

DIPLOMA PROGRAMME IN CERAMIC ENGINEERING
(For the State of Haryana)

1. SALIENT FEATURES

1. Name of the Programme : Diploma Programme in Ceramic Engineering
- 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 : 37 : 63 (Approx.)

7) Industrial Training:

Six 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

Employment opportunities for diploma holder in Ceramic Engineering are visualized in following industries at various levels/positions.

- i) White Ware Industry
 - (a) Sanitary ware
 - (b) Tiles
 - (c) Crockery
 - (d) Pottery ware
 - (e) Handicraft
- ii) Refractories
- iii) Glass Industry
- iv) Cement Industry
- v) Modern Ceramic industries-metallurgical cosmoferrites, modern insulators, BEL etc.

In various capacities as Production Supervisor, Ceramic Engineer, Ceramist, Glass technologist, Quality Control Supervisor, Inspection Supervisor, In plant Laboratory Supervisor, R&D Supervisor, Sales and Marketing Officer.

- vi) Iron and Steel Industry
- vii) DRDO, ISRO, NNFL (National Nuclear Fuel Limited), NALCO (National-Aluminium Cooperation Limited)
- viii) Lab Instructor in teaching institution
- ix) Self employed in setting up small units

3. COMPETENCY PROFILE

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

1. Basic understanding of concepts and principles related to applied sciences like physics, chemistry and mathematics.
2. Development of communication and interpersonal skills for effective functioning in the world of work.
3. Ability to classify and understand the properties of refractories, white wares, glass and cement.
4. Ability to prepare, read and interpret engineering drawings.
5. Knowledge of physical, chemical and thermal properties of raw materials, additives and finished products.
6. Understanding of various manufacturing processes and machinery used for ceramics production.
7. Ability to plan, schedule, organise, direct, control and coordinate men, materials and machines for the production of ceramic products.
8. Ability to select appropriate raw materials, processes, machines and make cost calculations for production of ceramics.
9. Proficiency in use of computers.
10. Basic manual and machining skills as an aid to function effectively in the process industry.
11. Ability to formulate suitable compounds so as to make ceramic products of desired properties.
12. Understanding of various aspects of human and industrial relations, leadership, motivation, human resource development, industrial legislation, safety and environment at work places along with knowledge of marketing and sales promotion of ceramic products.
13. Development of generic skills of thinking and problem solving, communication, attitudes and value system for effective functioning in process industry.
14. Development of good personality in order to have effective communication and business ethics.

4. DERIVING CURRICULUM AREAS FROM COMPETENCY PROFILE

The following curriculum areas have been derived from course objectives:

Sr. No.	Curriculum Objectives	Curriculum Areas/Subjects
1.	Basic understanding of concepts and principles related to applied sciences like physics, chemistry and mathematics.	<ul style="list-style-type: none"> - Applied Physics - Applied Chemistry - Applied Mathematics
2.	Development of communication and interpersonal skills for effective functioning in the world of work.	<ul style="list-style-type: none"> - Communication skills
3.	Ability to classify and understand the various products and its properties of refractories, white wares, glass and cement.	<ul style="list-style-type: none"> - Introduction to Ceramic Technology
4.	Ability to prepare, read and interpret engineering drawings.	<ul style="list-style-type: none"> - Engineering Drawing - General Workshop Practice
5.	Knowledge of physical, chemical and thermal properties of earthy and non-metallic materials, additives and finished products.	<ul style="list-style-type: none"> - Geology - Ceramic Raw materials - Material Science
6.	Understanding of various manufacturing processes and machinery used for ceramic products.	<ul style="list-style-type: none"> - Unit operations in Ceramics
7.	Ability to plan, schedule, organise, direct, control and coordinate men, materials and machines for the production of ceramic products.	<ul style="list-style-type: none"> - Ceramic Whiteware technology - Ceramic Refractory Technology - Glass Technology - Cement Technology - Modern Ceramics
8.	Ability to select appropriate raw materials, processes, machines and make cost calculations for production of ceramic products.	<ul style="list-style-type: none"> - Fuels and Furnaces - Ceramic Machineries - Ceramic Whiteware Technology - Glass Technology - Cement Technology - Ceramic Coating Technology
9.	Proficiency in use of computers.	<ul style="list-style-type: none"> - Basics of Information Technology - Computer Applications in Ceramic Industry

10.	Basic manual and machining skills as an aid to function effectively in the process industry.	- General workshop Practice
11.	Ability to formulate suitable compounds so as to make ceramic products of desired properties.	- Material science - Modern Ceramics
12.	Understanding of various aspects of human and industrial relations, leadership, motivation, human resource development, industrial legislation, safety and environment at work places along with knowledge of marketing and sales promotion of ceramic products.	- Employability Skills - Project Oriented Professional Training
13.	Development of generic skills of thinking and problem solving, communication, attitudes and value system for effective functioning in process industry.	- Industrial visits - Project Oriented Professional Training
14.	Development of good personality in order to have effective communication and business ethics.	- Student centered activity

5. ABSTRACT OF CURRICULUM AREAS/SUBJECTS

a) Basic Sciences and Humanities

- 1 Communication Skills
- 2 Employability Skills
- 3 Environmental Education
- 4 Basics of Information Technology

b) Applied Sciences

- 5 Applied Mathematics
- 6 Applied Physics
- 7 Applied Chemistry

c) Basic Courses in Engineering/Technology

9. Engineering Drawing
10. General Workshop practice

d) Applied Courses in Engineering/Technology

11. Introduction to Ceramic Technology
12. Geology
13. Material Science
14. Unit operations in Ceramics
15. Fuel and Furnaces
16. Ceramic Machineries
17. Ceramic Raw Materials
18. Ceramic Coating Technology
19. Cement Technology
20. Computer Applications in Ceramic Industry
21. Ceramic Whiteware Technology
22. Ceramic Refractory Technology
23. Glass Technology
24. Modern Ceramics
25. Project Oriented Professional Training

6. HORIZONTAL AND VERTICAL ORGANISATION OF THE SUBJECTS

Sr. No.	Subjects	Distribution in Hours 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.	Basics of Information Technology	4	-	-	-	-	-
6.	Engineering Drawing	6	-	-	-	-	-
7.	General Workshop Practice	6	6	-	-	-	-
8.	Introduction to Ceramic Engineering	-	3	-	-	-	-
9.	Geology	-	6	-	-	-	-
10.	Ceramic Raw Materials	-	-	4	-	-	-
11.	Materials Science	-	-	4	-	-	-
12.	Unit Operations in Ceramics	-	-	9	-	-	-
13.	Fuels and Furnaces	-	-	8	-	-	-
14.	Ceramic Machineries	-	-	6	-	-	-
15.	Computer Applications in Ceramic Industries	-	-	4	-	-	-
16.	Ceramic Coating Technology	-	-	-	4	-	-
17.	Cement Technology	-	-	-	7	-	-
18.	Ceramic Whiteware Technology	-	-	-	10	9	-
19.	Ceramic Refractory Technology	-	-	-	7	9	-
20.	Glass Technology	-	-	-	7	9	-
21.	Employability Skills - I	-	-	-	-	2	-
22.	Environmental Education	-	-	-	-	3	-
23.	Modern Ceramics	-	-	-	-	3	-
24.	Project Oriented Professional Training	-	-	-	-	-	40
25.	Student Centred Activities	3	4	5	5	5	-
	Total	40	40	40	40	40	40