

PART – II (2nd Year)

**REVISED CURRICULUM OF DIPLOMA
PROGRAMME
ON
CIVIL ENGINEERING**

For

**Centre for Computers &
Communication Technology, Sikkim**



Path Finder for Excellence in Technical Education

**National Institute of Technical Teachers'
Training & Research, Kolkata**

Block – FC, Sector – III, Salt Lake City, Kolkata – 700 106

November 2018

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**DIRECTOR
NITTTR, Kolkata**

**DIRECTOR
Technical Education
Government of Sikkim, Gangtok**

Foreword

Director of Technical Education, Government of Sikkim, has requested National Institute of Technical Teachers' Training and Research (NITTTR), Kolkata for revising the existing curricula on Civil Engineering, Computer Science & Technology, Electrical & Electronics Engineering and Electronics & Communication Engineering for Centre for Computers & Communication Technology (CCCT), Sikkim.

To carry out the above mentioned task, Curriculum Development Centre of the Institute has conducted a series of workshops involving experts in different subject areas for revision of complete course structure and content details of third and fourth semesters. An effort has also been made in this regard to ensure the schemes of studies and evaluation of the revised curricula will not deviate significantly from the existing curricula and at the same time revised curriculum will reflect the recent requirements of technical education and trends in a particular subject area.

The Institute welcomes any meaningful suggestions which can be incorporated in the final versions of the above said document.

Sd/-
(Phalguni Gupta)
Director,
NITTTR, Kolkata

SEMESTER - III

Sl. No	Code	Course	Study Scheme				Evaluation Scheme									Total Marks	Credit
			Pre-requisite	Contact Hours / Week			Theory						Practical				
				L	T	P	End Exam	Progressive Assessment				End Exam	Progressive Assessment				
								Class Test	Quiz	Assignment	Attendance		Sessional	Viva-voce			
1	CE4301	Mechanics of Material	G206	3	0	2	70	15	5	5	5	0	50	-	150	4	
2	CE302	Civil Engg Drawing I	G105&G106	0	0	4	-	-	-	-	-	25	25	-	50	2	
3	CE303	Surveying -I		3	0	2	70	15	5	5	5	25	25	-	150	4	
4	CE304	Construction Technology		3	1	0	70	15	5	5	5	-	-	-	100	4	
5	CE305	Concrete Technology		3	0	2	70	15	5	5	5	25	-	-	125	4	
6	CE306	Professional Practices - II		0	0	2	-	-	-	-	-	-	25	-	25	1	
7	G306	Mathematics III	G102 & G202	2	1	0	70	15	5	5	5	-	-	-	100	3	
8	G307	Development of Life Skill - II	G108	1	0	2	-	-	-	-	-	-	25	25	50	2	
TOTAL				15	1	14	350	75	25	25	25	75	150	25	750	24	

SEMESTER - IV

Sl. No	Code	Course	Study Scheme				Evaluation Scheme								Total Marks	Credit
			Pre-requisite	Contact Hours / Week			Theory				Practical					
				L	T	P	End Exam	Progressive Assessment				End Exam	Progressive Assessment			
								Class Test	Quiz	Assignment	Attendance		Sessional	Viva-voce		
1	CE401	Soft Core-I *		3	0	0	70	15	5	5	5	0	0	0	100	3
2	CE402	Civil Engg Drawing II	CE302	0	0	4	-	-	-	-	-	25	25	0	50	2
3	CE403	Surveying-II	CE303	2	0	2	70	15	5	5	5	25	25	0	150	3
4	CE404	Hydraulics		3	0	2	70	15	5	5	5	25	25	0	150	4
5	CE405	Design & Detailing I	CE304	3	0	2	70	15	5	5	5	0	25	0	125	4
6	CE406	Estimating I		2	1	0	70	15	5	5	5	0	0	0	100	3
7	CE407	Computer Aided Drawing	CE302	0	0	3	0	0		0	0	0	50	0	50	2
8	CE408	CE Workshop		0	0	3	0	0		0	0	0	50	0	50	2

9	CE409	Professional Practices – III		0	0	2	0	0		0	0	0	25	0	25	1
TOTAL				13	1	18	350	75	25	25	25	75	250	0	800	24

***Any one to be chosen from the list of softcore courses**

SOFT CORE COURSES (Common for all discipline) :Any Two

Sl. No	Course	Study Scheme				Evaluation Scheme								Total Marks	Credit
		Pre-requisite	Contact Hour/Week			Theory				Practical					
			L	T	P	End Exam	Progressive Assessment				End Exam	Progressive Assessment			
							Class Test	Quiz	Attendance	Assignment		Sessional	Viva		
1	Engineering Economics & Accountancy		3	0	0	70	15	5	5	5	-	-	-	100	3
2	Entrepreneurship Development		3	0	0	70	15	5	5	5	-	-	-	100	3
3	Principles of Management		3	0	0	70	15	5	5	5	-	-	-	100	3
4	Organizational Behaviour		3	0	0	70	15	5	5	5	-	-	-	100	3
5	Environmental Education		3	0	0	70	15	5	5	5	-	-	-	100	3

TOTAL OF TWO COURSES		6	0	0	140	30	10	10	10	-	0	-	200	6
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3rd Semester

Name of the course : MECHANICS OF MATERIAL		
Course code: CE301	Semester : THIRD	
Teaching Scheme	Maximum Marks : 150	
	PA and End Examination Scheme	
Theory : 3 hrs/week	Class test: 15 Marks	
Tutorial: 0 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks	
Practical : 2 hrs/week	End Semester Theory Exam: 70 Marks	
Credit : 4		
Rationale:		
<p>Mechanics of Materials deals with the internal behaviour of variously loaded solid bodies, such as shafts, bars, beams, plates, and columns, as well as structures and machines that are assemblies of these components. Mechanics of material focuses primarily on mechanical properties of materials, analysis of stress, strain and evaluation of deformations. The subjects like structural analysis, design of structures as well as machines are based on adequate knowledge and understanding of Mechanics of Materials. Therefore, it is an important basic subject for Diploma students in Civil and Mechanical Engineering.</p>		
Course Outcome:-.		
Module/Unit	After completion of the course, students will be able to:	
1.	Solve simple problems related to stress and strains.	
2.	Draw SFD and BMD for different types of beams- simply supported and cantilever.	
3.	Solve simple problems related to theory of pure bending.	
4	Find out slope and deflection of different types of beams under different loading conditions.	
5	Solve problems related to columns and struts Using Euler's equation.	
6	Solve problems related to torsion.	
Pre-Requisite :-		
1.	Class X with Science (Physics, Chemistry and mathematics), concept of engineering drawing	
Contents (Theory)	Hrs	Marks in %

UNIT - I	<p>1.0 INTRODUCTION</p> <p>1.1 Uses of structures, Importance of knowledge of: stress, strain, and deformation in a structure, Permissible stresses in a material, Safety and Economy. Contents and importance of the subject</p> <p>1.2 Engineering Materials: Elastic material, linearly elastic material, ductile material, brittle material, composite material, isotropic material, orthotropic material (Definition, examples and application)</p>	4	5
UNIT- II	<p>2.0 SIMPLE STRESSES AND STRAINS:</p> <p>2.1 Properties of materials – Elasticity, Plasticity, Hardness, Toughness, Brittleness, Ductility, Creep, Fatigue.</p> <p>2.2 Stress, strain, Elongation, Types of stresses & strains, Elastic limit, Hooke's law - Stress strain diagram – working stress, Yield stress, Ultimate stress & breaking stress, Factor of safety.</p> <p>2.3 Linear strain, lateral strain, volumetric strain & Poisson's ratio, Elastic constants-Young's modulus, Rigidity modulus & Bulk modulus and their relations (no derivation).</p> <p>2.4 Bars of varying cross section (Excluding tapering section).</p> <p>2.5 Composite sections.</p> <p>2.6 Temperature stresses and strain (simple sections).</p> <p>2.7 Strain energy, resilience, proof resilience and modulus of resilience, Types of loading. Equation for strain energy stored in a body.</p> <p>2.8 Simple problems.</p>	12	20
UNIT - III	<p>3.0 ANALYSIS OF BEAMS:</p> <p>3.1 Beam: definition, types of beams – Simply supported and cantilever beams, propped cantilever, fixed-ended and continuous beams.</p> <p>3.1.1 Identify different types of beams and loading conditions.</p> <p>3.1.2 Determine the support reactions and draw the free body diagram of a determinate beam.</p> <p>3.2 Shearing force and Bending Moment in Beams : Sign conventions and relationships among load, shearing force and bending moment.</p> <p>3.3 Shear Force and Bending Moment Diagrams : Cantilever beam with concentrated and uniformly Distributed load, simply supported beam with uniformly distributed and varying loads.</p>	15	25

