

REVISED CURRICULUM FOR DIPLOMA PROGRAMME IN PLASTIC TECHNOLOGY FOR THE STATE OF HARYANA



Prepared by:

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**1. SALIENT FEATURES OF THE DIPLOMA PROGRAMME IN
PLASTIC TECHNOLOGY**

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|----|----------------------------------|---|--|
| 1. | Name of the Programme | : | Diploma Programme in Plastic Technology |
| 2. | Duration of the Programme | : | Three Years |
| 3. | Entry Qualifications | : | Matriculation or equivalent as prescribed by AICTE |
| 4. | Admission Criteria | : | Entrance Examination/Test |
| 5 | Intake | : | 40 |
| 6 | Pattern of the Programme | : | Semester Pattern |
| 7. | Ratio between Theory & Practical | : | 50 : 50 |

2. JOB OPPORTUNITIES

Plastic Technologists can get employment with:

- Plastic Processing Industries such as
 - Packaging
 - Carry Bag
 - Raw Material
 - Household articles
 - Paints, Coatings & Lacquers
 - Adhesives
 - Wire and Cable Coating
 - Polymeric composites, elastomers and sealants
 - Conduit pipes
- Polymer manufacturing industry
- Industries manufacturing Electrical Components and Accessories
- Chemical industry
- Automobile industry
- Textile industry
- Agricultural Appliances industry
- Footwear Industry
- Furniture making units
- Toy manufacturing
- Rexin (artificial leather cloth) manufacturing unit.
- Dairy Industry

In industry diploma holders in plastic technology can be placed in departments like quality control, research and development, production, sales, marketing and customer care.

These diploma holders can also be placed in educational organizations as teachers, demonstrators and laboratory technicians.

Plastic technologists can also get employment in:

- Biomedical applications
- Defense (Plastic Research)

Diploma holders in plastic technology can also set up their own small-scale industries and could be self-employed.

3. COURSE OBJECTIVES

Keeping in view the employment opportunities of diploma holders in plastic technology, the course is aimed at developing following knowledge and skills in the students:

1. Ability to prepare, read and interpret engineering drawings.
2. Understanding of various plastic raw materials, additives and compounds used for commodity, products and engineering items, and their selection for various applications.
3. Ability to formulate suitable compounds so as to make plastic products of desired properties.
4. Ability to formulate a design for the product and design a suitable mould/die for fabricating the component.
5. Ability to interpret, design and prepare drawing of products, moulds and dies.
6. Understanding of various manufacturing processes and processing machinery used for injection molding, blow molding and extrusion processes for various products.
7. Understanding of basic concepts and principles of instrumentation and control.
8. Understanding of basic testing standards and ability to achieve quality assurance of plastic components/material.
9. Ability to manage shop floor with a view to optimise the use of men, material and machines for achieving the laid down targets.
10. Appreciation of the role of Plastic Technologist.
11. Understanding of various aspects of human and industrial relations, leadership, motivation, human resource development, industrial legislation, and safety and environment at work places.
12. Awareness regarding use of computers and its application in plastic industries.
13. Ability to communicate verbally and in writing to perform functions at technician engineer level.
14. Understanding of general principles of applied sciences and basics of engineering to function effectively as a plastic technologist.
15. Ability to prepare feasibility and project report of the manufacturing of plastic product; start and manage a small venture in plastic and set up research and development laboratory with the basic facility for a specified industry.
16. Ability to estimate the cost of manufacturing plastic products.
17. Ability to promote marketing of the product and guide consumers.
18. Ability to maintain and upkeep plastic processing machines.
19. Ability to cope up with advancements in the field of plastics and to gain speciality.
20. Development of good personality in order to have effective communication and business ethics.
21. Awareness about reusability and eco-friendly use of plastics

4. DERIVING CURRICULUM AREAS FROM COURSE OBJECTIVES

The following curriculum areas have been derived from course objectives:

Sr. No.	Curriculum Objectives	Curriculum Areas/ Subjects
1.	Ability to prepare, read and interpret engineering drawings.	<ul style="list-style-type: none"> - Engineering Drawing - General Workshop Practice
2.	Understanding of various plastic raw materials, additives and compounds used for commodity products and engineering items, and their selection for various applications.	<ul style="list-style-type: none"> - Applied Chemistry - Polymeric Materials and Properties - Polymer Chemistry - Introduction to Plastic Technology
3.	Ability to formulate suitable compounds so as to make plastic products of desired properties.	<ul style="list-style-type: none"> - Applied Physics - Compounding of polymers - Engineering and Speciality Polymers
4.	Ability to formulate a design for the product and design a suitable mould/die for fabricating the component.	<ul style="list-style-type: none"> - General Workshop Practice - Design of Dies and Moulds
5.	Ability to interpret design and drawing of products, moulds and dies.	<ul style="list-style-type: none"> - Engineering Drawing - AUTOCAD - Polymer Product Design
6.	Understanding of various manufacturing processes and processing machinery used for injection molding, blow molding and extrusion processes for various products.	<ul style="list-style-type: none"> - Applied Mathematics - Mechanics of solids - Unit Operations - Process Instrumentation - Engineering Fundamentals - Plastic Processing Techniques
7.	Understanding of basic concepts and principles of instrumentation and control.	<ul style="list-style-type: none"> - Process Instrumentation
8.	Understanding of basic testing standards and ability to achieve quality assurance of plastic components/material.	<ul style="list-style-type: none"> - Applied Physics - Applied Chemistry - Plastic Testing and Quality Control
9.	Ability to manage shop floor with a view to optimise the use of men, material and machines for achieving the laid down targets.	<ul style="list-style-type: none"> - Communication Techniques - Industrial Management - Plastic Processing Techniques - Plastic Testing & Quality Control

