

**Curriculum for**  
**Diploma Programme in**  
**CIVIL ENGINEERING**

CAMPUS



Sr. No	Subject	STUDY SCHEME			Credit	EVALUATION SCHEME						Total Marks
						Internal Assessment		External Assessment (Examination)				
						Theory	Practical	Written Paper		Practical		
						Max. Marks	Max. Marks	Max. Marks	Hrs	Max. Marks	Hrs	
Hrs/week		L	T	P								
6.1	Steel Structures Design and Drawing				4	-	3	6	50*	-	150	3
6.2	Earthquake Resistant Building Construction	3	-	-	3	25	-	100	3	-	-	125
6.3	Quantity Surveying & Valuation	4	-	2	5	25	25	100	3	50	3	200
6.4	Construction Management & Accounts	5	-	-	5	25	-	100	3	-	-	125
6.5	Major Project Work	-	-	12	6	-	100	-	-	100	3	200
Soft Skills-IV		-	-	2	-	-	25	-	-	-	-	25
<b>Total</b>		<b>16</b>	<b>-</b>	<b>19</b>	<b>25</b>	<b>125</b>	<b>150</b>	<b>450</b>	<b>-</b>	<b>150</b>	<b>-</b>	<b>875</b>

\*Sessional test including Drawing also with 2 hours duration.

Use of the IS: 800-2007 is permissible in the theory exam of Steel Structures Design and Drawing.

## 6.1 STEEL STRUCTURES DESIGN AND DRAWING

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### RATIONALE

This subject is an applied engineering subject. Diploma holders in Civil Engineering will be required to supervise steel construction and fabrication. He may also be required to design simple structural elements, make changes in design depending upon availability of materials. This subject thus deals with elementary design principles as per BIS code of practice IS: 800. Thus one should be able to read and interpret structural drawings of steel structures. The competence to read and interpret structural drawings is best learnt by being able to draw these drawings. Hence there is a need to have a subject devoted to preparation of structural drawings.

### LEARNING OUTCOMES

After undergoing the subject, students will be able to:

- Explain structural properties of steel and its designation as per Indian Standards
- Select different types of bolted and welded joints
- Analyze and design single and double angle section struts and I section compression members
- Explain different types of trusses, their different components and usability
- Analyze and design of simply supported steel beams
- Select various types of plate girders
- Supervise fabrication and erection of steel structure like trusses, columns and girders
- Read and interpret steel structural drawing
- Prepare the detailed drawings of toe joint, ridge joint, details of purlins and roof sheets
- Prepare and draw slab base connection, gusseted base connection grillage base connection for single section steel columns
- Draw column beam connections
- Prepare drawings of plate girder from given design data
- Prepare the drawing and demonstrate steel roof truss
- Draw the structural drawing sheets using CAD Software