UNIT - IV	4.0 THEORY OF SIMPLE BENDING 4.1 Bending stress, neutral axis, Theory of pure bending Equation for bending (no derivation)- Assumption. 4.2 Determine the moment of inertia, section modulus and moment of resistance of a beam cross-section. Determine the bending stresses in a beam under bending. 4.3 Definition of Flexural rigidity, Modulus of rupture. 4.4 Simple problems.	4	10
UNIT - V	5.0 SLOPE AND DEFLECTION OF BEAMS (by Moment area method only) 5.1 Introduction -deflection, slope and curvature. 5.2 State and explain Mohr's theorem. 5.3 Slope and Deflection of cantilever with point load at free end and uniformly distributed loaded. 5.4 Slope and Deflection of simply supported beam with central point load and u d l. 5.5 Simple problems.	7	15
UNIT - VI	COLUMNS AND STRUTS 6.1 Introduction- columns, struts, effective length of column for different end condition, slenderness ratio, long & short columns and Crippling load. 6.2 Euler's equation (no derivation) & assumptions. 6.3 Simple problems.	3	5
UNIT - VII	TORSION 7.1 Basic assumptions for pure torsion, torsion of circular shafts (hollow and solid, no proof) – polar moment of inertia, torsional shearing stress angle of twist, torsional rigidity. 7.2 Torsion equation (no derivation), Torsional rigidity, Torsional equation for solid and hollow circular shafts. 7.3 Power transmitted by solid and hollow shafts. 7.4 Simple problems.	3	10
	Class Test	3	
	Total	45 hrs	100
S.no.	Skills to be developed		
1	Intellectual skills-		
2	Motor skills-		
3	Social skills-		
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher

R.S Khurmi	Strength of Materials		
S.S Bhavikatti	Strength of Materials		

Name of the course : CIVIL ENGINEERING DRAWING 1			
Subject code: CE302		Semester : THIRD	
Teaching Scheme		Maximum Marks : 50	
		PA and End Examination Scheme	
Theory :	0 hrs/week	Class test: 15 Marks	
Tutorial:	0 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks	
Practical :	4 hrs/week	End Semester Practical Exam: 25 Marks	
Credit :	2		
Rationale:			
Engineering drawing is the precise means of communicating the ideas of engineers, designers and architects to the workmen who will produce/build the desire object. It is necessary that all diploma engineers have command over preparing and reading engineering drawing and have thorough understanding of geometric principle on which engineering drawing is based.			
Course outcome :-			
Module/Unit	After completion of the course, students will be able to visualize, draw and read:		
1.	Plan section and elevation of wall footing and column footing.		
2.	Plan section and elevation of different types of doors.		
3.	Plan section and elevation of different types of stair cases		
4	Elevation of roof trusses.		
5	Plan section and elevation of single storied R.C.C. building with detail.		
6	Plan section and elevation of different types of bonds		
Pre-Requisite :-			
1.	Class X with Science (Physics, Chemistry and mathematics), concept of engineering drawing		
Contents (Theory)		Hrs	Marks in %
UNIT - I	INTRODUCTION 1.1 Different symbols used in Civil Engg. R.C.C, work, Earth work, Glass work, Cross section of door and windows. 1.2 Foundation layout, footing.	6	4

UNIT- II	DOORS AND WINDOWS (ELEVATION AND SECTION) 2.1 Elevation and sectional plan of doors. 2.1.1 Panelled and fully glazed door. 2.1.2 Battened and ledged door. 2.2.3 Flush door. 2.2 Windows: 2.2.1 Fully glazed, fully paneled, ledged and braced.(aluminum and steel)	6	10
UNIT - III	STAIR CASE 3.1 sectional plan and elevation of stair cases. 3.1.1 Straight type. 3.1.2 Dog legged type. 3.1.3 Open well type. 3.1.4 Bifurcated, half turn stair case. 3.1.5 Quarter turn stair case.	16	10
UNIT - IV	ROOF TRUSS 4.1 Draw the elevation of roof trusses. 4.1.1 King post. 4.1.2 Queen post. 4.1.3 Steel roof truss.	10	5
UNIT - V	R.C.C. BUILDING (DETAILED PLAN AND SECTIONAL ELEVATION OF ONE STORIED R.C.C. BUILDING) 5.1 Details of Plan, section and elevation of a R.C.C residential building.	18	15
UNIT - VI	BONDS 6.1 Draw the different types of bonds, header, types of closers.	8	6
Total		64 hrs	50
S.no.	Skills to be developed		
1	Intellectual skills- 1. Use of equipment in correct manner. 2. Draw correct margin lines. 3. Accuracy while drawing lines. 4. Follow instructions properly.		
2	Motor skills- 1. Use proper drawing sheets. 2. Use proper drawing tools.		
3	Social skills-		

	1. Will learn to work with peer as group. 2. Able to communicate with teachers and peers to clarify doubts.		
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Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
B. P. Verma	Civil Engineering Drawing & home planning		
Agarwal and Agarwal	Engineering drawing		TMH
R.B. Gupta	Engineering drawing		Satya Prakashan Delhi

Name of the course : SURVEYING-I	
Course code: CE303	Semester : Third
Teaching Scheme	Maximum Marks : 125
	PA and End Examination Scheme
Theory : 3 hrs/week	Class test: 15
Tutorial: 0 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 2 hrs/week	End Semester Theory : 70 Marks Practical End Exam: 25Marks
Credit : 3	
Rationale:	
<p>Surveying is an essential component of the day to day work of a Civil Engineering Technician. The job includes conducting detailed surveying, plotting of survey data, preparation of survey maps etc. In view of its importance the course content has been divided into 2 parts and introduced sequentially as Surveying-I. Each theory course is accompanied by practical course work to provide hands on experience. The course content of Surveying-I includes the basic concept of surveying, horizontal linear and angular measurements and conducting surveys involving horizontal linear and angular measurements with stress on familiarization with various equipment used. It also includes vertical linear measurements to indicate the profile of the land surface by levelling has also been covered in details.</p>	
Course outcome :-	
Module/Unit	After completion of the course, students will be able to:
1.	Explain the importance of surveying in civil engineering.
2.	Classify methods of surveying. Use surveying instruments to measure distances, bearings and elevations.
3.	Workout problems related to compass, levels, chain and plane table
4	Find out different sources of errors and rectify them.
5	Carry out survey and prepare maps using the data collected.
6	Identify the instrument required for particular survey work.
7	Preparing contour maps from field data.
Pre-Requisite :-	
1.	Class X with Science (Physics, Chemistry and mathematics), concept of engineering mechanics.

Contents (Theory)		Hrs	Marks in %
UNIT - I	<p>BASIC CONCEPT AND GENERAL INTRODUCTION</p> <p>1.1 Broad aims definition, uses, Principles and classification of survey</p> <p>1.2 Basic instruments for surveying: Pegs, arrows, ranging rods, ranging poles, Cross staff, optical square, plumb bob, chain, tape.</p>	4	5
UNIT- II	<p>CHAIN SURVEY</p> <p>2.1 Definition, principles and use of chain survey.</p> <p>2.2 Selection of station, base line, check line, tie line, kinds of offsets, obstacles in chaining, chaining on sloping ground</p> <p>2.3 Errors in chain survey: Incorrect ranging, limiting length of offset, error in length, area and volume due to incorrect chain, cumulating and compensating error, tape correction, simple problems</p>	9	15
UNIT - III	<p>COMPASS SURVEY</p> <p>4.1 Introduction to compass surveying</p> <p>4.2 Types of compass: Prismatic and Surveyor's compass, basic differences between prismatic and surveyor's compass, basic difference between chain and compass surveying, open and closed traversing</p> <p>4.3 Bearing of lines, type of meridians, whole circle and quadrantal system of bearing, fore and back bearing, reduced bearing,</p> <p>4.4 Local attraction, dip of the needle and magnetic declination, variation in magnetic declination, relation between true bearing and magnetic declination, error and precautions in compass survey, numerical problems.</p> <p>4.4 Traversing by compass, plotting of traverse, closing error, simple problems.</p>	15	25
UNIT - IV	<p>LEVELLING</p> <p>5.1 Definition of terms used in levelling: level surface, horizontal surface, vertical surface, datum, reduced level (RL), bench mark (BM).</p> <p>5.2 Types of levelling instruments: essential features and uses, definition of line of collimation, axis of bubble tube, axis of telescope, vertical axis, levelling staff- types</p> <p>5.3 Temporary adjustments of level, taking reading with level</p> <p>5.4 Definition of BS, IS, FS, CP, HI</p>	10	20

