1. SALIENT FEATURES OF THE DIPLOMA PROGRAMME IN MECHANICAL ENGINEERING (TOOL AND DIE)

1)	Name of the Programme	:	Diploma Programme in Mechanical Engineering (Tool and Die)
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	:	50 : 50 (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) Entrepreneurship Development:
A subject on Entrepreneurship Development and Management has been incorporated in the scheme.

10) 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 MECHANICAL ENGINEERING (TOOL AND DIE)

Diploma holders in Mechanical Engineering (Tool and Die) find placement in all functional areas like R&D, planning, shop floor production, quality control, inventory management in manufacturing industry. However majority of them find employment in tool making workshop, repair workshop or small manufacturing units.

Diploma holders can be employed in Tool Room organizations. The designation specifying various job requirements of diploma holders in Mechanical Engineering (Tool & Die) in Tool Room organizations.

i. Tool Designer/Tool Design Supervisor.
(Press Tools, Plastic Moulds, Forging & Casting, Dies, Cutting Tools and Jigs & Fixtures etc.)

ii. Supervisor/Foreman

(For production of Press Tools, Plastic Moulds, Forging and Casting, Dies, Cutting tools and Jigs and Fixtures)

iii. Quality Control and Inspection supervisor

Manufacturing and Assembly Industries
Supervisor Design and Development.
Production Supervisor/Foreman
Production Planning and control supervisor.
Process planner
Quality control and inspection supervisor in manufacturing and assembly industry.

iv. Marketing and Servicing
Marketing Assistant.
Sales and Service Engineer

The Diploma holders can also be self employed in tool making workshop, repair workshop or small manufacturing units and consultancy services.

3. COMPETENCY PROFILE OF DIPLOMA HOLDER IN MECHANICAL ENGINEERING (TOOL & DIE)

At the end of the course, the diploma holders should have following compentices:-

i Ability to read, interpret and prepare engineering components drawings.
ii Provide support in design of various types of press tools, plastic moulds, forging dies, casting dies, jigs and fixtures.
iii Understanding of principles and operation of handling various types of machine tools and equipment including CNC machines and special purpose machines required for the manufacture of tools, moulds and dies.
iv Understanding about various forms, characteristics, testing, usage and standards of various types of materials used in Mechanical Engineering industry and advances in the field of materials.
v Knowledge of making various press tools, moulds, gauges, jigs and fixtures in the workshop.
vi Understanding of various heat treatment processes and surface protection processes.
vii Prepare estimates of time and material required and cost for various jobs.
viii Competency to measure various parameters using various measuring instruments
ix Knowledge about quality management techniques and skill in implementing quality control tools.
x Communicate effectively with others.
xi Maintain, service and repair various machine tools and equipment, press tools and dies.
xii Guide the workers regarding correct use of tools, instruments, machines, working method and cutting parameters in order to improve efficiency.
xiii Knowledge and skills to maintain suitable records of production and services, analyze operational efficiency and causes of waste and take remedial action.
xiv Knowledge about effluents and pollution and methods to control pollution.
xv Knowledge and skills in Applied Sciences so as to develop scientific temper and their applications in technology subjects and as a foundation for continued learning.
xvi Knowledge and skills in Engineering Sciences which are pre-requisite to understand technology subjects.
xvii Appreciation of appropriate attitudes, professional ethics and values.
xviii Set up and manage a small-scale enterprise for self-employment.

4. DERIVING CURRICULUM AREAS FROM COMPETENCY PROFILE

Sr. No.	Competency	Curriculum Area(s)
i)	Ability to read, interpret and prepare engineering components drawings.	▪ Engineering Drawing ▪ Machine Drawing ▪ Computer Aided Drafting
ii)	Provide support in design of various types of press tools, plastic moulds, forging dies, casting dies, jigs and fixtures	▪ Press tool - Design and Drawing ▪ Plastic Mould - Design and Drawing ▪ Forging and casting dies- Design and Drawing ▪ Jigs, fixtures, and gauges- Design and Drawing.
iii)	Understanding of principles, and operation of handling various types of machine tools and equipment including CNC machines and special purpose machines required for the manufacture of tools, moulds, and dies.	▪ Workshop Technology ▪ Workshop Practice ▪ CNC Machines and Automation ▪ Basics of Mechanical Engineering ▪ General Workshop Practice
iv)	Understanding about various forms, characteristics, testing, usage and standards of various types of materials used in Mechanical Engineering industry and advances in the field of materials.	▪ Materials and Metallurgy ▪ Strength of Materials
v)	Knowledge of making various press tools, moulds, gauges, jigs and fixtures in the workshop.	▪ Workshop Practice ▪ Tool Room Practice
vi)	Understanding of various heat treatment processes and surface protection processes.	▪ Workshop Technology ▪ Heat treatment
vii)	Prepare estimates of time and material required and cost for various jobs.	▪ Estimating and costing
viii)	Competency to measure various parameters using various measuring instruments	▪ Inspection and Quality Control
ix)	Knowledge about quality management techniques and skill in implementing quality control tools.	▪ Industrial Engineering ▪ Inspection and Quality Control
x)	Communicate effectively with others	▪ Communication Skills ▪ Employability Skills
xi)	Maintain, service and repair various machine tools and equipment, press tools and dies .	▪ Tool Room Practice ▪ Project Work
xii)	Guide the workers regarding correct use of tools, instruments, machines, working method and cutting parameters in order to improve efficiency.	▪ Workshop Technology ▪ Workshop Practice
xiii)	Knowledge and skills to maintain suitable records of production and services, analyze operational efficiency and causes of waste and take remedial action.	▪ Industrial Engineering