**DETAILED CONTENTS**

<b>1. Structural Steel and Sections:</b>	<b>(02 Hours)</b>
1.1 Properties of structural steel as per IS Code	
1.2 Designation of structural steel sections as per IS handbook and IS:800	
<b>2. Riveted Connections</b>	<b>(04 Hours)</b>
Types of Rivet, Permissible stresses in rivets, types of riveted joints, specifications as per IS800, Failure of riveted joint, strength and efficiency of riveted joint, Design of Riveted Connection only axially loaded number (No staggered rivetting)	
<b>3. Bolt Connections:</b>	<b>(04 Hours)</b>
Types of bolt, permissible stresses in bolt, types of bolted joints, specifications for bolted joints as per IS 800. Failure of a bolted joint. Assumptions in the theory of bolted joints. Strength and efficiency of a bolted joint. Design of bolted joints for axially loaded members ( No Staggered bolts).	
<b>4. Welded connections:</b>	<b>( 04 Hours)</b>
Types of welds and welded joints, advantages and disadvantages of welded joints design of fillet and butt weld for axially loaded members	
<b>5. Tension Members</b>	<b>(14 Hours)</b>
Analysis and design of single and double section tension members and their rivetted and welded connections with gusset plate as per IS:800-2007	
<b>6. Compression Members</b>	<b>(14 Hours)</b>
Analysis and design of single and double angle sections compression members subjected to axial load	
<b>7. Roof Trusses</b>	<b>(05 Hours)</b>
Form of trusses, pitch of roof truss, spacing of trusses, spacing of purlins, connection between purlin and roof covering. Connection between purlin and principal rafter (no design, only concept)	
<b>8. Column Bases:</b>	<b>( 07 Hours)</b>
Types of column bases i.e. slab base, gusseted base. Concept of buckling, effective length, slenderness ratio, Analysis and Design of axially loaded single section column.	
<b>9. Beams</b>	<b>(08 Hours)</b>
Analysis and design of single section simply supported laterally restrained steel beams. Introduction to plate girder and functions of various elements of a plate girder	
<b>10. Fabrication and erection of steel structures like trusses, columns and girders</b>	<b>(02 Hours)</b>
<b>Steel Structures Drawings:</b>	
Structural drawing from given data for following steel structural elements.	
(i) Drawing No. 1: Roof Truss – Drawing of Fink Roof Truss with details of joints, fixing details of purlins and roof sheets.	
(ii) Drawing No.2 : Column and Column Bases - Drawing of splicing of steel columns. Drawings of slab base, gusseted base and grillage base for single section steel columns.	
(iii) Drawing No.3 : Column Beam Connections	
(a) Sealed and Framed Beam to Beam Connections	
(b) Sealed and Framed Beam o Column Connections	
(iv) Drawing No. 4 : Plate Girder (Bolted)	

Plan and Elevation of Plate Girder with details at supports and connection of stiffness, flange angles and cover plate with web highlighting curtailment of plates.

(v) Drawing No. 5: Draw atleast one sheet using CAD software

### Important Note:

Use of IS: 800 and Steel Tables are permitted in examination.

### INSTRUCTIONAL STRATEGY

Teachers are expected to give simple problems for designing various steel structural members. For creating comprehension of the subject, teachers may prepare tutorial sheets, which may be given to the students for solving. It would be advantageous if students are taken at construction site to show fabrication and erection of steel structures. IS:800 may be referred along with code for relevant clauses

### MEANS OF ASSESSMENT

- Assignments and quiz/class tests
- Mid-term and end-term written tests
- Laboratory and Practical work
- Drawing
- Software installation and operation
- Viva-voce

### RECOMMENDED BOOKS

1. "Design of Steel Structures" by Duggal SK; Standard Publishers, Delhi
2. "Steel Structures Design and Drawing" by Birinder Singh; Kaption Publishing House, Ludhiana
3. "Design of Steel Structures" by Ram Chandra; Standard Publishers, Delhi
4. "Design of Steel Structures" by S Ramamurthan
- 5 e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

### Steel Structures Drawings:

1. "Civil Engineering Drawing" by Loyal JS; Satya Parkashan, New Delhi
2. " Civil Engineering Drawings" by Chandel RP
3. " Civil Engineering Drawing by Kumar; NS; IPH, New Delhi
- 4.. "Civil Engineering Drawing" by Malik RS and Meo GA; Asian Publishing House, New Delhi
5. "Steel Structures Design and Drawing" by Singh, Birinder; Kaption Publishing House, New Delhi
- 6 e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

### Websites for Reference:

<http://swayam.gov.in>

**SUGGESTED DISTRIBUTION OF MARKS**

Topic No.	Time Allotted (Hours)	Marks Allotted (%)
1	02	03
2	04	06
3	04	06
4	04	06
5	14	22
6	14	22
7	05	08
8	07	10
9	08	14
10	02	03
	SS Drawing*	50
<b>Total</b>	<b>64</b>	<b>150</b>

\* Examiner have to set 03 questions from SS Drawing of 25 marks each and out of Which the examinee can attempt any 02 questions.