	<p>5.5 Principles of levelling, different types of levelling, calculation of reduced level by height of collimation and rise & fall method</p> <p>5.6 Effects of curvature and refraction, simple problems</p> <p>5.7 Difficulties in levelling, errors in levelling and pre-cautions</p>		
UNIT - V	<p>PLANE TABLE SURVEYING</p> <p>1.1 Objectives of plane table surveying, comparison with chain & compass surveying, use of plane table surveying</p> <p>1.2 Principles of plane table surveying</p> <p>1.3 Instruments & accessories in plane table surveying- features and uses</p> <p>1.4 Setting up plane table-centering, leveling, orientation</p> <p>1.5 Methods of plane table surveying- (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection.</p> <p>1.6 Statements of TWO POINT and THREE POINT PROBLEM and their applications</p> <p>1.7 Errors in plane table surveying and their corrections, precautions in plane table surveying.</p>	7	10
UNIT- VI	<p>CONTOURING</p> <p>2.1 Definitions of related terms, concepts of contours, characteristics of contours</p> <p>2.2 Methods of contouring, plotting contour maps</p> <p>2.3 Interpretation of contour maps, toposheets</p> <p>2.4 Use of contour maps in engineering projects - drawing cross-sections from contour maps, locating proposed routes of roads/railway/canal on a contour map, computation of volume of earthwork from contour map for simple structures</p>	3	5
	<p>LIST OF EXPERIMENTS/ DEMONSTRATIONS</p> <p>1.0 CHAIN SURVEY</p> <p>1.1 Handling and uses of chain, tape, cross-staff, optical and other related instruments and accessories.</p> <p>1.2 Ranging and measurement of lines by chain and tape</p> <p>1.3 Laying and measurement offset by various methods</p> <p>1.4 Chain survey of an area containing simple details and plotting the survey.</p> <hr/> <p>2.0 COMPASS SURVEY</p> <p>2.1 Reading Fore bearing and back bearing 4</p> <p>2.2 Measurement of included angle</p> <p>2.3 Compass survey of a plot of land making it closed traverse</p> <p>2.4 Plotting of compass survey after making correction for local attraction</p>	64	

	<p>3.0 LEVELLING</p> <p>3.1 Reading of staff</p> <p>3.2 Setting up a levelling instrument and finding difference of level by fly levelling</p> <p>3.3 Conducting of longitudinal levelling and cross-section levelling of a proposed road of 500m taking L- section at 20m.</p> <p>3.4 Plotting of survey from field book and level book</p>		
	<p>4.0 CONTOURING</p> <p>4.1 Locating contour points in the given area by direct method/ indirect method</p> <p>4.2 Conducting block level survey in the given area</p> <p>4.3 Plotting and drawing contour lines of the block level survey in Exercise 2.2</p> <p>4.4 Preparing the contour map of a given area by radial Method</p> <p>5.0 SURVEY CAMP</p> <p>5.1 There should be survey camp duration outside the campus, especially in an underdeveloped area using all modern instruments</p>		
Total		112 hrs	100
Practical :- NA			
S.No	Skills to be developed		
1.	<p>Intellectual skills-</p> <ol style="list-style-type: none"> 1. Use of equipment in correct manner. 2. Accuracy while positioning of instrument, observing and taking readings. 3. Follow safety instructions properly. 4. Accurate plotting of maps with the help of field data. 		
2.	<p>Motor skills-</p> <ol style="list-style-type: none"> 1. Operate instruments properly. 2. Use proper marking tools. 		
3	<p>Social skills-</p> <ol style="list-style-type: none"> 1. Will learn to work with peer as group. 2. Able to communicate with teachers and peers to clarify doubts. 		
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
B.C.Punmia	Surveying vol-1		Tata Mc. Grawhill
T.P Kanetkar	Surveying and levelling		
Hussain and Nagaraj	Surveying		

Name of the course : CONSTRUCTION TECHNOLOGY			
Course code: CE304		Semester : Third	
Teaching Scheme		Maximum Marks : 100	
		PA and End Examination Scheme	
Theory :	3 hrs/week	Class test: 15 Marks	
Tutorial:	1 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks	
Practical :	0 hrs/week	End Semester Theory Exam:70 Marks	
Credit :	4	PA Practical : 0 Marks	
Rationale:			
It is essential that the students should have knowledge of various components of building like walls, roof, floor etc. and their constructional details. Therefore, the subject construction technology is very important for civil engineering diploma students.			
Course outcome :-			
Module/Unit	After completion of the course, students will be able to:		
1.	Interpret the role of the Construction Sector in Civil Engineering		
2.	Apply the basic knowhow for making a good construction with the relevant construction material		
3.	Select and guide the concerned personnel for using different types of tools and equipment for construction		
4	Design the sequence of operations are to be planned to complete the work with minimum delay with special emphasis on PERT, CPM techniques		
5	Apply technical knowhow to interact with the site team and all concerned with the project so as to efficiently control the construction		
6	Update oneself regularly with latest technological developments in this field as the knowledge in this field is expanding in leaps and bounds		
Pre-Requisite :-			
Contents (Theory)		Hrs	Marks in %

UNIT - I	<p>1.0 STONE MASONRY, BRICK MASONRY & TIMBER</p> <p>1.1 Terms used in stone masonry and brick masonry</p> <p>1.2 Coursed rubble masonry and Ashlar masonry.</p> <p>1.3 Points to be kept in mind while supervising stone masonry work.</p> <p>1.4 List Bonds used in Brick masonry, Study of English bond & Flemish bond.</p> <p>1.5 Points to be kept in mind while supervising brick masonry work.</p> <p>1.6 Partition walls-bricks, Concrete block, Glass, Plywood and hard board.</p> <p>1.7 Timber and their properties, Classification, seasoning of timber.</p>	6	6
UNIT- II	<p>2.0 LINTELS, ARCHES & VENTILATIONS</p> <p>2.1 Necessity of lintels and arches, sunshades, sun breakers and canopy</p> <p>2.2 RCC lintels, sun shades, sun breakers.</p> <p>2.3 Arch-Terms used, Types of arches-Flat, Segmental, Semicircular</p> <p>2.4 Definition, Necessity & requirements of ventilation system</p> <p>2.5 Types of ventilation.</p>	5	20
UNIT - III	<p>3.0 DAMPNES AND PREVENTION OF DAMPNES</p> <p>3.1 Definition and causes of dampness</p> <p>3.2 Effects of dampness and prevention of dampness</p> <p>3.3 List the materials used for damp proof course.</p>	3	24
UNIT - IV	<p>4.0 DOORS AND WINDOWS</p> <p>4.1 Definition of doors, windows and ventilator and their purpose</p> <p>4.2 Size of doors, windows & ventilators for different types of building as per I.S. specifications</p> <p>4.3 Important types of doors, windows and ventilators in general use.</p> <p>4.4 Fixtures for doors, windows and ventilators.</p>	8	15
UNIT - V	<p>5.0 STAIRS</p> <p>5.1 Technical terms. Requirements of good stair.</p> <p>5.2 Classification of stairs, brief description & their suitability.</p> <p>5.3 Uses of Escalators and lifts.</p>	3	

UNIT - VI	6.0 ROOF 6.1 Definition of roof and types of roof in general 6.2 Common types of Roofing materials. 6.3 Pitched roof basic elements. 6.4 Flat RCC roof-advantages and disadvantages. 6.5 Water proofing course for flat roofs, use of newer materials and techniques	5	10
UNIT - VII	7.0 FLOORING 7.1 Definitions of floors and floorings 7.2 Selection of floor material, Types of floors and their selection 7.3 Laying of Mosaic tile flooring, Ceramic tile flooring and Cement concrete floorings.	5	15
UNIT - VIII	8.0 PLASTERING, POINTING AND PAINTING 8.1 Object of plastering and requirements of good plaster. 8.2 Method of cement plastering 8.3 Types of plaster finishes-Smooth, sand faced, rough cast, pebble dash, defter, scrapped, textured finish. 8.4 Method of pointing & types of pointing. 8.5 Methods of painting, distempering & varnishing on different surfaces.	6	
UNIT - IX	9.0 PRE-STRESSED CONCRETE 9.1 Pre-stressing - Principles - Types of pre-stressing – pre-tensioning, post tensioning 9.2 High strength concrete and steel systems of pre-stressing – Hoyer, Freyssinet, Magnel and Blaton 9.3 Advantages and disadvantages of pre-stressing 9.4 Comparison of pre-stressed concrete with reinforced cement concrete 9.5 Practical use of pre-stressed concrete	5	
UNIT - X	10.0 CONSTRUCTION EQUIPMENT MANAGEMENT 10.1 Identification – Planning - Equipment Management in Projects - 10.2 Maintenance, Management – Replacement – 10.3 Unit Operating Cost - Cost Control of Equipment - Depreciation Analysis – Safety Management	6	