xiv)	Knowledge about effluents and pollution and methods to control pollution.	▪ Environmental Education
xv)	Knowledge and skills in Applied Sciences so as to develop scientific temper and their applications in technology subjects and as a foundation for continued learning.	▪ Applied Physics ▪ Applied Chemistry ▪ Applied Mathematics
xvi)	Knowledge and skills in Engineering Sciences which are pre-requisite to understand technology subjects.	▪ Applied Mechanics ▪ Strength of Materials ▪ Basics of Electrical and Electronics Engineering ▪ Basics of Mechanical Engineering ▪ Hydraulic and Pneumatic Systems
xvii)	Appreciation of appropriate attitudes, professional ethics and values	▪ Entrepreneurship development & management ▪ Employability Skills ▪ Student centre Activities
xviii)	Set up and manage a small-scale enterprise for self-employment.	▪ Entrepreneurship Development & Management

5. ABSTRACT OF CURRICULUM AREAS

Following is the abstract of curriculum areas:

5.1 Applied Science

- Applied Mathematics
- Applied Physics
- Applied Chemistry
- Basics of Information Technology

5.2 Engineering Sciences

- Engineering Drawing
- Applied Mechanics
- Materials and Metallurgy
- Strength of Materials
- Basics of Electrical and Electronics Engineering
- Hydraulic and Pneumatic Systems
- Basics of Mechanical Engineering

5.3 Core Engineering/Technology

- Machine Drawing
- Press Tool-Design and Drawing
- Jigs, Fixtures and Gauges – Design and Drawing
- Plastic Mould – Design and Drawing
- Forging and Casting Dies- Design and Drawing
- Computer Aided Drafting
- Inspection and Quality Control
- CNC Machines and Automation
- Industrial Engineering
- Workshop Technology
- Workshop Practice
- General Workshop Practice
- Tool Room Practice
- Industrial Training
- Project work

5.4 Management Subjects

- Communication Skills
- Employability Skills
- Environmental Education
- Entrepreneurship Development and Management

5.5 Student Centred Activities

It includes industrial visits, extension lectures, seminars, library studies, hobby clubs, sports and games and cultural activities.

6. HORIZONTAL AND VERTICAL ORGANISATION

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.	Basics of Electrical and Electronics Engineering	-	-	5	-	-	-
10.	Strength of Materials	-	-	6	-	-	-
11.	Press Tool – Design and Drawing	-	-	6	-	-	-
12.	Workshop Technology	-	-	3	3	3	-
13.	Workshop Practice	-	-	9	9	9	-
14.	Machine Drawing	-	-	6	-	-	-
15.	Materials and Metallurgy	-	-	-	5	-	-
16.	Hydraulic and Pneumatic Systems	-	-	-	6	-	-
17.	Jigs, Fixtures & Gauges – Design and Drawing	-	-	-	5	-	-
18.	Computer Aided Drafting	-	-	-	3	-	-
19.	Basics of Mechanical Engineering	-	-	-	5		-
20.	Heat Treatment	-	-	-	-	4	-
21.	Plastic Mould - Design and Drawing	-	-	-	-	6	-
22.	Employability Skills	-	-	-	-	2	2
23.	Environmental Education	-	-	-	-	3	-
24.	CNC Machines and Automation	-	-	-	-	5	-
25.	Estimating and Costing	-	-	-	-	3	-
26.	Industrial Engineering	-	-	-	-	-	4
27.	Entrepreneurship Development and Management	-	-	-	-	-	3
28.	Forging & Casting Dies - Design & Drawing	-	-	-	-	-	7
29.	Inspection and Quality Control	-	-	-	-	-	6
30.	Tool Room Practice	-	-	-	-	-	4
31.	Project Work	-	-	-	-	-	8
32.	Student Centered Activities	3	2	5	4	5	6
	Total	**40**	**40**	**40**	**40**	**40**	**40**