## 6.2 EARTHQUAKE RESISTANT BUILDING CONSTRUCTION

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### RATIONAL

Diploma holders in civil engineering have to supervise construction of various earthquake resistant buildings. Therefore, the students should have requisite knowledge regarding terminology of earthquake and the precautions to be taken while constructing earthquake resistant buildings

### LEARNING OUTCOMES

After undergoing the subject, students will be able to:

- Classify the earthquakes
- Explain seismic behavior of traditionally built constructions
- Supervise construction of earthquake resistant buildings
- Monitor reinforcement detailing in earthquake resistant structures
- Manage all rescue operation caused due to earthquake





## DETAILED CONTENTS

- 1. Elements of Engineering Seismology (08 Hours)**  
General features of tectonic of seismic regions. Causes of earthquakes, Seismic waves, earthquake size (magnitude and intensity), Epicentre, Seismograph, Classification of earthquakes, Seismic zoning map of India, Static and Dynamic Loading, Fundamental period.
- 2. Seismic Behaviour of Traditionally-Built Constructions of India (07 Hours)**  
Performance of building during earthquakes and Mode of failure (Out-of-plane failure, in-plane failure, Diaphragm failure, Connection failure, Non-structural components failure)
- 3. Special construction method, tips and precautions to be observed while planning, designing and construction of earthquake resistant building. (08 Hours)**
- 4. Introduction to seismic zone of India and factors related to IS:1893 and IS: 13920 (latest edition) (05 Hours)**
- 5. Seismic provision of strengthening and retrofitting measures for traditionally-built constructions (08 Hours)**
- 6. Provision of reinforcement detailing in masonry and RCC constructions (06 Hours)**
- 7. Disaster Management: Disaster rescue, psychology of rescue, rescue workers, rescue plan, rescue by steps, rescue equipment, safety in rescue operations, debris clearance and casualty management. (06 Hours)**

### INSTRUCTIONAL STRATEGY

The student may be taken for visit to various building construction sites where precautions related to earthquake resistant construction are being taken so that the students may appreciate the importance of the subject.

### MEANS OF ASSESSMENT

- Assignments and quiz/class tests
- Mid-term and end-term written tests
- Viva-voce

### RECOMMENDED BOOKS

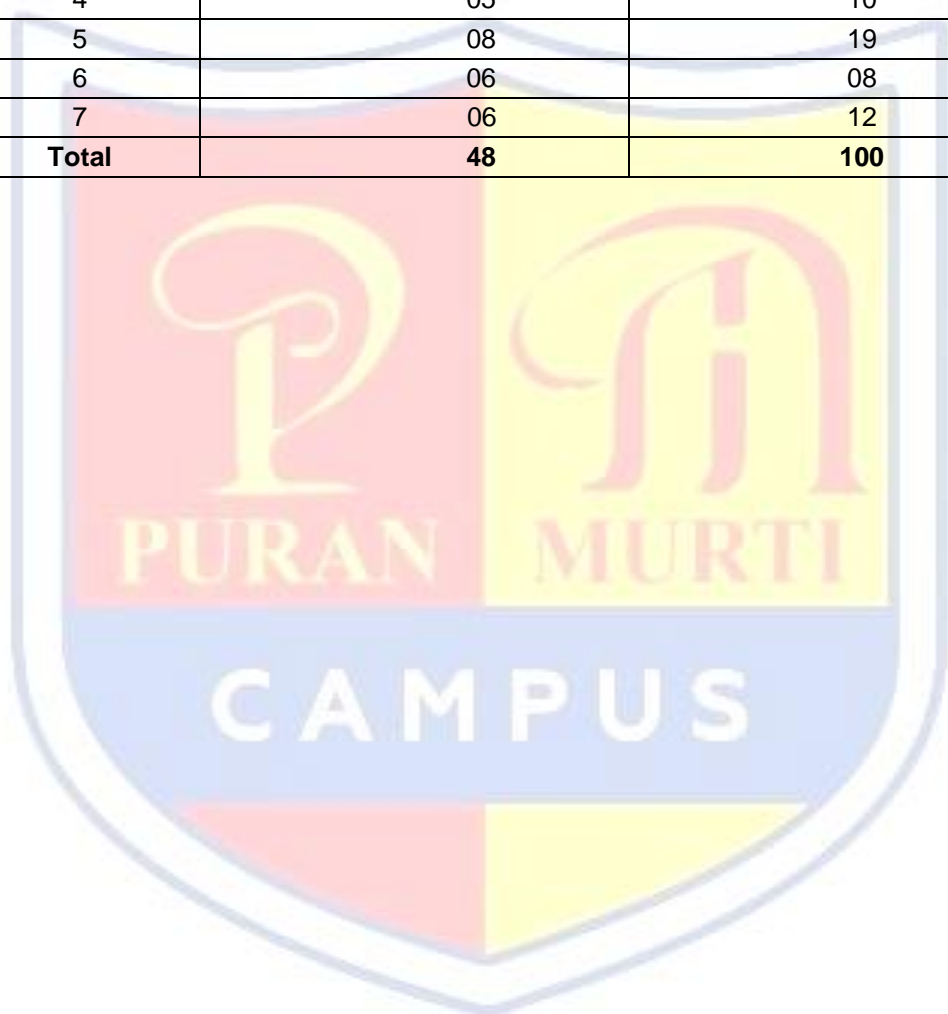
1. Elements of Earthquake Engineering by Jai Krishana and AR Chandersekaran; Sarita Parkashan, Meerut.
2. Building Construction by BL Gupta and NL Arora; Satya Prakashan, New Delhi
3. Manual Published by Earthquake Engineering department, IIT Roorkee / IIT Kanpur
4. IS 13920, IS: 13827, IS: 13828, IS 1893-2002, IS 4326 (latest edition)
5. Dynamics of Structure by AK Chopra; Prentice Hall Inc. New Delhi
6. Earthquake Resistant Building Construction by Neelam Sharma
- 7 e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTTR.

