

Raipur



Syllabus Scheme
(6th Semester)
For
DIPLOMA PROGRAMME
IN
CIVIL ENGINEERING

Subject Code For DIPLOMA PROGRAMME IN CIVIL ENGINEERING

6th Semester (Civil)

S.No.	Subject Code	Subject Name
THEORY		
1	DP-620	Architectural Practices and Interior Design
2	DP-621	Watershed Management
3	DP-622	Design of Steel Structures
4	DP-623	Estimation, Costing & Valuation
5	DP-624	Construction Management
PRACTICAL		
6	DP-625	Steel Structure Lab
7	DP-626	Soil Mechanics Lab
8	DP-627	Major Project



MATS School of Engineering & I.T
MATS University, Raipur
Diploma in Civil Engineering



VIth Semester

Sr. No.	Course code	SUBJECT	Periods per week			Evaluation Scheme		Total Credits
			L	T	P	IM	ESE	
THEORY								
1	DP-620	Soil Mechanics	3	0	-	30	70	
2	DP-621	Watershed Management	4	0	-	30	70	
3	DP-622	Design of Steel Structures	4	1	-	30	70	
4	DP-623	Estimation, Costing & Valuation	4	1	-	30	70	
5	DP-624	Construction Management	3	0	-	30	70	
6	DP-625	Steel Structure Lab	-	-	2	20	30	
7	DP-626	Soil Mechanics Lab	-	-	2	20	30	
8	DP-627	Major Project	-	-	5	75	125	
TOTAL			18	2	09	265	535	

L-Lecturer, P-Practical, ESE- End Semester Examination, IM-Internal Marks, T-Tutorial

SIXTH SEMESTER
SUBJECT :- SOIL MECHANICS

SUBJECT CODE: DP-620

Unit -1

INTRODUCTION

Concept of soil, Definition and meaning of soil mechanics , History of soil mechanics , Scope of soil mechanics, Soil formation.

Unit-2

WEIGHT

AND VOLUME RELATIONSHIP OF SOIL

Definition of soil mass , Components of soil mass Phase diagram of soil mass and its labeling Weight and volume of soil with usual notation Dry soil and wet soil Void ratio Porosity and their relations Types of water in soil ω , G.S.e and, γ Relation between, Bulk density, saturated, submerged and dry density Difference between adsorbed water and absorbed water in soil Saturated, partly saturated and dry soil

Unit - 3

CLASSIFICATION OF SOIL

Definition of Coarse and fine grained soil Homogeneity Consistency Cohesiveness Toughness Shear strength Compressibility Stoke's law Sedimentation analysis of soil Particle size - Distribution curve on semi log scale States of consistency and its diagram Consistency limits- Liquid limit, plastic limit, shrinkage limit and plasticity index (P.I) Laboratory methods to find out these limits Field identification tests

Unit - 4

PERMEABILITY

Definition and understanding of permeability Different types of soil and permeability Laminar and turbulent flow Importance of permeability Darcy's Law Coefficient of permeability and its determination in laboratory Factors affecting permeability Concepts meaning of seepage, Effects of seepage

Unit - 5

EARTH PRESSURE

Define Earth pressure Effective pressure Neutral pressure Total pressure Magnitude of earth pressure Rankines theory Assumptions made in the Rankine's theory Earth retaining structures 123 Earth pressure on earth retaining structures.

SIXTH SEMESTER

SUBJECT :- WATERSHED MANAGEMENT

SUBJECT CODE: DP-621

Unit 1

Soil and Water, Issues related to plant life like composition of soil, water requirement of crops, necessary conditions for plant growth etc. Soils, their origin and classification.

Unit 2

Land classification for WM, Land capability rating, determination of land capability class, land capability and suitability surveys.

Unit 3

Soil erosion, problem, types, conservation, and control measures in agricultural and non-agricultural land. Water conservation and Harvesting, Agronomical measures in soil and water conservation. Examples and critical reviews.

