1. SALIENT FEATURES OF THE DIPLOMA PROGRAMME IN PRINTING TECHNOLOGY (SPL. CAD/GAT)

1) Name of the Programme : Diploma Programme in PRINTING TECHNOLOGY (SPL. CAD/GAT)

2) Duration of the Programme : Three years (Six Semesters)

3) Entry Qualification : Matriculation or equivalent as prescribed by State Board of Technical Education, Haryana

4) Intake : 40/60 (or as prescribed by the Board)

5) Pattern of the Programme : Semester Pattern

6) Ratio between theory and Practice : 42 : 58 (Approx.)

7) Industrial Training:

Four weeks of industrial training is included after IV semester during summer vacation. Internal assessment out of 50 marks and external assessment out of another 50 marks will be added in 5th semester. Total marks allotted to industrial training will be 100.

Distribution of Marks:

➢ Daily diary and reports of training - 50 Marks
➢ Viva Voce (External) - 50 Marks

8) Ecology and Environment:

As per Govt. of India directives, a subject on Environmental Education has been incorporated in the scheme.

9) Student Centred Activities:

A provision of 5-6 hrs per week has been made for organizing Student Centred Activities for overall personality development of students. Such activities will comprise of co-curricular activities like extension lectures, library studies, games, hobby clubs e.g. photography, painting, singing, seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities, Civil Defence/Disaster Management activities etc.

2. EMPLOYMENT OPPORTUNITIES FOR DIPLOMA HOLDERS IN PRINTING TECNOLOGY (SPL. CAD/GAT)

Printing is a technique of reproducing and duplicating texts, drawing, illustrations, photographs etc through mechanical and photo mechanical process on printing. Materials like paper, cloth, metal, glass, wood, synthetic, etc. Different types of printing namely letter press, offset, gravure, screen and flexo etc. are in common use.

The Printing Industry, which was craft oriented till a few years ago, has become more & more technology orientated and science based. A lot of sophisticated machines, equipment and processes are being currently used. A greater use of computer and information technology in innovative printing techniques are made in printing industry.

With economic Liberalization, many multinational companies are putting up printing establishments in India because of easy availability of cheap technical manpower, raw material and large demand. Apart from this, the export of print material is also picking up. This results in wide scope of expanding of existing units and also setting up new printing units. All these units will be using state of the art technologies and hence there is ample scope for employment of specialized technologies technicians to run these highly sophisticated machines.

Technology used in printing in India is a heterogeneous mix of different types. The conventional technology used in large establishments, co-exists with modern printing processes. Printing product, production and selling comprises of stages given in Figure 1 in a Printing Unit.

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┌─────────────────────────────────────────┐
│   PRODUCTION PLANNING & CONTROL          │
│   (CONSUMER SUPPORT SERVICES)            │
└─────────────────────────────────────────┘
                    ⇓
┌─────────────────────────────────────────┐
│   VISULISATION, PREPARATION OF IMAGE     │
└─────────────────────────────────────────┘
                    ⇓
┌─────────────────────────────────────────┐
│   LAYOUT & ESTIMATION ACTIVITIES         │
└─────────────────────────────────────────┘
                    ⇓
┌─────────────────────────────────────────┐
│   PRE – PRESS ACTIVITIES                 │
└─────────────────────────────────────────┘
                    ⇓
┌─────────────────────────────────────────┐
│   PRESS WORK ACTIVITIES                  │
└─────────────────────────────────────────┘
                    ⇓
┌─────────────────────────────────────────┐
│   DESPATCH                               │
└─────────────────────────────────────────┘
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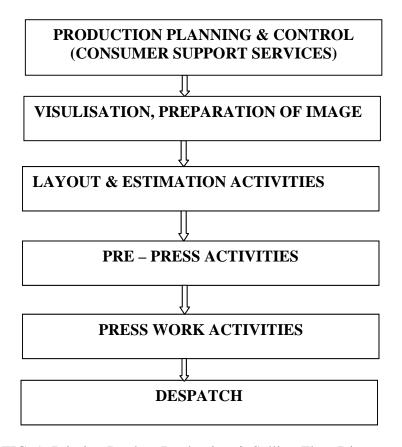
FIG. 1: Printing Product Production & Selling Flow Diagram

Printing Technology (Spl. CAD/GAT) basically covers a major technological area encompassing various industries i. e. Commercial Printing, Newspaper and Magazine Production, Book Production, Computer Stationary and Forms Production, Packaging Novelty Good's Production, Publicity Material etc. All these industries present a broad base employment scenario for diploma holders in medium and large scale industries including the jobs of technicians or supervisors of sophisticated machinery and computerized systems. In addition there are jobs available in the field of marketing, sales and maintenance of printing materials and printing equipment. Self employment opportunities are also available for diploma holders in the field in the form of setting up units for (i) Designing (ii) Type-setting, (iii) Process Camera Work, (iv) Plate Making, (v) Packaging, (vi) Binding (vii) Printing (viii) Scanning (ix) Machining (x) Freelancing and (xi) Machine Maintenance (xii) Screen Printing (xiii) Pre-press (xiv) Publication.