### Websites for Reference:

<http://swayam.gov.in>

**SUGGESTED DISTRIBUTION OF MARKS**

<b>Topic No.</b>	<b>Time Allotted (Hours)</b>	<b>Marks Allotted (%)</b>
1	08	19
2	07	15
3	08	17
4	05	10
5	08	19
6	06	08
7	06	12
<b>Total</b>	<b>48</b>	<b>100</b>



## 6.3 QUANTITY SURVEYING

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**4 - 2**

### RATIONALE

Diploma holders in Civil Engineering are supposed to prepare material estimates for various Civil Engineering works namely; buildings, irrigation works, public health works and roads etc. In addition, they must have basic knowledge regarding analysis of rates, contracting, principles of valuation. Therefore, this subject has great importance for diploma holders in Civil Engineering.

### LEARNING OUTCOMES

After undergoing the subject, students will be able to:

- Explain different units of measurement for different items
- Calculating quantities of materials and prepare the material chart
- Prepare detailed and abstract of estimates from drawings
- Prepare tender document of different civil engineering items by using C.S.R. rates with premium
- Use principles of valuation for valuation of a building



## DETAILED CONTENTS

- 1. Introduction to quantity surveying and its importance. Duties of quantity surveyor (02 Hours)**
- 2. Types of estimates (02 Hours)**
- 2.1 Preliminary estimates
- Plinth area estimate
  - Cubic content estimate
- 2.2 Detailed estimates
- Definition
  - Stages of preparation – details of measurement and calculation of quantities and abstract
- 3. Measurement (07 Hours)**
- 3.1 Units of measurement for various items of work as per BIS:1200
- 3.2 Rules for measurements
- 3.3 Different methods of taking out quantities – centre line method and long wall and Short wall method
- 4. Preparation of Detailed and Abstract Estimates from Drawings by following CSR rates for: (20 Hours)**
- 4.1 A small residential building with a flat roof comprising of - Two rooms with W.C., bath, kitchen and verandah
- 4.2 Earthwork for unlined channel
- 4.3 WBM road and pre-mix carpeting
- 4.4 Single span RCC slab culvert
- 4.5 Earthwork for plain and hill roads
- 4.6 RCC work in beams, slab, column and lintel, foundations
- 4.7 10 user's septic tank
- 5. Calculation of quantities of materials for (05 Hours)**
- 5.1 Cement mortars of different proportion
- 5.2 Cement concrete of different proportion
- 5.3 Brick/stone masonry in cement mortar of different proportion
- 5.4 Plastering, pointing and painting
- 5.5 D.P.C. and flooring
- 6. Analysis of Rates (08 Hours)**
- 6.1 Steps involved in the analysis of rates. Requirement of material, labour, sundries, Contractor's profit and overheads
- 6.2 Analysis of rates for finished items when data regarding labour, rates of material and labour is given: - Earthwork in excavation in hard/ordinary soil and filling with a concept of lead and lift
- RCC in roof slab/beam/lintels/columns
  - Brick masonry in cement mortar
  - Cement Plaster
  - White washing, painting
- 7 Contractorship (05 Hours)**
- Meaning of contract
  - Essentials of a contract
  - Types of contracts, their advantages, dis-advantages and suitability, system of payment
  - Single and two cover-bids; tender, tender forms and documents, tender notice, submission of tender and deposit of earnest money, security deposit, retention money, maintenance period
  - Classification and types of contracting firms/construction companies