Unit 4

Watershed Management, Approach in Govt. programmes, people's participation, conservation farming, watershed-management planning, identification of problems, objectives and priorities, socioeconomic survey, use of tools like GIS.

Unit 5

Hill slope processes, forest and land use, hill slope conservation. Bad lands, bad land development.

Name of Text Books:

Watershed Management – J.V.S. Murthy (New Age International Ltd.)

Name of Reference Books:

Watershed Management – B.M. Tideman (-----)

Modern physical geography – Strahler A.N. and Strahler A.H. (-----)

SIXTH SEMESTER

SUBJECT :- DESIGN OF STEEL STRUCTURE

SUBJECT CODE: DP-622

Unit – 1

INTRODUCTION

Examples of steel structure, I.S. code 800-1984, Structural Steel Section, Loads, D.L., L.L., W.L., Allowable stresses.

RIVETED& WELDED JOINTS

Definition of terms related to riveted joints, Permissible stress in rivet, Types of Riveting- power driven, field driven, Power driven shop

Riveting, Definition of terms related to welded joints, Types of welded joint, Strength of welded joint, Design of welded joint

Unit – 2

BEAMS

Permissible stress in beams, Deflection, Buckling of compression flange, Design of laterally restrained beams of single rounded steel section, Built up section, I section with plates

Unit 3

TENSION MEMBER

Use of Sections as tension member, Net sectional area, effective sectional area of single and double angles, Design of a tension member

COMPRESSION MEMBER

Criteria of failure of short column and long column, End conditions, Effective length of a column, Slenderness ratio and corresponding compressive stress, Design of column and compound column consisting of two channels, Design of lacing s and Battening

Unit– 4

COLUMN BASES & COLUMN FOOTING

Types of column base - Slab base and gusseted base, Design of M.S. Slab and gusseted base with concrete pedestal, Cleat angles, their use only **ROOF TRUSS**, Types of Trusses, Definitions of terms related to truss, Combination of loads for design of truss, Selection of truss, Forces in the member, Design of members of truss, Design of purlin, Detailing of different roof joints and purlin connection.

Unit– 5

ANALYSIS OF CONTINUOUS BEAMS

Analysis of continuous beam by Clayperion's theorem for three moments, Moment distribution method limited to three spans with different end Conditions

Name of Reference Books:

Design of Steel Structures – Arya, A.S., Ajmani, J.I. (Nem Chand & Bros., Roorkee, U.P.)
Design of Steel Structures – Punmia, Jain & Jain (Laxmi Publications)

SIXTH SEMESTER

SUBJECT :- ESTIMATION,COSTING& VALUATION

SUBJECT CODE: DP-623

Unit – 1**ESTIMATE OF TIMBER STRUCTURE**

Estimate of doors and windows, Estimate of king post Roof Truss, Estimate of Roof covering material (Tiles)

Unit 2**ESTIMATE OF R.C.C. STRUCTURE**

Estimate of slab, Estimate of beam, Estimate of T-beam, Estimate of staircase from and with actual working drawing, Estimate of R.C.C. column with its footing, Preparation of abstract of above items, Preparation of bar bending schedule, and to calculate amount of steel

Unit– 3**ESSTIMATE OF STEEL STRUCTURE**

Estimate of steel column (Stanchion), Estimate of steel Truss and Gusset Plate, Estimate of Roof covering materials, Estimate of GIC Roof, A.C. Roof, Estimate of steel frames for doors and windows

Unit – 4**ESTIMATE OF CULVERTS & BRIDGES**

Estimate of hume pipe culvert with splayed type of wing wall, turn wall, face wall, Estimate of R.C.C. slab bridge, straight type wing walls

ESTIMATE OF WATER SUPPLY AND SANITARY FITTINGS

Detailed estimate of water supply for building work, Detailed estimate of sanitary works for building work, Estimate of S.W. pipe, Estimate of septic tank, Estimate of manhole.