Jobs as supervisors or technicians in offfset, gravure, flexo, and screen printing are also available. Some other avenues of employment include print production executives in public and private sector, technicians in public relations and technicians in newspaper and magazine industries. Most of these technician functions are related to actual production, maintenance and supervisions of scales and marketing.

3. COMPETENCY PROFILE OF DIPLOMA HOLDERS IN PRINTING TECHNOLOGY (SPL. CAD/GAT)

Based on employment opportunities for diploma holders in Printing Technology (Spl. CAD/GAT) following competency profile is arrived at:

- Understand the principles involved in the various printing processes, printing operations, printing machinery and printing equipment

- Understand the physical and chemical properties of various printing materials and Chemical reactions thereof

- Ability to test printing materials

- Ability to select suitable process, operation and materials such as paper, ink and chemicals for a specific printing job.

- Ability to supervise and handle typesetting systems
-
- Ability to handle and supervise the operation of imaging devices for reproduction processes.

- Ability to supervise and handle printing press operation, process photography, planning and plate making for various printing processes.

- Ability to supervise and handle press room operations including rectification of running defects connected with:

     a) Letter Press Printing
     b) Offset Printing
     c) Gravure Printing
     d) Flexo Printing and
     e) Screen Printing

- Ability to supervise and handle binding, print finishing and converting operations related to the production of books, newspapers, magazines, publicity materials, stationery items, packaging etc.

- Ability to detect the running faults in printing machines and rectify these including preventive maintenance and minor repairs

- Ability to manage and control production involving:

     a) Selecting the process and methodology of production:

     b) Estimating and costing;

     c) Planning, scheduling and production control;

     d) Allocation and distribution of work;

     e) Directing and motivating workers to achieve targets;

f) Maintenances of production records;

g) Indenting materials and inventory control;

h) Exercising production and labour and management;

i) Acting as a link between labour and management;

j) Ensuring safety and welfare of labour and plant;

k) Rendering technical advice on choice of materials and processes

- Learning to learn skills and ability to apply scientific methods to problem solving in situations related to print production processes, machinery and management

- Awareness regarding the importance of leadership, interpersonal relations, and ability to effectively communicate in writing or otherwise

- Ability to train shop floor personnel.

- Ability to visualize and create graphic compositions

- Understand and apply the basic concepts, principles and practices of Science/engineering/technology in problem-solving requiring analytical skills and creativity

- Ability to perform basic workshop operations

- Skills in using computers and information technology for various applications in the field of printing industry.

- Awareness regarding safety and important provision of industrial legislation including legislation including ecology and environment.

- Awareness regarding facilities and support system to promote entrepreneurship amongst diploma holders

4. DERIVATION OF CURRICULUM AREAS FROM COMPETENCY PROFILE

Sr. No.	Competency Profile	Curriculum Area
1.	Understand the principles involved in the various Printing processes, printing operations, printing machinery and printing equipment	- Printing Processes - Press Work - Publishing Technology - Engineering Drawing - Engineering Mechanics and Mechanical Engineering - Electronical and Electronic Engineering - Applied Physics - Applied Chemistry - Applied Mathematics
2.	Understand the physical and chemical properties of various printing materials and Chemical reactions thereof	- Printing Science - Applied Chemistry - Applied Physics
3.	Ability to test printing materials	- Printing Science - Applied Chemistry - Applied Physics
4.	Ability to select suitable process, operation and materials such as paper, ink and chemicals for a specific printing job.	- Printing Processes - Printing Science - Graphic Design - Print Reproduction Technology
5.	Ability to supervise and handle typesetting systems	- Computer Applications - Pre-Press Technology - Graphic Design - Computer Application in Printing - CAD/GAT in Printing
6.	Ability to handle and supervise the operation of imaging devices for reproduction processes.	- Print Reproduction Technology
7.	Ability to supervise and handle printing press operation, process photography, planning and plate making for various printing processes.	- Reproduction Technology - Pre-Press Technology - Production Management

8.	Ability to supervise and handle press room operations including rectification of running defects connected with :	- Printing Processes - Press Work - Project Work

    a) Letter Press Printing
    b) Offset Printing
    c) Gravure Printing
    d) Flexo Printing
    e) Screen Printing

9.	Ability to supervise and handle binding, print finishing and converting operations related to the production of books, newspapers, magazines, publicity materials, stationery items, packaging etc.	- Packaging Technology - Graphic Design - CAD/GAT in Printing - Computer Application in Printing -
10.	Ability to detect the running faults in printing machines and rectify these including preventive maintenance and minor repairs	- Printing Equipment and Maintenance - General Engineering for Printing Technology - Engineering Drawing - Press Work - Production Management