UNIT - X	11.0 EQUIPMENT FOR EARTHWORK 4 11.1 Fundamentals of Earth Work Operations - Earth Moving Operations 11.2 Types of Earth Work Equipment - Tractors, Scrapers, Earth Movers.	4	
UNIT - X	12.0 EQUIPMENT FOR PRODUCTION OF AGGREGATE AND CONCRETING 8 Crushers, Feeders, Screening Equipment, Handling Equipment, Batching and Mixing Equipment, Hauling, Pouring and Pumping Equipment, Types of pumps, Transporters, Conveyors - Hauling Equipment.	5	
UNIT - X	13.0 OTHER CONSTRUCTION EQUIPMENT 13.1 Equipment for Dredging, Trenching, Tunnelling, Drilling, Blasting 13.2 Equipment for Erection	3	
Total			
Practical :-			
S.No	Skills to be developed		
1.	Intellectual skills-		
2.	Motor skills-		
3	Social skills-		
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
S.C.Rangwala	Building construction		

B.C.Punmia	Building construction		
Gurucharan Singh	Building construction		
Sushilkumar	Building construction		
Sharma S.C.	Construction Equipment and Management,		Khanna Publishers, New Delhi, 1988.
Deodhar, S.V	Construction Equipment and Job Planning		Khanna Publishers, New Delhi, 1988
Dr.MaheshVarma	Construction Equipment and its planning and Application		Metropolitan Book Company, New Delhi. 1983.

Name of the course : CONCRETE TECHNOLOGY	
Course code: CE305	Semester : THIRD
Teaching Scheme	Maximum Marks : 125
	PA and End Examination Scheme
Theory : 3 hrs/week	Class test: 15 Marks
Tutorial: 0 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 2 hrs/week	End Semester Theory Exam: 70 Marks
Credit : 4	Practical Exam: 25 Marks
Rationale / Aim :-	
Concrete is used as the most important construction material throughout the world. It is unique in the sense that it is produced in-situ with locally available raw materials and a team of labours. For producing good quality concrete knowledge of concrete technology is a must and hence this subject is very important for civil engineering diploma holders.	
Course outcome :-	
Module/Unit	After completion of the course, students will be able to:
1.	Appreciate the role of concrete in Civil Engineering
2.	Identify the basic ingredients of concrete and their properties in concrete making including selection of the suitable materials and their relative proportioning for producing good quality concrete
3.	Perform experimentation on concrete materials and on concrete for assessing their quality and acceptability
4.	Interpret the impact of concrete, which is the second largest material with respect to per capita consumption in the world, on the society including its environmental and ecological aspects
5.	Implement the concept of concrete making to a construction site as efficiently as possible
6.	Update oneself regularly with latest technological developments in this field as the knowledge in this field is expanding in leaps and bounds
Pre-Requisite :-	

1			
Contents		Hrs.	Marks in %
UNIT - I	1.0 INTRODUCTION 1.1 Concrete as a construction material- Grades of concrete, advantages and disadvantages of concrete	3	5
UNIT-II	2.0 MATERIALS FOR CONCRETE 2.1 Chemical composition of cement, hydration of Cement, heat of hydration. 2.2 Properties of Portland cement – ordinary, Rapid hardening, low-heat, sulphate resisting, Portland slag, Portland pozzolana, super sulphated cement, white cement. 2.3 Tests on Cement and Cement Paste – fineness, consistency, setting time, soundness, compressive strength. 2.4 Use of IS code Specifications- 4031, 4032, 269, 8116, 12269 and 455 2.5 Aggregates – Classification, mechanical and physical properties, deleterious substances, alkali-aggregate reaction, fineness modulus, grading of aggregate. IS code specifications- 2386, 383 2.6 Water – quality of mixing water, curing water, use of IS code 2.7 Admixtures –Important functions, classification of admixtures, accelerating, retarding, air entraining admixtures. water reducing admixture and Super plasticizers,. IS 9103, 456	15	5
UNIT - III	3.0 PROPERTIES OF CONCRETE 3.1 Concept of fresh concrete, Workability, Factors affecting workability, 3.2 Measurement of workability- Slump test, compacting factor test, flow table test, vee-bee consistency test 3.3 Segregation and Bleeding of concrete, 3.4 Hardened concrete- water cement ratio and effect of age on strength, flexural strength of concrete, stress strain relationship with different elastic modulli phenomena of creep and shrinkage, permeability, durability of concrete, sulphate and acid attack on concrete, efflorescence. 3.5 Testing of concrete- Destructive and non-destructive test on hardened concrete, cube and cylinder test, flexural tensile strength of concrete, some common nondestructive test like rebound hammer and USPV test 3.6 Production of concrete – Batching, mixing, transporting, placing, compacting, Curing of concrete, mixers and vibrators, Use of relevant Clauses of IS 456	15	8

UNIT IV	4.0 MIX DESIGN FOR CONCRETE 4.1 Requirements of material, workmanship, inspection and testing as per IS:456, Section 2 4.2 Mix design-concept, parameters to be considered in mix proportioning-Mix design methods-Mix design using I.S.code method (10262- 2009)	10	12
UNIT V	5.0 SPECIAL CONCRETE: 5.1 High strength concrete, high performance concrete and fly ash concrete, polymer concrete – Fiber reinforced Concrete-self compacting concrete, Ready mix Concrete 5.2 Applications -advantages and limitations.	5	10
	LIST OF EXPERIMENTS/ DEMONSTRATIONS 1.0 TESTS ON CEMENT AS PER IS CODES 1.1 Determination of Fineness of cement (Blaine air Permeability app.) 1.2 Determination of Specific gravity 1.3 Normal Consistency 1.4 Initial setting and final setting time 1.5 Test on compressive strength of Cement (Mortar Cube) 1.6 Soundness of cement – Le-Chatelier and Autoclave	32	50
	2.0 TESTS ON AGGREGATE AS PER IS CODES 2.1 Sieve Analysis of Fine and Coarse Aggregates for Gradation 2.2 Specific gravity of Aggregates 2.3 Bulking of sand 2.4 Water absorption of coarse & fine aggregate 2.5 Elongation & flakiness index 2.6 Test on deleterious material 2.7 Test on alkali aggregate reaction		
	3.0 TESTS ON CEMENT CONCRETE AS PER IS CODE 3.1 Slump test 3.2 Compaction factor test 3.3 Casting Concrete cubes and cylinders 3.4 Compressive strength of concrete cubes and cylinders 3.5 Split Tensile Test on concrete Cylinder 3.6 Flexural tensile strength of concrete 3.7 Non- destructive test- rebound hammer, USPV IS:13311		
Total		90 hrs	100%
Practical :-			
S.No	Skills to be developed		

1.	Intellectual skills-
2.	Motor skills-
3	Social skills-

Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
M. L. Gambhir	Concrete Technology		
M S Shetty.	Concrete Technology		
Neville	Properties of concrete		
Neville & Brooks	Concrete Technology		Pitman Pub. Ltd
Santhakumar	Concrete Technology		

Name of the course : PROFESSINAL PRACTICES- II				
Course code: EC 308		Semester : THIRD		
Teaching Scheme		Maximum Marks : 25		
		IA and End Examination Scheme		
Theory :	00 hrs/week	Class test: 0 Marks		
Tutorial:	00 hrs/week	Assignment / Quiz etc.: 0 Marks Attendance : 0 Marks Sessional(IA) : 25		
Practical :	02 hrs/week	EE Theory Exam: 00 Marks		
Credit :	01	EE Practical Exam: 00 Marks		
Rationale / Aim :-				
<p>Students in the discipline of engineering and technology need to acquire skill, knowledge and attitude that fits the requirement of the industry, to develop right temperament to be a job fit the students must have some ability such as team work, team management, working on projects, meeting deadlines, problem solving ability, critical thinking, knowledge of society etc. hence during the study of the engineering course it is also necessary that the students is imbided with above required professional skills.</p> <p>The course curriculum professional practice II incorporates students micro seminar, expert lectures and scrap project, which will give some input to their required professional knowledge of the trade, as this course will continue in the next semester some other aspect will be address there too.</p>				
Course Objective :-				
Module/Unit	After completion of the course, students will be able to:			
1.	Prepare details project Report on scrape project.			
2.	Explain recent trends through Guest Lecture			
3.	Present given topic in a seminar,			
4.	Assemble and de-assemble specific equipment / gadgets			
Pre-Requisit e :-				
1				
Contents			Hrs.	Marks in %
UNIT - I	Students Micro Seminar/Presentation: Seminars on information searched by the student as a part of lab talk. (Minimum: one nos.)			
UNIT-II	Lectures by Professional / Industrial Expert be organized in their field of studies.		7	
UNIT – III	3.0 Scrape Project: The students individually has to perform a project of dismantling of non-working equipment's or gadgets available in the institute or to be bought by themselves.		23	

	The student has to give a presentation on his work during the project. The student has to submit a report of the project.		
		Total	

1.	Intellectual skills- <ol style="list-style-type: none">1. Interact with industry people- executive and working level2. Implementation of theoretical concept.3. Exchange of ideas.4. Adopting safety precautions.
2.	Motor skills- <ol style="list-style-type: none">1. Development of supervisory skill.
3	Social skills- <ol style="list-style-type: none">1. Development of ethics.2. Will learn to work with peer as group.3. Able to communicate with teachers and peers to clarify doubts.

