

1. SALIENT FEATURES OF THE DIPLOMA PROGRAMME IN CHEMICAL ENGINEERING (SPL. IN POLYMER ENGINEERING)

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| 1. | Name of the Programme | : | Diploma programme in Chemical Engineering (Spl. in Polymer Engineering) |
| 2. | Duration of the Programme | : | Six Semesters (Three Years) |
| 3. | Entry Qualification | : | Matriculation or equivalent as prescribed by State Board of Technical Education, Haryana |
| 4. | Intake | : | 40 |
| 5. | Pattern of the Programme | : | Semester System |
| 6.. | Ratio between theory and Practice classes | : | 50 : 50 |

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:

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| ➤ 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

A diploma holder in Chemical Engineering (Spl. in Polymer Engineering) can get employment with:

- Polymer Processing Industries such as
 - Packaging
 - Household articles
 - Paints, Coatings and Lacquers
 - Adhesives
 - Wire and cable coating
 - Polymeric composites, elastomers and sealants
 - Conduit pipes

- Polymer manufacturing industry
- Industries manufacturing electrical components and accessories
- Sports industry
- Automobile industry
- Textile industry
- Agriculture and irrigation
- Agricultural tool industry
- Footwear industry
- Furniture making units
- Toy and gift manufacturing
- Rexin (artificial leather cloth) manufacturing unit.
- Tyre industry
- Packaging industry
- Recycling units
- Biomedical industry
- Research and Development laboratories
- Compounding and colouring of polymers (Master-batch preparation)

In industry, diploma holders in Chemical Engineering (Spl. in Polymer Engineering) can be placed in departments like quality control, research and development, production, sales, marketing and customer care, mould manufacturing, mould design, computerized control of process.

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

Diploma holders in Chemical Engineering (Spl. in Polymer Engineering) can also set up their own small-scale industries. These diploma holders can also go for higher studies.

3. COMPETENCY PROFILE

Keeping in view the employment opportunities of diploma holders in Chemical Engineering (Spl. in Polymer Engineering), 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 polymer 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 moulding, blow moulding, extrusion processes etc. 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 polymer engineer
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 polymer 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 polymer engineer.
15. Ability to prepare feasibility and project report of the manufacturing of polymer products.
16. Start and manage a small venture in polymers.
17. Ability to estimate the cost of manufacturing polymer products.
18. Ability to promote marketing of the product and guide consumers.
19. Ability to cope up with advancements in the field of polymers and to gain speciality.
20. Development of good personality in order to have effective communication and business ethics.
21. Awareness about reusability, recycling and eco-friendly use of polymers.

4. DERIVING CURRICULUM AREAS FROM COMPETENCY PROFILE

The following curriculum areas have been derived from course objectives:

Sr. No.	COMPETENCY	Curriculum Areas/ Subjects
1.	Ability to prepare, read and interpret engineering drawings.	<ul style="list-style-type: none"> - Engineering Drawing - Computer Aided Drafting - Computer Aided Mould Design - 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 Science
3.	Ability to formulate suitable compounds so as to make plastic products of desired properties.	<ul style="list-style-type: none"> - Applied Physics - Polymer Processing Techniques - Polymer Compounding and Formulation - Strength of Materials
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 - Computer Aided Mould Design
5.	Ability to interpret design and drawing of products, moulds and dies.	<ul style="list-style-type: none"> - Engineering Drawing - Computer Aided Drafting - Computer Aided Mould 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 - Mechanical Operations - Fluid Flow - Plastic Processing Techniques
7.	Understanding of basic concepts and principles of instrumentation & control.	<ul style="list-style-type: none"> - Mechanical Operations - Fluid Flow - Process Instrumentation and Control
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 Product Design - Polymer Testing, Characterisation 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 Skills - Entrepreneurship Development and Management - Polymer Processing Techniques - Polymer Testing, Characterisation and Quality Control

10.	Appreciation of the role of Polymer Engineer	<ul style="list-style-type: none"> - Polymer Science - Industrial Training
11.	Understanding of various aspects of human and industrial relations, leadership, motivation, human resource development, industrial legislation, and safety and environment at work places.	<ul style="list-style-type: none"> - Project Work - Environmental Education - Entrepreneurship Development and Management
12.	Awareness regarding use of computers and its application in polymer industries.	<ul style="list-style-type: none"> - Basics of Information Technology - Computer Aided Drafting - Computer Aided Mould Design
13.	Ability to communicate verbally and in writing to perform functions at technician engineer level.	<ul style="list-style-type: none"> - Communication Skills - Entrepreneurship Development and Management
14.	Understanding of general principles of applied sciences and basics of engineering to function effectively as a polymer engineer.	<ul style="list-style-type: none"> - Applied Chemistry - Applied Physics - Applied Mathematics - Engineering Fundamentals - Strength of Materials
15.	Ability to prepare feasibility and project report of the manufacturing of plastic product	<ul style="list-style-type: none"> - Project Work - Entrepreneurship Development and Management
16.	Start and manage a small venture in polymers	<ul style="list-style-type: none"> - Polymer Testing, Characterisation and Quality Control - Polymer Processing Techniques
17.	Ability to estimate the cost of manufacturing polymer products.	<ul style="list-style-type: none"> - Applied Mathematics - Entrepreneurship Development and Management - Project Work
18.	Ability to promote marketing of the product and guide consumers	<ul style="list-style-type: none"> - Entrepreneurship Development Management
19.	Ability to cope up with advancements in the field of polymers and to gain speciality.	<ul style="list-style-type: none"> - Polymer Science and Technology - Plastic Product Design - Polymer Compounding and Formulation
20.	Development of good personality in order to have effective communication and business ethics.	<ul style="list-style-type: none"> - Student Centered Activity - Entrepreneurship Development and Management
21.	Awareness about reusability, recycling and eco-friendly use of polymers.	<ul style="list-style-type: none"> - Environmental Education

5. ABSTRACT OF CURRICULUM AREAS/SUBJECTS

Following is the abstract of curriculum areas:

a) General Studies

1. Communication skills
2. Basics of Information Technology
3. Employability Skills
4. Environmental Education
5. Entrepreneurship Development and Management

b) Applied Science

6. Applied Mathematics
7. Applied Physics
8. Applied Chemistry

c) Basic Courses in Engineering/Technology

9. Applied Mechanics
10. Engineering Fundamentals
11. Strength of Materials
12. Fluid Flow

d) Core Courses in Engineering/Technology

13. Polymer Science
14. Chemical Process Calculations
15. Mechanical Operations
16. Computer Aided Drafting
17. Polymer Processing Techniques
18. Polymeric Materials and Properties
19. Heat Transfer
20. Mass Transfer
21. Chemical Engineering Thermodynamics
22. Computer Aided Mould Design
23. Design of Dies and Moulds
24. Chemical Reaction Engineering
25. Polymer Compounding and Formulation
26. Employability Skills
27. Polymer Testing, Characterisation and Quality Control
28. Plastic Product Design
29. Process Instrumentation and Control
30. Project Work