**8 Preparation of Tender Document based on Common Schedule Rates (CSR)****(10 Hours)**

- Introduction to CSR and calculation of cost based on premium on CSR
- Exercises on writing detailed specifications of different types of building works from excavation to foundations, superstructure and finishing operation
- Exercises on preparing tender documents for the following
  - a) Earth work
  - b) Construction of a small house as per given drawing
  - c) RCC works
  - d) Pointing, plastering and flooring
  - e) White-washing, distempering and painting
  - f) Wood work including polishing
  - g) Sanitary and water supply installations
  - h) False ceiling, aluminum (glazed) partitioning
  - i) Tile flooring including base course
  - j) Preparation of comparative statement for item rate contract.

**9. Valuation****(05 Hours)**

- a) Purpose of valuation, principles of valuation
- b) Definition of various terms related to valuation like depreciation, sinking fund, salvage and scrap value, market value, fair rent, year's purchase etc.
- c) Methods of valuation (i) replacement cost method (ii) rental return method

**INSTRUCTIONAL STRATEGY**

This is an applied engineering subject. Teachers are expected to provide working drawings for various Civil Engineering works and students be asked to calculate the quantities of materials required for execution of such works and use of relevant software for preparing estimates. Teachers should conceptualize making analysis of rates for different items of works. It will be advantageous if students are given valuation reports for reading.

**MEANS OF ASSESSMENT**

- Assignments and quiz/class tests
- Mid-term and end-term written tests
- Report Writing
- Viva-voce

**RECOMMENDED BOOKS**

1. "Estimating, Costing and Valuation (Civil)" by Pasrija, HD, Arora, CL and S. Inderjit Singh; New Asian Publishers, Delhi,
2. "Estimating and Costing" by Rangwala, S.C ; Charotar Book Stall, Anand
3. "Estimating and Costing by Dutta, BN
4. "Estimating and Costing" by Mahajan Sanjay; Satya Parkashan, Delhi
5. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTR.

**Websites for Reference:**

<http://swayam.gov.in>

**SUGGESTED DISTRIBUTION OF MARKS**

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	02	03
2	02	04
3	07	10
4	20	30
5	05	08
6	08	13
7	05	08
8	10	16
9	05	08
<b>Total</b>	<b>64</b>	<b>100</b>



## 6.4 CONSTRUCTION MANAGEMENT AND ACCOUNTS

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### RATIONALE

This is an applied civil engineering subject. The subject aims at imparting basic knowledge about construction planning and management, site organization, construction labor, control of work progress, inspection and quality control, accidents & safety and accounts.

### LEARNING OUTCOME

After undergoing the subject, students will be able to:

- State functions of various aspects of controlling construction job/project
- Explain pre-tender stage and contract stage
- Prepare bar charts for simple construction work
- Prepare scheduling techniques i.e. PERT and CPM
- Prepare job layout of building
- Comply with various labour laws
- Analyze and support in effective functioning of organization
- Inspect quality at various stages of the construction
- Control accidents and safety concerns
- Prepare measurement books and bill of quantities...