Name of the course : Applied Mathematics			
Course code: G 306		Semester : Third	
Teaching Scheme		Maximum Marks : 100	
		IA and End Examination (EE)Scheme	
Theory :	02 hrs/week	Class test:15 Marks	
Tutorial:	01 hrs/week	15 Marks =Assignment 5 Marks+ Quiz-5 Marks +attendance 5 Marks	
Practical :	00 hrs/week	EE Theory Exam: 70 Marks	
Credit :	03	IA Practical Exam: 00 Marks EE Practical Exam: 00 Marks	
Rationale / Aim :-			
<p>Mathematics is the backbone of study of engineering and technology irrespective of the trade of studies and hence, it is a fundamental course of studies, The students from all programme has to use mathematical basics as a tool for analyzing and solving engineering problems, technicians and engineers need study of relevant theories and principles of mathematics to enable them to understand with clarity the logic behind any problems that they encounter in their respective field. With the above view in mind, the necessary content details for the course of Applied mathematics are derived.</p> <p>In the current course will learn the topics related to Numerical Method, Differential Equations, Laplace Transformation, Inverse Laplace Transformation and Fourier Series it is presumed that the input provided in the syllabus will give sufficient opportunity to the students to learn the required tricks of the trade.</p>			
Course Objective :-			
Module/Unit	After completion of the course, students will be able to:		
1.	Solve algebraic equations using appropriate method		
2.	Find Complementary Function and Particular Integral of second order differential equation.		
3.	Solve differential equation of 1 st and 2 nd order		
4	Solve differential equation using Laplace and Inverse Laplace Transformation		
5	Analyze non sinusoidal signals using Fourier Series.		
Pre-Requisite :-			
SLNO	Pre-Requisite		
1.	G 102		
2.	G 202		
Contents (Theory)		Hrs/week	Marks
Unit -1	1.0 Numerical Analysis Introduction, Graphical Solution, bisection method, Newton – Raphson’s Method, Regula – Falsi Method, Iteration Method,	6+3	

UNIT-II	<p>2.0 DIFFERENTIAL EQUATIONS</p> <p>2.1 Introduction Definition of differential equations, degree and order of a differential equation, Formation of a differential equation up to 2nd order by eliminating constants.</p> <p>2.2 First order differential Equation Solution of linear differential equations of the first degree and first order. a) Variable separable method b) Homogeneous method c) Linear differential equations of the type $\frac{dy}{dx} + Py = Q$</p> <p>2.3 Differential equations of the second order Complementary function and particular integral of second order DE of following types a) $a \frac{d^2y}{dx^2} + b \frac{dy}{dx} + cy = 0$ b) $a \frac{d^2y}{dx^2} + b \frac{dy}{dx} + cy = e^x$ c) $a \frac{d^2y}{dx^2} + b \frac{dy}{dx} + cy = \sin mx / \cos mx$</p> <p>2.4 Using differential equations, finding charge and current for L-R and L-R-C circuits</p>	8+4	
UNIT-III	<p>4.0 LAPLACE TRANSFORM (LT): Introduction, Laplace transformation, important formulae, properties of Laplace transformation, Change of scale property, First Shifting theorem, Unit Step theorem, Second Shifting Theorem. Laplace Transformation of derivatives, Laplace transformation of integrals</p>	6+3	
UNIT-IV	<p>5.0 INVERSE LAPLACE TRANSFORM Definition of Inverse Laplace Transform and Null Function, important formulae, Linearity Property. First Shifting Property. Second Shifting Property. Change of scale property. Inverse Laplace Transform of derivatives. Convolution Theorem. Solution of Differential Equations using Laplace Transform.</p>	5+3	
UNIT-VI	<p>6.0 FOURIER SERIES. Periodic function, Trigonometric series. Advantages of Fourier series Fourier series and Fourier coefficients Theorem. Finite discontinuity, Even functions and Odd functions. Change of Interval and Change of Period.</p>	5+2	

	Complex form of Fourier series, Half range series		
	Total		
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
Dr. J.S.Bindra and K.S.Gill.	Applied Mathematics-I,II,III		
B.S.Grawal	Engineering Mathematics		
H.K.DAS	Polytechnic Mathematics	11th	S Chand
H.K DAS	Engineering Mathematics	latest	S Chand

Name of the course : DEVELOPMENT OF LIFE SKILL- II	
Subject code: G 108	Semester : THIRD
Teaching Scheme	Maximum Marks : 50
	PA and End Examination Scheme
Theory : 0 hrs/week	Class test: 0 Marks Sessional: 25marks
Tutorial: 0 hrs/week	Assignment / Quiz etc.: 0 Marks Attendance : 0 Marks
Practical : 2 hrs/week	End Semester Theory Exam: 25 Marks
Credit : 2	
Rationale:	
<p>The age of adolescence is a vital stage of change and growth, this is the period of transition from childhood to adulthood and characterized by rapid psychological and physiological changes occurs, as the students came out from schools they are extending the relationship beyond parents and family and are widely influenced by their peers. At this age they start thinking independently. These are the years of creativity, idealism, buoyancy and spirit of adventure and also the year of experimenting and risk-taking. Therefore the students at a risk of taking uninformed decision on crucial issues. Life skills is a course designed to give positive support to the students at this crucial juncture.</p> <p>Development of Life skills includes the basics of thinking skills and social skills which includes Self – awareness , Empathy, Critical thinking, Creative thinking, Decision making, Problem Solving, Effective communication, Interpersonal Relationship, Coping with Stress, Coping with emotions.</p>	
Course Objective :-	
Module/Unit	After completion of the course, students will be able to:
1.	Describe Inter personal Relationship and its types.
2.	Explain the “problems and steps of solving the Problem.
3.	Presentation Skill
4	Differentiate verbal & Nonverbal Communication
5	Explain Writing skills
6	Analys Stress and Time management.
Pre-Requisite :-	
1.	Life skill-I

Contents (Theory)		Hrs	Marks in %
UNIT - I	<p>1.1 Inter personal Relation Importance, Interpersonal conflicts, Resolution of conflicts, Developing effective interpersonal skills communication and conversational skills, Human Relation Skills (People Skills)</p>	4	
UNIT- II	<p>2.0 Problem Solving 2.1 Steps in Problem & Problem Solving Technique Solving (Who?What?Where?When?Why?How?How much?) 2.2 Identify, understand and clarify the problem 2.3 Information gathering related to problem 2.4 Evaluate the evidence 2.5 Consider feasible options and their implications 2.6 Choose and implement the best alternative 1. Trial and Error, 2. Brain Storming 3.Thinking outside the Box 2.7 Review</p>	6	
UNIT - III	<p>3.0 Presentation Skills Concept ,Purpose of effective presentations, 3.1 Components of Effective Presentations: Understanding the topic, selecting the right information, organizing the Process interestingly, Good attractive beginning, Summarizing and concluding, adding impact to the ending, 3.2 Use of audio visual aids 3.3 Evaluating the presentation Before the presentation, During the presentation, After the presentation</p>	14	
UNIT - IV	<p>4.0 Nonverbal graphic communication 4.1 Nonverbal codes: Kinesics, Proxemics, Haptic, Vocalic, Physical appearance, Chronemics, Artifacts Aspects of Body Language 4.2 Nonverbal communication: Posture, Gestures ,Eye contact and facial expression, Voice and Language Volume, pitch, Inflection, Speed, Pause, Pronunciation, Articulation, Language, Handling</p>	8	

	questions, Respond, Answer, Check, Encourage, Return to presentation		
UNIT - V	5.0 Formal Written Skills: Memos, Emails, Netiquettes, Business correspondence Letter of enquiry, Letter of Placing Orders, Letter of Complaint	10	
UNIT - VI	6.0 Time and Stress management Time Management Stress Management.	3	
	Total	48 hrs	
	Sessional Activities		
Unit 1	1.0. Interpersonal Relationship Case Studies: 1. From books 2. From real life situations 3. From students' experiences Group discussions on the above and step by step write of any one or more of these in the sessional copies		
Unit II	2.0 Problem Solving Case Studies: 1. From books 2. From real life situations 3. From students' experiences Group discussions on the above and step by step write of any one or more of these in the sessional copies		
Unit III	3.0 Presentation Skills Prepare a Presentation (with the help of a Power point) on a Particular topic. For engineering subject oriented technical topics the cooperation of a subject teacher may be sought. Attach hand out of PPT in the sessional copy		
Unit IV	4.0 Looking for a job Write an effective CV and covering letter for it. Write a Job Application letter in response to an advertisement and a Self-Application Letter for a job.		