10.	Appreciation of the role of Plastic Technologist.	- Orientation to Polymer Engineering
11.	Understanding of various aspects of human and industrial relations, leadership, motivation, human resource development, industrial legislation, and safety and environment at work places.	- Industrial Management - Minor Project - Environment and Pollution in Plastic Industry
12.	Awareness regarding use of computers and its application in plastic industries.	- Basics of Information Technology - Computer Aided Mould Design
13.	Ability to communicate verbally and in writing to perform functions at technician engineer level.	- Communication Techniques
14.	Understanding of general principles of applied sciences and basics of engineering to function effectively as a plastic technologist.	- Applied Chemistry - Applied Physics - Mechanics of solids - Applied Mathematics
15.	Ability to prepare feasibility and project report of the manufacturing of plastic product; start and manage a small venture in plastic and set up research and development laboratory with the basic facility for a specified industry.	- Major Project - Entrepreneurship Development and Management - Plastic Testing and Quality Control - Polymer Product Design - Plastic Processing Techniques
16.	Ability to estimate the cost of manufacturing plastic products.	- Applied Mathematics - Industrial Management - Project Work - Polymer Product Design
17.	Ability to promote marketing of the product and guide consumers.	- Industrial Management
18.	Ability to maintain and upkeep plastic processing machines.	- Maintenance of plastic processing Machines
19.	Ability to cope up with advancements in the field of plastics and to gain speciality.	- Rubber Technology - Reinforced Plastics - Adhesives & Coating Technology - Engineering & Speciality Polymers
20.	Development of good personality in order to have effective communication and business ethics.	- Student Centered Activity
21.	Awareness about reusability and eco-friendly use of plastics	- Environment and Pollution in Plastic Industry

5. ABSTRACT OF CURRICULUM AREAS

a) Basic Sciences and Humanities

1. Communication Skills
2. Basics of Information Technology
3. Entrepreneurship Development and Management
4. Industrial Management

b) Applied Sciences

5. Applied Mathematics
6. Applied Physics
7. Applied Chemistry

c) Basic Courses in Engineering/Technology

8. Engineering Drawing
9. General Workshop Practice
10. Engineering Fundamentals
11. Mechanics of Solids

d) Applied Courses in Engineering/Technology

12. Introduction to Plastic Technology
13. Orientation to Polymer Engineering
14. Polymer Chemistry
15. Unit Operations
16. Polymer Science
17. Polymeric Materials and Properties
18. Design of Dies and Moulds
19. Engineering and Speciality Polymers
20. Plastic Processing Techniques
21. AUTOCAD
22. Process Instrumentation
23. Polymer Product Design
24. Compounding of Polymers
25. Plastic Testing & Quality Control
26. Computer Aided Mould Design
27. Environment and Pollution in Plastic Industry
28. Maintenance of Plastic Processing Machines
29. Minor Project
30. Major Project

e) Specialised Courses in Engineering/Technology (Electives) (Any one of the following)

31. Reinforced Plastics
32. Rubber Technology
33. Adhesion & Coating Technology

6. HORIZONTAL AND VERTICAL ORGANISATION OF THE SUBJECTS

Sr. No.	Project	Distribution in Hours					
		I	II	III	IV	V	VI
1.	Communication Skills	5	5	-	-	-	-
2.	Applied Mathematics	5	5	-	-	-	-
3.	Applied Physics	6	-	-	-	-	-
4.	Applied Chemistry	4	-	-	-	-	-
5.	Basics of Information Technology	4	-	-	-	-	-
6.	Entrepreneurship Development and Management	-	-	-	-	-	3
7.	Engineering Drawing	6	6	-	-	-	-
8.	General Workshop Practice	6	6	-	-	-	-
9.	Engineering Fundamentals	-	-	7	-	-	-
10.	Introduction to Plastic Technology	-	3	-	-	-	-
11.	Orientation to Polymer Engineering	-	3	-	-	-	-
12.	Polymer Chemistry	-	5	-	-	-	-
13.	Mechanics of Solids	-	-	5	-	-	-
14.	Unit Operations	-	-	8	8	-	-
15.	Industrial Management	-	-	-	-	3	-
16.	Polymer Science	-	-	5	-	-	-
17.	Polymeric Materials and Properties	-	-	3	-	-	-
18.	Design of Dies and Moulds	-	-	-	6	6	-
19.	Engineering and Speciality Polymers	-	-	-	3	-	-
20.	Plastic Processing Techniques	-	-	-	8	8	8
21.	AUTOCAD	-	-	6	-	-	-
22.	Process Instrumentation	-	-	-	6	-	-
23.	Polymer Product Design	-	-	-	-	3	-
24.	Compounding of Polymers	-	-	-	-	4	-
25.	Plastic Testing & Quality Control	-	-	-	-	7	-
26.	Computer Aided Mould Design	-	-	-	-	4	-
27.	Environment and Pollution in Plastic Industry	-	-	-	-	-	5
28.	Maintenance of Plastic Processing Machines	-	-	-	-	-	8
29.	Elective Subjects	-	-	-	-	-	3
30.	Project Work (Major/Minor)	-	-	-	4	-	8
31.	Student Centred Activities	4	7	6	5	5	5
	Total	40	40	40	40	40	40