11. - Ability to manage and control production involving:

a)	Selecting the process and methodology of production;	- Finishing and Converting
b)	Estimating and costing in printing;	- Production Management
c)	Planning, scheduling and production control;	- Image Carrier Preparation - Publishing Technology
d)	Allocation and distribution of work;	- Packaging Technology
e)	Directing and motivating workers to achieve targets;	- Basics of Management - Estimating and Costing in printing
f)	Maintenances of production records;	- Generic Skills and Entrepreneurship Development
g)	Indenting materials and inventory control;	
h)	Exercising production and quality control;	- Communication Techniques
i)	Acting as a link between labour and management;	- Project Work
j)	Ensuring safety of labour and plant;	
k)	Rendering technical advice on choice of materials and process	

12.	Learning to learn skills and ability to apply scientific methods to problem solving in situations related to print production processes, machinery and management	-	Project Work
13.	Awareness regarding the importance of leadership, interpersonal relations, and ability to effectively communicate in writing or otherwise	- -	Communication Skills Generic Skills and Entrepreneurship Development
14.	Ability to train shop floor personnel	-	Basics of Management
15.	Ability to visualize and create graphic compositions	- - -	Graphic Design Computer Application in Printing CAD/GAT in Printing
16.	Understand and apply the basic concepts, principles and practices of Science/engineering/technology in problem-solving requiring analytical skills and creativity	- - - - - -	Applied Mathematics Applied Physics Applied Chemistry Engineering Drawing General Workshop Practice General Engineering for Printing Technology
17.	Ability to perform basic workshop operations	-	General Engineering for Printing Technology
18.	Skills in using computers and information technology for various applications in the field of printing industry.	- - -	Engineering Drawing Computer Application in Printing Print Reproduction Technology
19.	Awareness regarding safety and important provision of industrial legislation including legislation including ecology and environment.	- -	Basic of Management Ecology and Environment
20.	Awareness regarding facilities and support system to promote entrepreneurship amongst diploma holders	-	Generic Skills and Entrepreneurship Camp

5. ABSTRACT OF CURRICULUM AREAS

a) General Subjects

1. Communication Skills
2. Employability Skills
3. Environmental Education
4. Basics of Information Technology
5. Personality Development Camp
6. Entrepreneurial Awareness Camp

b) Applied Subjects

7. Printing Processes
8. Applied Mathematics
9. Applied Physics
10. Applied Chemistry
11. Engineering Drawing
12. General Workshop Practice
13. Pre-Press Technology
14. Printing Science
15. General Engineering for Printing Technology
16. Packaging Technology
17. Press Work
18. Print Reproduction Technology
19. Computer Applications in Printing
20. Image Carrier Preparation
21. Publishing Technology
22. CAD/GAT in Printing
23. Estimating and Costing in Printing
24. Production Management
25. Finishing and Converting
26. Major Project Work

6.   HORIZONTAL AND VERTICAL ORGANISATION OF THE SUBJECTS

Sr. No.	Subject	Distribution of time in various semesters					
		I	II	III	IV	V	VI
1.	Communication Skills	5	5	-	-	-	-
2.	Applied Mathematics	5	5	-	-	-	-
3.	Applied Physics	6	6	-	-	-	-
4.	Applied Chemistry	5	5	-	-	-	-
5.	Engineering Drawing	6	6	-	-	-	-
6.	General Workshop Practice	6	6	-	-	-	-
7.	Basics of Information Technology	4	-	-	-	-	-
8.	Applied Mechanics	-	5	-	-	-	-
9.	Printing Processes	-	-	8	-	-	-
10.	Graphic Design	-	-	7	-	-	-
11.	Pre-Press Technology	-	-	7	8	-	-
12.	Printing Science	-	-	7	7	-	-
13.	General Engineering for Printing Technology	-	-	7	-	-	-
14.	Packaging Technology	-	-	-	4	-	-
15.	Press Work	-	-	-	8	-	-
16.	Print Reproduction Technology	-	-	-	9	-	-
17.	Employability Skills	-	-	-	-	2	2
18.	Computer Applications in Printing	-	-	-	-	8	-
19.	Image Carrier Preparation	-	-	-	-	8	-
20.	Publishing Technology	-	-	-	-	8	-
21.	CAD/GAT in Printing	-	-	-	-	9	-
22.	Environmental Education	-	-	-	-	-	3
23.	Estimating and Costing in Printing	-	-	-	-	-	5
24.	Production Management	-	-	-	-	-	8
25.	Finishing and Converting	-	-	-	-	-	8
26.	Major Project Work	-	-	-	-	-	9
27.	Student Centered Activities	3	2	4	4	5	5
	Total	**40**	**40**	**40**	**40**	**40**	**40**