## DETAILED CONTENTS

### THEORY

#### CONSTRUCTION MANAGEMENT:

##### 1. Introduction:

(06 Hours)

- 1.1 Significance of construction management
- 1.2 Main objectives of construction management and overview of the subject
- 1.3 Functions of construction management, planning, organizing, staffing, and directing, controlling and coordinating, meaning of each of these with respect to construction job.
- 1.4 Classification of construction into light, heavy and industrial construction
- 1.5 Stages in construction from conception to completion
- 1.6 The construction team: owner, engineer, architect and contractors, their functions  
And inter-relationship

##### 2. Construction Planning:

(12 Hours)

- 2.1 Importance of construction planning  
Stages of construction planning
  - Pre-tender stage
  - Contract stage
- 2.2 Scheduling construction works by bar charts
  - Definition of activity, identification of activities though
  - Preparation of bar charts for simple construction work
  - Preparation of schedules for labour, materials, machinery and finances for Small works
  - Limitations of bar charts
- 2.3 Scheduling by network techniques
  - Introduction to network techniques; PERT and CPM, differences  
Between PERT and CPM terminology

##### 3. Organization:

(06 Hours)

- 3.1 Types of organizations: Line, line and staff, functional and their characteristics

##### 4. Site Organization:

(06 Hours)

- 4.1 Principle of storing and stacking materials at site
- 4.2 Location of equipment
- 4.3 Preparation of actual job layout for a building
- 4.4 Organizing labour at site

##### 5. Construction Labour:

(06 Hours)

- 5.1 Conditions of construction workers in India, wages paid to workers
- 5.2 Important provisions of the following Acts:
  - Labour Welfare Fund Act 1936 (as amended)
  - Payment of Wages Act 1936 (as amended)
  - Minimum Wages Act 1948 (as amended)
  - Acts relating to Labour Safety

##### 6. Control of Progress:

(05 Hours)

- 6.1 Methods of recording progress
- 6.2 Analysis of progress
- 6.3 Taking corrective actions keeping head office informed
- 6.4 Cost time optimization for simple jobs - Direct and indirect cost, variation with time, cost optimization

##### 7. Inspection and Quality Control:

(09 Hours)

- 7.1 Need for inspection and quality control
- 7.2 Principles of inspection
- 7.3 Stages of inspection and quality control for
  - Earth work



- Masonry
- RCC
- Sanitary and water supply services

**8. Accidents and Safety in Construction:****(08 Hours)**

8.1 Accidents – causes and remedies

8.2 Safety measures for

- Excavation work
- Drilling and blasting
- Hot bituminous works
- Scaffolding, ladders, form work
- Demolitions

8.3 Safety campaign and safety devices, safety training

**ACCOUNTS****9. Public Work Accounts:****( 22 Hours)**

**9.1 Introduction**, technical sanction, allotment of funds, re-appropriation of funds bill, contractor ledger, measurement book running and final account bills complete, preparation of bill of quantities (BOQ), completion certificate & report, hand receipt, acquittance roll. Muster Roll labour, casual labour roll-duties and responsibility of different cadres, budget-stores, returns, account of stock, misc. P.W. advances T & P – verification, survey report, road metal material charged direct to works, account - expenditure & revenue head, remittance and deposit head, definition of cash, precaution in custody of cash book, imprest account, temporary advance, treasury challan, preparation of final bills. Students must learn to prepare accounts register.

**9.2 Filling of PWD accounts forms****INSTRUCTIONAL STRATEGY**

This is highly practice-based course and efforts should be made to relate process of teaching with direct experiences at work sites. Participation of students should be encouraged in imparting knowledge about this subject. To achieve this objective the students should be taken to different work sites for clear conception of particular topics, such as site organization, inspection of works at various stages of construction and working of earth moving equipment

**MEANS OF ASSESSMENT**

- Assignments and quiz/class tests
- Mid-term and end-term written tests
- Report Writing
- Viva-voce

**RECOMMENDED BOOKS**

1. "Civil Engineering Management" by Wakhlo, ON ; Light and Life Publishers, New Delhi
2. "Construction Equipment and its Planning and Application by Verma, Mahesh
3. "Management in Construction Industry" by Dharwadker, PP; Oxford and IBH Publishing Company, New Delhi
4. "Construction Planning and Management" by Gahlot PS; Dhir, BM; Wiley Eastern Limited, New Delhi
5. MS Project – Microsoft USA
6. Primavera Manual by Sh. Vinod Kumar; NITTTTR, Chandigarh.
7. e-books/e-tools/relevant software to be used as recommended by AICTE/HSBTE/NITTTTR.