Unit V	<p>5.0 Job Interviews & Group Discussions</p> <p>Write down the anticipated possible questions for personal interview (HR) along with their appropriate responses</p> <p>Face mock interviews. The cooperation of HR personnel of industries may be sought if possible</p> <p>Videos of Mock Group Discussions and Interviews may be shown</p>		
Unit VI	<p>6.0 Formal Written Skills</p> <p>Write a memo,</p> <p>Write an effective official e-mail, write a letter of enquiry, letter of placing orders, letter of complaint</p>		

Suggested List of Activities :-	
Sl. No	Activities
1	Conduct Guest Lectures.
2	Conduct Industrial visits.
3	Conduct Seminar/Group Discussions.
4	Role play
5	Debate
6	Brainstorming
7	Story telling
Any other experiment / Micro project based on this course may be included.	

The Term Work Will Consist of Following Assignments.

1. Library search:-

Visit your Institute's Library and enlist the books available on the topic given by your teacher. Prepare a bibliography consisting name of the author, title of the book, publication and place of publication.

2. Enlist the magazines, periodicals and journals being available in your library.

Select any one of them and write down its content.

3. Choose a topic for presentation.

4. Attend a seminar or a guest lecture, listen it carefully and note down the important points and prepare a report of the same.

5. Visit to any one place like historical/office/farms/development sites etc. and gather information through observation, print resources and interviewing the people.

6. Prepare your individual time table for a week – (a) List down your daily activities.

(b) Decide priorities to be given according to the urgency and importance of the activities.

(c) Find out your time wasters and mention the corrective measures.

7. Keep a diary for your individual indicating- planning of time, daily transactions, collection of good thoughts, important data, etc
8. Find out the causes of your stress that leads tension or frustration .Provide the ways to avoid them or to reduce them.
9. Undergo the demonstration on yoga and meditation and practice it. Write your own views, feeling and experiences on it.

4th Semester

Name of the course : ENGINEERING ECONOMICS AND ACCOUNTANCY	
Course code: G401,G401A,G401B/G401C/G401D/G401E	Semester :FOURTH
Teaching Scheme	Maximum Marks : 100
	IA and End Examination Scheme
Theory : 3	Class test: 15 Marks
Tutorial: 0	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 0	End Semester Theory Exam: 70 Marks
Credit : 3	
Rationale / Aim :-	
<p>The knowledge of Economics and Accountancy is needed by personal dealing with the cost of products of any kind related to quality and standards of production including its financial control. Engineers in general need to know the cost of the final products for marketing purposes. The knowledge of Economics as well as Accountancy is required by all people dealing in any business or enterprises. This particular subject deals with the Basic Concepts of Economics, Factors of Production, Types of Industries, Market forms, Need of Economics Planning for overall development, Concept of Money, Unemployment causes and measures, Industrial Policy, Public Finance, Business Transactions and Accountancy, Maintenance of Cash and balances, Receipts and Expenditures Accounts, Final Accounts and Cost Concepts.</p>	
Course Outcome :-	
Module/Unit	After completion of the course, the students will be able to:
1.	Define basic terminologies of Economics.
2.	Identify factors of Production.
3.	Define different scale of industries.
4.	Distinguish different Market Forms
5.	Distribute Expenditure (capital & revenue)
6.	Do the cost analysis with appropriate classifications of cost accounts.
7.	Apply the concept of Trial balance & final accounts
8.	Define basic features of economy of money
9.	Understand industrial policy with appropriate acts
10.	Apply different concept of business transactions and accountancy

Prerequisites	Mathematics –I & II
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Contents (Theory)		Hrs	Marks in %
UNIT -1	INTRODUCTION: Introduction to Economics and its Utility of Study Importance of the study of economics.	1	
UNIT-2	BASIC CONCEPTS OF ECONOMICS: Definition of Goods, Utility, Value, Price, Income, Capital Classification of Goods, Human Wants-Classification and Types- Relation between Wealth and Capital Consumer Behaviour: Basic Law of Demands and Supply Concepts and measurement of elasticity of demand	3	
UNIT -3	PRODUCTION: Meaning and Factors of Production Land, Labour, Capital and Organisation – meaning and Characteristics Formation of Capital, Break Even Analysis, Break Even Chart its uses.	3	
UNIT-4	SCALE OF INDUSTRIES: Meaning of Small, Medium and Large Scale production Advantages and Disadvantages of Small Scale and Large Scale Production	2	
UNIT -5	MARKET FORMS: Meaning of Market-Forms of Market Features of Perfect, Imperfect and Monopoly Price Determination under Perfect Competition and monopoly	3	
UNIT -6	ECONOMIC PLANNING: Basic features of underdeveloped Economy – Basic features of Indian Economy Meaning, Objectives and Needs of Planning Current Five Year Plan	2	
UNIT -7	MONEY: Meaning and Function of Money Introduction to the concepts of the value of Money	2	
UNIT -8	UNEMPLOYMENT: Meaning, types and causes of Unemployment in India Unemployment problems in India-Measures taken by the Government of India.	2	
UNIT -9	INDUSTRIAL POLICY: Current Industrial Policy Monopoly Restricted Trade Practices Act (MRTP), Foreign Exchange Management Act (FEMA), Competitions Act	3	

UNIT -10	PUBLIC FINANCE: Meaning of Public Finance-Distinction Between Public and Private Finance Sources of Public Revenue.	2	
UNIT-11	BUSINESS TRANSACTIONS AND ACCOUNTANCY: Transactions and classifications, need and objectives of proper records including double entry system Classification of accounts and its description (in respect of real accounts, personal accounts and nominal accounts) Debit and credit concepts: Golden rules of Debit and Credit. Objectives and Principles of Double Entry System of Book Keeping.	5	
UNIT-12	BOOKS OF ACCOUNTS: Journal and Ledger, their subdivisions; posting from journals to ledger. Balancing of Accounts	2	
UNIT-13	CASH BOOK: Objectives of Cash Book (in respect of all kinds of Cash Transactions) Single Column, Double Column and Triple Column Impress System of Petty Cash Book	2	
UNIT-14	TRIAL BALANCE: 14.1 Objectives, Preparation – Errors and Rectification (In respect of Balance of Accounts for the Total period)	2	
UNIT-15	FINAL ACCOUNTS: Steps of preparing accounts: Trading Accounts, Profit and Loss Accounts Revenue and Depreciation Adjustment Introduction to Balance Sheet	5	
UNIT-16	CAPITAL AND REVENUE EXPENDITURE DISTRIBUTION: Receipt and Payments Income and Expenditure differences	3	
UNIT-17	MENAING AND PURPOSE OF COSTING: Element of Cost Analysis and Classification of expenditure for Cost Accounts. Cost Control: Prime Cost, Overhead Cost and Indirect Material and Tools	3	
Total		45 hrs	100%

Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
K. K. Dewett and J. D. Verma	Elements of Economics		
H. L. Ahuja	An Introduction to Economics Theory		
Mohan, Juneja, Chawla and Saxena	Double Entry Book Keeping		
J. R. Batliboy	Double Entry System of Book Keeping		

Name of the course : ENTREPRENEURSHIP DEVELOPMENT	
Course code: G401/G601	Semester : FOURTH/ SIXTH
Teaching Scheme	Maximum Marks : 100
	IA and End Examination Scheme
Theory : 3	Class test: 15 Marks
Tutorial: 0	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 0	End Semester Theory Exam: 70 Marks
Credit : 3	
Rationale / Aim :-	
The course intends to provide the fundamental aspects of entrepreneurship as a means for self employment and culminating in economic development of the country. It deals with basic issues like entrepreneurial characteristics and quality, governmental policy support and overall scenario along with opportunities and the facilities available for entrepreneurship development.	
Course Outcome :-	
Module/Unit	After completion of the course, the students will be able to:
1.	Identify different functions & scopes of entrepreneurship.
2.	Distinguish different types of company with registration procedure
3.	Define scope & functions of small scale & ancillary industries.
4.	Identify different characteristic & functions of sales organization.
5.	Identify basic guidelines of pricing of product
6.	Collect basic quarries and information's from different business organizations.
7.	Write preliminary report incorporating feasieility study finance, time etc.
8	Define different environmental legislation acts & guidelines.
Pre-Requisite :-	

