and preparation of two reels for printing of one reel for fed machine and other for four colour.

2. Printing of Rotary machine (Printing Unit) for bed machine printing only.

3. Make ready and preparation of colour and cutting unit.

4. Practically of Web setting, web turning and tension control web, web guiding, print registering.

5. Flexography printing machine make-ready and printing of single colour/two colour jobs.

6. Gravure printing machine make ready and printing of single colour jobs.

7. Preparation of stencils for screen printing.

8. Setting, printing of different jobs in single colour / multi-colour by silk screen printing.

9. Handling of equipments of all printing processes.

RECOMMENDED BOOKS

1. Flexography; Principle and Practice, Flexography technical Association USA.

2. Lithographic manual GATF, USA. Published by M/S R.K.Printing and *Publishing* company, West Virgina, *U.S.A.*

3. Web offset Press Operation GATF, USA. Published by M/S : Blue Cloud *Books Sellers, USA*

4. Gravure Press Operation GATF, USA. Published by M/S : Blue Cloud *Books Sellers, USA*

5. Printing Technology by Adams Faux Rieber; Publihers M/S Galgotia *Book* Source, New Delhi.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	06	10
2.	16	25
3.	16	25
4.	12	18
5.	14	22
Total	**64**	**100**

5.4 PUBLISHING TECHNOLOGY

L	T	P
4	-	4

RATIONALE

In this subject the diploma students shall be given a comprehensive overview of printing technology supplemented with relevant exercises on publishing.

DETAILED CONTENTS

Unit-1 (6 hrs)

Introduction to Publishing Technology – Meaning, Concept, Scope and Importance

Unit-2 (6 hrs)

Kinds of Publications:

1. Books for Children, dictionary
2. Scientific Technical and Medical Books
3. Textbooks, Journals and Manuals
4. Newspapers and Magazines

Unit -3 (16 hrs)

Process of Publishing

1. Meaning and concept of Manuscripts, CRCs, and Typesetting
2. Concept of Proof Reading in composed pages, content vetting, editing
3. Parts in a book
4. Pre-press activities
5. Production and Emerging Technologies in Publishing
6. An overview different binding techniques for publications along with Lamination

Unit -4 (6 hrs)

1. Costing and estimation for publications
2. Marketing Promotion and Distribution of published books

Unit -5 (16 hrs)

1. Govt. certifications and Licenses required for bringing publications- As Police and RNI Authorities
2. Copy Right Act, IPR
3. Quality Standard for Publications – Bar-coding and ISBN etc.

Unit-6 (14 hrs)

1. e-Publishing – Concept and importance in today's world
2. Technical requirements for e-publishing
3. Role of Internet

LIST OF PRACTICALS

1. Publishing of a newsletter for institute
2. Publishing of a Books and Journal (Small)
3. Editing of books, journals and newsletters
4. Publishing of downloaded notes of Printing Concepts in form of books

RECOMMENDED BOOKS

1. Offset press operating; GATF USA published by Graphic Arts Technical Fndtn Publication, USA
2. Faux 1; Lithography GATF USA. published by Graphic Arts Technical Fndtn Publication, USA
3. Lithographer's manual GATF USA. published by Graphic Arts Technical Fndtn Publication, USA
4. Machines Printing by Durraut W.R., Focal Press London.
5. Technology of offset Printing by C.S. Mishra; Anupam Prakashan Allahabad.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	6	10
2.	6	10
3.	16	24
4.	6	12
5.	16	24
6.	14	20
Total	**64**	**100**

5.5 QUALITY CONTROL AND WASTE MANAGEMENT

L	T	P
5	-	-

RATIONALE

Quality Control and Waste Management are important aspects of printing technology. Keeping this in view, this subject is included in the diploma curriculum besides covering some of these concepts in other subjects.