Unit – 5**VALUATION**

Definition, purpose of valuation, Gross income/Net income, Cut goings, Sinking fund, Obsolescence and depreciation, Capitalized value and year purchase, Methods of depreciation, methods of valuation, Free hold property, rent fixation of building.

Name of Reference Books:

Textbook of Estimating and Costing – G.S. Birdi (Dhanpat Rai Publications)

Valuation of real properties – S.C. Rangwala (Charotar Publication)

A Textbook of Estimating and Costing – Kohli & Kohli (S. Chand & Co.)

SIXTH SEMESTER
SUBJECT :- CONSTRUCTION.MANAGEMENT
SUBJECT CODE: DP-624

Unit - 1 INTRODUCTION

Organization-Major departments executing civil works., Structure of departments, Staff pattern in division and sub-division, Accounting system, Types of work done by department, etc.

Unit - 2 WORK BY CONTRACT AGENCY

Different methods for executing works in PWD, Preparation of tender invitation of a tender, Contract agreements and its different parts, Conditions of contract, Responsibilities of sub-engineer, Site order book, Procedure for issuing material, Procedure for bills

Unit - 3 WORK BY DEPARTMENT

(A) GENERAL

Land acquisition, Procedure for material procurement, Use of a quarry chart, Different types of accounting papers, Procedure for operation of labour rolls, Stores procedure and records indent form, Accounts of T & P, Articles, Survey report, Road metal return, Road metal rate book and its use

(B) MEASUREMENT

Use of measurement book, Entries in measurement books, Standard measurement book and its use

Unit - 4 CASH,BILL,AUCTION & T.A. RULES

Procedure to settle account of money received, Modes of payment, Permanent and temporary advance, Comparison between permanent and temporary advance,, Checking of bills and vouchers, Auction procedure, T.A. rules etc.

TIME SCHEDULE FOR WORKS

Importance of management of works,Gantt bar chart,Limitations of chart, CPM network, Project chart

Unit - 5 CONSTRUCTION MANAGEMENT & EQUIPMENTS

Civil Engg construction industry, Human resource management,Material & equipment managements, Classes of equipments, Factors in the selection of equipment, Earth moving equipment, Concreting equipment, Different types of minor machine,Vibrators

Name of Reference Books:

Construction Planning Equipment and Methods – Peurify/ Schexnayder, 6th Edition (Tata McGraw Hill)

PERT & CPM – Sreenath, I.S. (East West Press, New Delhi, 1975)

SIXTH SEMESTER
SUBJECT :- STEEL STRUCTURES LAB
SUBJECT CODE: DP-625

LIST OF PRACTICALS/TUTORIALS:

1. Analysis of roof truss by graphical method for D.L, L.L., and W.L.
2. Sketching of different types of rivets and steel section
3. Sketching of different types of riveted joint
4. Sketching of different types of welded joint
5. Sketching of lacing and battening system used to connect compound column
6. Detail drawing of column with slab base foundation
7. Detail drawing of column with gusseted base foundation
- 8.** Working drawing of steel roof truss with details of joint.

SIXTH SEMESTER
SUBJECT :- SOIL MECHANICS LAB
SUBJECT CODE: DP-626

LIST OF PRACTICALS/TUTORIALS:

1. To determine the mass density of soil by core cutter method.
2. To determine the specific gravity of soil sample by pycnometer method.
3. To determine the water content of soil (%) by oven dry method.
4. To determine in situ dry density of soil by sand replacement method.
5. To determine the particle size distribution of a soil by dry mechanical analysis (sieve analysis).
6. To determine the liquid limit of a soil sample.
7. To determine the plastic limit of a soil sample.
8. To determine the shrinkage limit of soil sample.
9. Study of permeability by falling head and constant head methods.
10. To determine the grain size distribution by wet mechanical analysis (Hydrometer apparatus).
11. To determine the liquid limit of soil sample by static cone penetrometer method.
12. Study of cyclic plate load test.
13. Study of various field control test method.
14. Study of Skempton's pore pressure parameters.
15. Determination of density for contaminated soil.