

1. SALIENT FEATURES OF THE DIPLOMA PROGRAMME IN CIVIL ENGINEERING

1. Name of the Programme : Diploma programme in Civil Engineering
2. Duration of the Programme : Three years
3. Entry Qualifications : Matriculation or as prescribed by State Board of Technical Education, Haryana
4. Intake : 40/60
5. Pattern of the Programme : Semester System (each semester is of 16 weeks and each week has 36 - 40 contact hour for academic work)

2. EMPLOYMENT OPPORTUNITIES FOR DIPLOMA HOLDERS IN CIVIL ENGINEERING

It was envisaged that the employment in government/public sector undertakings is dwindling day by day. Keeping in view, the present scenario of activities in the field of civil engineering, following employment opportunities are visualized for diploma holders in civil engineering:

- i) Wage employment in public sector /private construction companies/Boards/ Corporation/Departments
- ii) Wage employment in service sector specially for repair and maintenance of buildings and their upkeep like:
 - Estate Offices of Universities/Colleges/ Business organizations etc
 - Hotels and Hospitals
- iii) Wage employment in military engineering services/banks/municipal corporations & Committees/Panchayati Raj etc.
- iv) Testing Laboratories
- v) Self employment opportunities:
 - Small building contractors
 - Public Health, plumbing and water supply installation contracts
 - White washing, distempering, repair and maintenance of buildings/ renovations, tile flooring etc.
 - Anti - termite treatment
 - Aluminum and other partition jobs
 - Construction material suppliers/Marketing
 - Preparation of municipal drawings
 - Estimating and costing jobs
 - Surveyor/loss assessment/valuation of buildings etc
 - Water proofing of existing and new building
 - Small enterprises like precast elements/Water proofing chemicals etc.
 - Rain water harvesting system

3. COMPETENCY PROFILE OF DIPLOMA HOLDERS IN CIVIL ENGINEERING

Keeping in view, the employment scenario and suggestions received during brainstorming session for revamping curriculum of diploma course in civil engineering, following are the competency profile of diploma holders in civil engineering:

1. Ability to prepare, read and interpret civil engineering drawings like that of: buildings; RCC, steel and timber structures; water supply and sanitary installations; roads, bridges and culverts, hydraulic structures etc.
2. Knowledge of various types of construction materials, their properties, suitability and uses, availability and cost.
3. Ability to test various construction materials (Laboratory test & field testing) for their quality and suitability as per BIS code of practice.
4. Knowledge and skills pertaining to principles and methods of surveying like levelling, plane tabling, theodolite surveying and contouring; modern surveying techniques including remote sensing
5. Understanding basic concepts and principles of hydraulics as applied to civil engineering practices.
6. Knowledge of various construction techniques from substructure to superstructure and finishing operations in respect of;
 - Earth work and foundation
 - Brick masonry
 - Stone masonry
 - RCC structure
 - Pre-fabrication construction elements
 - Hollow blocks
 - Steel and timber structures
 - Joinery and finishing
 - Anti termite treatment
 - Prestressing techniques
7. Knowledge of various BIS Codes and Standards related to civil engineering.
8. Knowledge of concrete technology: mix design, admixtures, concretes, mix design, concrete operations and associated skills.
9. Knowledge and associated skills pertaining to temporary structures including shuttering and centering

10. Knowledge of various types of soils, their behaviour and suitability as construction and foundation material; type of foundations and their construction
11. Knowledge and skills related to water supply, sewerage and sanitary systems
12. Knowledge of constructional aspects pertaining to highways, railways, irrigation & drainage structures, bridges/culverts and tunnels etc.
13. Ability to design simple structural elements of RCC, steel and timber with a view to develop appreciation of structural behaviour and safety during earthquakes including other natural disorders
14. Ability to prepare material estimates, costing, valuation and tender documents as per given drawings.
15. Identification of various types of defects in buildings and their rectification.
16. Knowledge of basic principles of management and construction management techniques
17. Awareness regarding ecology and environmental considerations for executing construction activities/projects
18. Knowledge of:
 - Safety measures and regulations
 - Building bye laws
 - Labour management
 - Importance of interpersonal relations and communication skills
 - Report writing skills
 - Value system
 - Generic skills of problem solving
19. Understanding the characteristics of an entrepreneur and entrepreneurial support system.
20. Ability to make use of computer softwares for different applications in the field of civil engineering
21. Knowledge of applied and engineering sciences to facilitate understanding of technical subjects, to develop analytical skills, and to facilitate continuing education of diploma engineers

Note: This competency profile will form the basis for identification of subjects and limit the boundaries of knowledge and skills for working out curriculum details

4. DERIVING CURRICULUM AREAS FROM COMPETENCY PROFILE

Sr.No	Competency Profile	Curriculum Areas
1.	Ability to prepare, read and interpret civil engineering drawings like that of buildings; RCC, steel and timber structures; water supply and sanitary installations; roads, bridges and culverts etc.	- Engineering Drawing - Civil Engineering Drawings
2.	Knowledge of various types of construction materials, their properties, suitability and uses, availability and cost	Construction Materials
3.	Ability to test various construction materials for their quality and suitability as per BIS code of practice	Testing of Materials
4.	Knowledge and skills pertaining to principles and methods of surveying like levelling, plane tabling, theodolite surveying and contouring; modern surveying techniques including remote sensing	- Surveying - Modern Surveying Equipment
5.	Understanding basic concepts and principles of hydraulics as applied to civil engineering practices	Hydraulics
6.	Knowledge of various construction techniques from structure to superstructure and finishing operations in respect of; - Earth work and foundation - Brick masonry - Stone masonry - RCC structure - Steel and timber structures - Joinery and finishing - Anti-termite Treatment - Prestressing technique	Building Construction
7.	Knowledge of various BIS Codes and Standards related to civil engineering	BIS Codes and Standards (Part of relevant subjects)
8.	Knowledge of concrete technology: mix design, admixtures, concretes, mix design, concrete operations and associated skills	Concrete Technology