**Websites for Reference:**

<http://swayam.gov.in>

### SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hours)	Marks Allotted (%)
1	06	8
2	12	15
3	06	8
4	06	8
5	06	8
6	05	6
7	09	12
8	08	10
9	22	25
<b>Total</b>	<b>80</b>	<b>100</b>



## 6.5 PROJECT WORK

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### RATIONALE

Project Work aims at developing innovative skills in the students whereby they apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. In addition, the project work is intended to place students for project oriented practical training in actual work situation for the stipulated period.

### LEARNING OUTCOMES

After undergoing the project work, students will be able to:

Apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. In addition, the project work is intended to place the learner for project oriented practical training in actual work situation for the stipulated period with a view to:

- Develop understanding regarding the size and scale of operations and nature of fieldwork in which students are going to play their role after completing the courses of study
- Develop understanding of subject based knowledge given in the classroom in the context of its application at work places.
- Develop first hand experience and confidence amongst the students to enable them to use and apply polytechnic/institute based knowledge and skills to solve practical problems related to the world of work.
- Develop abilities like interpersonal skills, communication skills, positive attitudes and values etc.

### General Guidelines

The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. The activity of problem identification should begin well in advance (say at the end of second year). Students should be allotted a problem of interest to him/her as a major project work. It is also essential that the faculty of the respective department may have a brainstorming session to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 3 students if the project work is given to a group. The project work identified in collaboration with industry should be preferred. This practical training cum project work **should not be considered** as merely conventional industrial training in which students are sent at work places with either minimal or no supervision. This experience is required to be planned in advance and supervised on regular basis by the polytechnic faculty. For the fulfillment of above objectives, polytechnics may establish close linkage with 8-10 relevant organization for providing such an experience to students. It is necessary that each organization is visited well in advance and activities to be performed by students are well defined. The chosen activities should be such that it matches with the curricular interest to students and of professional value to industrial/ field organizations. Each teacher is expected to supervise and guide 5-6 students.

### Some of the projects are listed below for the benefit of the students:

1. Study and detailed estimate of different component of modern residential and commercial building
2. Preparation of detailed estimate for low cost two room set residential building
3. Analysis of green building
4. Design of rain water harvesting for a given building
5. Analysis of accidents prone area in your city and remedial measure for them
6. Case study of safety practices in a multi-storied buildings under constructions
7. Concrete Mix Design
8. Case study of repair and maintenance of a given building
9. Preparation of DNIT of a given building for Civil Engineering works
10. Detailed estimate for installing plumbing fixtures
11. Preparing a standard measurement book of a given building
12. Construction of concrete road by using latest techniques
13. Water supply scheme for a govt approved colony
14. Construction estimates of shopping complex

15. Analysis and design of Effluent Treatment Plant (ETP) for an industry
16. Design of soak pit with septic tank for 100 users
17. Design and estimate of two room set building
18. Design of concrete mix by using flyash
19. Setting up of an interlocking pavers fabrication plant
20. Preparation of different Civil Engineering models e.g. beam, one way, two way slab, column etc.
21. Reinforcement detailing as per IS:4326
22. Design of car parking in your polytechnic
23. Design of acoustics for an auditorium
24. To prepare analysis of rates for non -schedule items e.g. aluminium door, windows, work stations etc.
25. Study of retrofitting of a given Civil Engineering works.
26. Survey of your polytechnic by using total station.
27. Traffic volume study and analysis on different roads in a city
28. Case study of a flyover with regard to its various construction components
29. Study and preparation of detailed project report of ready mix concrete (RMC) unit
30. Study and preparation of detailed project report of prefabricated/prestressed concrete components unit
  