Contents (Theory)		Hrs	Marks in %
UNIT -1	<p>INTRODUCTION</p> <p>1.1 Definition and functions of Entrepreneur, entrepreneurship quality, entrepreneurial spirit, need for entrepreneurship.</p> <p>1.2 Individual and social aspects of business – achievement motivation theory</p> <p>1.3 Social responsibilities of Entrepreneurs</p>	10	
UNIT-2	<p>2.0 FORMS OF BUSINESS ORGANISATION</p> <p>2.1 Types of company</p> <p>2.2 Merits and demerits of different types</p> <p>2.2 Registration of small scale industries</p> <p>2.4 Conglomeration.</p>	4	
UNIT -3	<p>3.0 SMALL SCALE AND ANCILLARY INDUSTRIES</p> <p>3.1 Definition – scope with special reference to self employment.</p> <p>3.2 Procedure to start small scale and Ancillary industries</p> <p>3.3 Pattern on which the Scheme/Project may be prepared</p> <p>3.4 Sources of finance - Bank, govt., and other financial institutions.</p> <p>3.5 Selection of site for factory</p> <p>3.6 Factors of selection</p> <p>3.7 N.O.C. from different authorities, e.g., Pollution Control Board, Factories Directorate etc.</p> <p>3.8 Trade License.</p>	8	
UNIT-4	<p>4.0 SYSTEM OF DISTRIBUTION</p> <p>4.1 Wholesale Trade</p> <p>4.2 Retail trade</p>	1	
UNIT -5	<p>5.0 SALES ORGANISATION</p> <p>5.1 Market survey, marketing trends, knowledge of competitors, product selection & its basis.</p> <p>5.2 Sales promotion</p> <p>5.3 Advertisement</p> <p>5.4 Public relations and selling skills</p>	3	
UNIT -6	<p>6.0 PRICING THE PRODUCT</p> <p>6.1 Basic guidelines</p>	1	

UNIT -7	7.0 INTRODUCTION TO IMPORT AND EXPORT 7.1 Procedures for export 7.2 Procedures for import 7.3 Technical collaboration – international trade 7.4 Business insurance 7.5 Rail and road transport 7.6 Forwarding formalities, FOR, FOB, CIF, etc.	6	
UNIT -8	8.0 BUSINESS ENQUIRIES 8.1 Enquiries: From SISI, DIC, SFC Dept. of Industrial Development Banks. 8.2 Offers and Quotations 8.3 Orders	4	
UNIT -9	9.0 PROJECT REPORT 9.1 Project Report on feasibility studies for small scale industries, proposal for finances from bank and other financial institutions for establishing new industries and its extension, obtaining License enlistment as suppliers, different vetting organizations for Techno Economic feasibility report. Breakeven analysis, Breakeven point.	6	
UNIT -10	10.0 ENVIRONMENT LEGISLATION 10.1 Air Pollution Act 10.2 Water Pollution Act 10.3 Smoke Nuisance Control Act 10.4 ISO: 14000, OSHA	2	
Total		45 hrs	100%

Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
CTSC Manila	Entrepreneurship Development		Tata Mc Graw Hill Publishing Co. Ltd.
	Small Enterprise Management		ISTE, Mysore
	Motivation		ISTE, Mysore
Jose Pauletal	Entrepreneurship Development		Himalaya Publishing House, 1996
Rathore, B.S. and J.S. Saini(ed)	A Handbook of Entrepreneurship		Panchkula : Aapga, 1997
Khanka, S.S	Entrepreneurship Development,		New Delhi : S. Chand and Co., 2001

Name of the course : PRINCIPLES OF MANAGEMENT	
Course code: G401/G601	Semester : FOURTH/SIXTH
Teaching Scheme	Maximum Marks : 100
	IA and End Examination Scheme
Theory : 3	Class test: 15 Marks
Tutorial: 0	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 0	End Semester Theory Exam: 70 Marks
Credit : 3	
Rationale / Aim :-	
<p>Management is the integrated component of all areas of technological courses as recognized across the world. Technicians or supervisors coming out of the system hence need to study the basics components of the management relevant to them. Principals of management will enable them to apply basic knowledge of management in their field of work. Keeping with this in mind necessary content details of the course on Principles of Management has been developed. With the assumption that, it will develop some management foundation to the diploma students.</p>	
Course Outcome :-	
Module/Unit	After completion of the course, the students will be able to:
1.	Define scope & functions of management.
2.	Identify managerial roles & skills.
3.	Define basic terminologies of TQM
Pre-Requisite :-	
1.	

Contents (Theory)		Hrs	Marks in %
UNIT -1	FRAMEWORK OF MANAGEMENT 1.1 Nature of management 1.2 Development of management thoughts 1.3 Management and process skills	8	
UNIT-2	2.0 PLANNING 2.1 Fundamentals of planning 2.2 Planning premises and forecasting 2.3 Decision making 2.4 Mission and objective	9	
UNIT -3	3.0 ORGANIZING 3.1 Fundamentals of organizing 3.2 Design of organization structure 3.3 Forms of organization structure 3.4 Power and authority 3.5 Authority relationship	10	
UNIT-4	4.0 STAFFING 4.1 Fundamentals of staffing 4.2 HR planning 4.3 Recruitment and selection 4.4 Training and development 4.5 Performance appraisal	8	
UNIT -5	5.0 DIRECTING 5.1 Fundamentals of directing 5.2 Operational control techniques 5.3 Overall control technique	6	
UNIT -6	6.0 TOTAL QUALITY MANAGEMENT 6.1 Concepts and definitions 6.2 Sages of quality gurus and their contributions 6.3 Basic tools of TQM	4	
Total		45 hrs	100%
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
T.Ramasamy	Principles of management		Himalya publishing house
S. P. Robins	Management		

Anil Bhat and Arya Kumar	Management principles		
LM Prasad	Principles and practice of management by		
LM Prasad	Principles of management		
Joseph L. Massie	Essentials of Management		Prentice-Hall of India

Name of the course : ORGANIZATIONAL BEHAVIOUR	
Course code: G401/G601	Semester : FOURTH/SIXTH
Teaching Scheme	Maximum Marks : 100
	IA and End Examination Scheme
Theory : 3	Class test: 15 Marks
Tutorial: 0	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 0	End Semester Theory Exam: 70 Marks
Credit : 3	
Rationale / Aim :-	
<p>Knowledge in behavioural principles in an organization is an important requirement because concepts such as work motivation, behavioural patterns of individuals as also those of group of individuals etc are intimately related to it. Organizational Behavioural principles, its scopes, applicability etc. are therefore important to know by the students irrespective of the branch of specialization. Based of the above facts following content details of the subject on Organizational Behaviour has been suggested.</p>	
Course Outcome :-	
Module/Unit	After completion of the course, the students will be able to:
1.	Define the concept of organization.
2.	Apply the different principles of motivations.
3.	Develop good work habit with appropriate IPRs.
4.	Define different factors of organizational culture.
5.	Identify different concept of team building its stages
Pre-Requisite :-	
1.	

Contents (Theory)		Hrs	Marks in %
UNIT -1	1.0 ORGANIZATION: Concept and Definition Structures (line, staff, functional divisional, matrix)	8	
UNIT-2	2.0 MOTIVATION : Principles of Motivation Aspects of Motivation Job motivation Theories of motivation (Maslow, Herzberg, Theory of X&Y of Mc. Gregar)	10	
UNIT -3	3.0 DEVELOPING GOOD WORK HABITS: Principles of habit formation Attitude and values Personality- - Concepts - Theories - Personality and Behaviour	10	
UNIT-4	4.0 ORGANIZATIONAL CULTURE: Concepts and its importance Determinants of organizational culture Rules & regulations	8	
UNIT -5	5.0 TEAM BUILDING: Concepts Team and Group Formation of Team building	9	
Total		45 hrs	100%
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
Huezynski A. & Bucheman C	Organisational Behaviour— An introductory Text		Prentice Hall of India
Morgan G (Sage)	Image of Organisation		
Linstoand S. (Sage)	Understanding Management		

Robbins	Organizational Behaviour		Prentice Hall of India
George & Jones	Understanding and Managing– Organizational Behavior		New Delhi, Sultan Chand & Sons
L.M. PRASAD	Organisational Behaviour		
Koontz	Essentials of Management		Tata McGraw Hill

Name of the course : ENVIRONMENTAL EDUCATION	
Course code: G401/G601	Semester : FOURTH/SIXTH
Teaching Scheme	Maximum Marks : 100
	IA and End Examination Scheme
Theory : 3	Class test: 15 Marks
Tutorial: 0	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 0	End Semester Theory Exam: 70 Marks
Credit : 3	
Rationale / Aim :-	
<p>Management of Environmental Degradation as also its control using innovative technologies is of prime importance in the times we are living in. Since the days of the famed Rio Summit (1992) awareness about degradation of environment we live in an its management through participation of one and all has literally blossomed into a full fledged movement of universal importance. Technically qualified people, such as the Diploma Engineers, should not only be aware about new technologies to combat environmental degradation at their disposal but also various aspects of environment, ecology, bio-diversity, management, and legislation so that they can perform their jobs with a wider perspective and informed citizens. This course can be taken by all diploma students irrespective of their specializations.</p>	
Course Outcome :-	
Module/Unit	After completion of the course, the students will be able to:
1.	Identify scope and components of environment
2.	Define different concept of ecological aspects of environment
3.	Identify different sources of natural resources with their appropriate usages and protection.
4.	Identify global environmental issues.
5.	Distinguish different types of environment pollution.
6.	Identify different environmental legislation acts.
7.	Access impact of environment by applying different standard mechanism.
8.	Apply different clean technology for improving QWL.
Pre-Requisite :-	
1.	