9.	Knowledge and associated skills pertaining to temporary structures including shuttering and centering	Temporary Structures (Part of building construction)
10.	Knowledge of various types of soils, their behaviour and suitability as construction and foundation material types of foundation and their construction	Soil and Foundation Engineering
11.	Knowledge and skill related to water supply, sewerage and sanitary systems	Water Supply and Waste Water Engineering
12.	Knowledge of constructional aspects pertaining to highways, railways, irrigation structures, bridges/culverts and tunnels	- Highway Engineering - Railways, Bridges and Tunnels - Hydraulic Structure
13.	Ability to design simple structural elements of RCC, steel and timber with a view to develop appreciation of structural behaviour and safety during earthquakes including other natural disorders	- Applied Mechanics - Structural Mechanics - Elementary Structural Design (RCC and Steel) - Aspects of Earthquake Engineering
14.	Ability to prepare material estimates, costing and tender documents as per given drawings	Quantity Surveying and Valuation
15.	Identification of various types of defects in buildings and their rectification	Repair and Maintenance of Buildings
16.	Knowledge of basic principles of management and construction management techniques	Construction Management and Accounts
17.	Awareness regarding ecology and environmental considerations for executing construction activities/projects	Environmental Awareness (Through Camps)
18.	Knowledge of: - Safety measures and regulations - Building bye laws - Labour management	- Construction Management - Communication Skills

	<ul style="list-style-type: none"> - Importance of interpersonal relations and communication skills - Report writing skills - Generic skills of problem solving 	- Professional Ethics
19.	Understanding the characteristics of an entrepreneur and entrepreneurial support system	Entrepreneurship Awareness (Through Camps)
20.	Ability to make use of computers for different applications in the field of civil engineering	<ul style="list-style-type: none"> - Basics of I.T. - Computer Applications in Civil Engineering
21.	Knowledge of applied and engineering sciences to facilitate understanding of technical subjects to develop analytical skills, and to facilitate continuing education of diploma engineers	<ul style="list-style-type: none"> - Applied Mathematics - Applied Physics - Applied Chemistry - Applied Mechanics

5. ABSTRACT OF CURRICULUM AREAS

(a) General Studies

1. Communication Skills
2. Basics of Information Technology
3. Entrepreneurial Awareness
4. Ecology and Environmental Awareness
5. Entrepreneurship Development and Management

(b) Applied Sciences

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

(c) Basic Courses in Engineering/Technology

9. Engineering Drawing
10. General Workshop Practice
11. Applied Mechanics
12. Fluid Mechanics
13. General Engineering

(d) Applied Courses in Engineering/Technology

14. Construction Materials
15. Building Construction
16. Building Drawing
17. Concrete Technology
18. Water Supply and Waste Water Engineering
19. Soil and Foundation Engineering
20. Surveying & Survey Camp
21. Structural Mechanics
22. RCC Design & Drawing

23. Public Health Engineering Drawing
 24. Steel Structure Design & Drawing
 25. Highway Engineering
 26. Computer Applications in Civil Engineering
 27. Railways, Bridges and Tunnels
 28. Irrigation Engineering and Drawing
 29. Quantity Surveying
 30. Earthquake Resistant Building Construction
 31. Construction Management and Accounts
 32. Tendering and Valuation
 33. Project Work
- (e) **Specialised Courses in Engineering/Technology (Electives)**
(Any one of the following)
34. Rural Technology
 35. Environmental Engineering
 36. Repair and Maintenance of Buildings

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	5	-	-	-	-
4.	Applied Chemistry	4	4	-	-	-	-
5.	Basics of Information Technology	4	-	-	-	-	-
6.	Engineering Drawing	6	6	-	-	-	-
7.	General Workshop Practice -	6	6	-	-	-	-
8.	Applied Mechanics	-	5	-	-	-	-
9.	Fluid Mechanics	-	-	7	-	-	-
10.	General Engineering	-	-	6	-	-	-
11.	Surveying	-	-	8	8	-	-
12.	Construction Material	-	-	5	-	-	-
13.	Building Construction	-	-	4	-	-	-
14.	Building Drawing	-	-	6	-	-	-
15.	Concrete Technology	-	-	-	6	-	-
16.	Water Supply and Waste Water Engineering	-	-	-	6	-	-
17.	Soil and Foundation Engineering	-	-	-	7	-	-
18.	Structural Mechanics	-	-	-	6	-	-
19.	Public Health Engineering Drawing	-	-	-	3	-	-
20.	RCC Design & Drawing	-	-	-	-	8	-
21.	Highway Engineering	-	-	-	-	7	-
22.	Computer Applications in Civil Engineering	-	-	-	-	6	3
23.	Railways, Bridges and Tunnels	-	-	-	-	4	-
24.	Irrigation Engineering and Drawing	-	-	-	-	6	-
25.	Quantity Surveying	-	-	-	-	4	-
26.	Steel Structure Design & Drawing	-	-	-	-	-	7
27.	Earthquake Resistant Building Construction	-	-	-	-	-	3
28.	Entrepreneurship Development and Management	-	-	-	-	-	3
29.	Tendering & Valuation	-	-	-	-	-	4
30.	Construction Management & Accounts	-	-	-	-	-	4
31.	Project Work	-	-	-	-	-	9
32.	Elective	-	-	-	-	-	3
	Student Centred Activities	4	4	4	4	4	4
	Total	40	40	40	40	40	40