DETAILED CONTENTS

A Quality Control

1. Introduction (6 hrs)

   Definition, Quality, Quality control and quality assurance its meaning and purpose

2. Management Consideration (6 hrs)

   Quality control as an attitude and management tool. Total Quality control and TQM

3. Quality Parameter in printing (6 hrs)

   Establishing specification and standardization of materials and printing, Inspection and Testing, maintaining records, sampling

4. Statistical Process Control (6 hrs)

   Importance of statistics in quality control

   Frequency Distribution, Mean, Median, Mode, Standard deviation, variance, Normal distribution curve. Graphical representation of various printing parameter. Statistical limit, tolerance

5. Introduction to ISO: 9000 and ISO : 14000 series (8 hrs)

B. Waste Management

6. Introduction: Waste material, Bio-degradable and non bio-degradable, toxic materials (6 hrs)
7. Waste Generation from various section of printing press (8 hrs)
8. Effluent treatment and disposal of works in printing industries (6 hrs)
9. Solid waste management in printing industries (6 hrs)
10. Recycling of waste coming from different section (8 hrs)
11. Green printing and Eco-friendly printing. (6 hrs)
12. Bye-laws, Regulations and environmental issues. (8 hrs)

RECOMMENDED BOOKS

1. Quality Control and Total Quality Management by PL Jain, *Publisher*, Tata McGraw-Hill Education New Delhi
2. Total Quality Management by Arora KC, Jaico Publishing House, Mumbai
3. Total Quality Control essentials; key elements, methodologies and managing for success, published by McGraw Hill, New York
4. Sheet fed offset technology by A.K. Baral, published by M/S Arihant Publication, New Delhi
5. Prospects and Perspectives; of Solid Waste Management by Hosetti, BB, publishers New Age international, New Delhi
6. Concept of Ecology/ Kormondy / Prentice Hall of India, New Delhi
7. Fundamental of Ecology/Odum published by M/S Red and Black *Publishing* Company. New Delhi
8. Environmental Science/ J.Turk & A.Turk published by M/S Springer *Publishing* Company. New Delhi
9. Human Rights – A source book Eds. /R.Dev & S.Das/ NCERT
10. Environmental Pollution/ Dix published by *B. K.* Sharma, Goel *Publishing* House, Meerut (UP)
11. Pollution Control Acts. Rules and Notification/ Central Pollution Control Board, New Delhi

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	6	8
2.	6	8
3.	6	8
4.	6	8
5.	8	8
6.	6	8
7.	8	10
8.	6	8
9.	6	8
10.	8	10
11.	6	8
12.	8	8
Total	**80**	**100**

ENTREPRENEURIAL AWARENESS CAMP

The employment opportunities for diploma holders especially in public sector are dwindling. The diploma holders need to explore the possibilities of becoming entrepreneurs. For this, they must be acquainted with entrepreneurship development, scope of setting up small-scale industry, existing business opportunities, financial support available and various aspects of managing business. In this context, an entrepreneurial awareness camp is suggested. During the camp, experts from various organizations such as banks, financial corporations, service institutes etc. may be invited to deliver expert lectures. Successful entrepreneurs may also be invited to interact with the students. Students may be encouraged to read papers or give seminar during the camp on Entrepreneurship Development related topics.

The camp is to be organized at a stretch for two to three days during fourth semester. Lectures will be delivered on the following broad topics. There will be no examination for this subject.

1. Who is an entrepreneur?

2. Need for entrepreneurship, entrepreneurial career and self employment

3. Scenario of development of small scale industries in India

4. Entrepreneurial history in India, Indian values and entrepreneurship

5. Assistance from District Industries Centres, Commercial Banks, State Financial Corporations, Small industries Service Institutes, Research and Development Laboratories and other Financial and Development Corporations

6. Considerations for product selection

7. Opportunities for business, service and industrial ventures

8. Learning from Indian experiences in entrepreneurship (Interaction with successful entrepreneurs)

9. Legal aspects of small business

10. Managerial aspects of small business