31. Construction of a small concrete road consisting of following activities
  - Survey and preparation of site plan
  - Preparation of drawings i.e. L-Section and X-Section
  - Estimating earth work
  - Preparation of sub grade with stone ballast
  - Laying of concrete
  - Testing of slump, casting of cubes and testing
  - Material estimating and costing with specifications
  - Technical report writing
  
32. Water Supply system for a locality
  - Surveying
  - Design of water requirements and water distribution system
  - Preparation of drawing of overhead tank
  - Material estimating and costing
  - Specifications
  - Technical report writing
  
33. Construction of shopping complex by detailing of RCC drawings, estimating and costing of material
  
34. Design and construction of septic tank with soak pit for 100 users
  
35. Design of small residential building including structural members, specifications, estimating and costing of materials, report writing and municipal drawings for water supply and sewerage system there is no binding to take up the above projects as it is only a suggestive list of projects. A suggestive criterion for assessing student performance by the external (person from industry) and internal (teacher) examiner is given in table below:

Sr. No.	Performance Criteria	Max.** Marks	Rating Scale				
			Excellent	Very Good	Good	Fair	Poor
1.	Selection of project assignment	10%	10	8	6	4	2
2.	Planning and execution of considerations	10%	10	8	6	4	2
3.	Quality of performance	20%	20	16	12	8	4
4.	Providing solution of the problems or production of final product	20%	20	16	12	8	4
5.	Sense of responsibility	10%	10	8	6	4	2
6.	Self expression/ communication skills	5%	5	4	3	2	1
7.	Interpersonal skills/human relations	5%	5	4	3	2	1
8.	Report writing skills	10%	10	8	6	4	2
9.	Viva voce	10%	10	8	6	4	2
<b>Total marks</b>		<b>100</b>	<b>100</b>	<b>80</b>	<b>60</b>	<b>40</b>	<b>20</b>

The overall grading of the practical training shall be made as per following table.

In order to qualify for the diploma, students must get "Overall Good grade" failing which the students may be given one more chance to improve and re-evaluate before being disqualified and declared "not eligible to receive diploma". It is also important to note that the students must get more than six "goods" or above "good" grade in different performance criteria items in order to get "Overall Good" grade.

	Range of maximum marks	Overall grade
i)	More than 80	Excellent
ii)	79 <> 65	Very good
iii)	64 <> 50	Good
iv)	49 <> 40	Fair
v)	Less than 40	Poor

## Important Notes

- 1. This criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.**
- 2. The criteria for evaluation of the students have been worked out for 200 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.**
- 3. the external examiner, preferably, a person from industry/organization, who has been associated with the project-oriented professional training of the students, should evaluate the student's performance as per the above criteria.**
- 4. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific nearby industries are approached for instituting such awards.**

**The teachers are free to evolve other criteria of assessment, depending upon the type of project work. It is proposed that the institute may organize an annual exhibition of the project work**



## SOFT SKILLS – IV

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### RATIONALE

The present day world requires professionals who are not only well qualified and competent but also possess good communication skills. The diploma students not only need to possess subject related knowledge but also soft skills to get good jobs or to rise steadily at their work place. The objective of this subject is to prepare students for employability in job market.

### LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Communicate effectively.
- Apply techniques of effective time management
- Develop habits to overcome stress
- Face problems with confidence
- Exhibit attributes required to appear for an interview
- Learn about current and future career opportunities
- Exhibit entrepreneurial skills
- Use QC/QT tools

### DETAILED CONTENTS

- Communication Skills - Presentation
- Time management
- Stress Management
- Problem solving
- Career opportunities-Current and future
- Entrepreneurial Skills
- Quality and Quality tools used in industry

In addition, the students must participate in the following activities to be organized in the institute

- Sports
- NCC/NSS
- Cultural Event

**Note: Extension Lectures by experts may be organized. There will be no examination for this Subject.**