Contents (Theory)		Hrs	Marks in %
UNIT -1	<p>1.0 INTRODUCTION</p> <p>1.1 Introduction 1.2 Environment and its components 1.3 Environment in India 1.4 Public Awareness</p>	2	
UNIT-2	<p>2.0 ECOLOGICAL ASPECTS OF ENVIRONMENT</p> <p>2.1 Ecology</p> <ul style="list-style-type: none"> • Eco-system • Factors affecting Eco-system <p>2.2 Bio-geochemical cycles</p> <ul style="list-style-type: none"> • Hydrological cycle • Carbon cycle • Oxygen cycle • Nitrogen cycle • Phosphorous cycle • Sulphur cycle <p>2.3 Bio-diversity 2.4 Bio-diversity Index</p>	8	
UNIT -3	<p>3.0 NATURAL RESOURCES</p> <p>3.1 Definition of Natural Resources 3.2 Types of Natural Resources 3.3 Quality of life 3.4 Population & Environment 3.5 Water Resources</p> <ul style="list-style-type: none"> • Sources of Water <p>3.6 Water Demand 3.7 Forest as Natural Resource</p> <ul style="list-style-type: none"> • Forest and Environment • Deforestation • Afforestation • Forest Conservation, its methods <p>3.8 Land</p> <ul style="list-style-type: none"> • Uses and abuses of waste and wet land 	5	
UNIT-4	<p>4.0 GLOBAL ENVIRONMENTAL ISSUES</p> <p>4.1 Introduction 4.2 Major Global Environmental Problems 4.3 Acid Rain</p> <ul style="list-style-type: none"> • Effects of Acid Rain <p>4.4 Depletion of Ozone Layer</p> <ul style="list-style-type: none"> • Effects of Ozone Layer Depletion <p>4.5 Measures against Global Warming 4.6 Green House Effect</p>	9	

UNIT -5	<p>5.0 ENVIRONMENTAL POLLUTION</p> <p>5.1 Introduction</p> <p>5.2 Water Pollution</p> <ul style="list-style-type: none"> • Characteristics of domestic waste water • Principles of water treatment • Water treatment plant (for few industries only- unit operations & unit processes - names only) <p>5.3 Air Pollution</p> <ul style="list-style-type: none"> • Types of air pollutants • Sources of Air Pollution • Effects of Air Pollutants <p>5.4 Noise Pollution</p> <ul style="list-style-type: none"> • Places of noise pollution • Effect of noise pollution 	9	
UNIT -6	<p>6.0 CLEAN TECHNOLOGY</p> <p>6.1 Introduction to Clean Technologies</p> <p>6.2 Types of Energy Sources</p> <ul style="list-style-type: none"> • Conventional Energy sources • Non-conventional sources of Energy <p>6.3 Types of Pesticides</p> <p>6.4 Integrated Pest Management</p>	6	
UNIT -7	<p>7.0 ENVIRONMENTAL LEGISLATION</p> <p>7.1 Introduction to Environmental Legislation</p> <p>7.2 Introduction to Environmental Laws</p>	3	
UNIT -8	<p>8.0 ENVIRONMENTAL IMPACT ASSESSMENT</p> <p>8.1 Introduction to Environmental Impact Assessment</p> <p>8.2 Environmental Management (elements of ISO 14001)</p> <p>8.3 Environmental ethics</p>	3	
Total		45 hrs	100%
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
Pandya & Carny	Environmental Engineering		Tata McGraw Hill, New Delhi
Gilbert M. Masters	Introduction to Environmental Engineering and Science		Tata McGraw Hill, New Delhi

Metcalf & Eddy	Waste Water Engineering – Treatment, Disposal & Reuse		Tata McGraw Hill, New Delhi
Peavy	Environmental Engineering		TMH International New York
	Study / training materials, references, reports etc. developed by Central Pollution Control Board, New Delhi as also State Pollution Control Boards		Central Pollution Control Board Postal Address: Parivesh Bhawan, CBD-cum-Office Complex East Arjun Nagar, DELHI - 110 032, INDIA Tel.: 91-11-22307233 Fax: 91-11-22304948 e-mail: ccb.cpcb@nic.in
Aluwalia & Malhotra,	Environmental Science		Ane Books Pvt. Ltd, New Delhi
Sing, Sing & Malaviya,	Text Book of Environment & Ecology		Acme Learning, New Delhi
Sing, Malaviya & Sing	Environmental Science & Ethics		Acme Learning, New Delhi
Samir K. Banerji,	Environmental Chemistry		Prentice Hall of India, New Delhi
(b) Others:			
<ol style="list-style-type: none"> 1. Text book mentioned in the references 2. Lab Manuals 3. OHP Transparencies 4. Video film on Environment 			

Name of the course : CIVIL ENGINEERING DRAWING -II			
Course code: CE402		Semester : Fourth	
Teaching Scheme		Maximum Marks : 50	
		PA and End Examination Scheme	
Theory :	0 hrs/week	Class test: 0 Marks	
Tutorial:	0 hrs/week	Assignment / Quiz etc.: 0 Marks Attendance : 0 Marks	
Practical :	4 hrs/week	End Semester : 25Marks	
Credit :	2	PA Practical : 25 Marks	
Rationale:			
This subject deals with drawing to be made for different components of sanitary engineering, bridges & culverts, roads & railways and blue prints to be made of the drawings. This also relates to preparation of working drawing as required for actual drawing			
Course outcome :-			
Module/Unit	After completion of the course, students will be able to draw :		
1.	sanitary & water supply system		
2.	Plan and elevation of bridges & culverts		
3.	Plan of roads & railways		
4	Complete plan, elevation & sections of RCC building		
Pre-Requisite :-			
	CE 302		
Contents (Theory)		Hrs	Marks in %
UNIT - I	1.0 SANITARY ENGINEERING 1.1 Plan, Sectional elevation of sanitary latrine with septic tanks, inspection chambers, manholes, soak pits, showing soil pipe connection	8	10

UNIT- II	<p>2.0 BRIDGE AND CULVERTS</p> <p>2.1 Plan, elevation, section of simple (i) timber bridge (ii) bridge either freely supported hollow circular type (single span) or RC balanced cantilever (single span) as constructed by the local PWD. Drawings may be shown</p> <p>2.2 Plan, elevation, section of a box culvert and hume pipe, culvert, RCC slab culvert, Drawing and Models may be shown .</p>	6	15
UNIT - II	<p>3.0 ROADS AND RAILWAYS</p> <p>3.1 Cross Section of (i) National highway/ state highway (ii) Major district road (iii) Minor district road</p> <p>3.2 Cross-section of Railway for B.G., M.G. and N.G.</p>	12	10
UNIT - III	<p>4.0 DRAWING OF A TWO STORIED BUILDING</p> <p>4.1 Plan and Elevation of two storied building drawing</p>	22	15
Total		48 hrs	50

Practical :-

S.No	Skills to be developed
1.	<p>Intellectual skills-</p> <p>5. Develop the idea about different civil engineering structural elements.</p>
2.	<p>Motor skills-</p> <p>3. To draw Complete plan, elevation & sections different civil engineering structures</p>
3	<p>Social skills-</p> <p>1. Will learn to work with peer as group</p> <p>2. Able to communicate with teachers and peers to clarify doubts.</p>

Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
N.D. Bhatt	Elementary Engineering Drawing -		Charotar Publishing House
G.R. Nagpal	Geometrical Drawing -		Khanna Publishers
Prof. C. H. Khadilkar	A Text book Of Bridge Construction by -		Allied Publishers, Bombay, New Delhi and Calcutta.
Warren J. Luzadder	Graphics for Engineers -		Prentice Hall of India (Pvt.) Ltd.

Name of the course : SURVEYING II	
Subject code: CE403	Semester : FOURTH
Teaching Scheme	Maximum Marks : 125
	PA and End Examination Scheme
Theory : 3 hrs/week	Class test: 15 Marks
Tutorial: 0 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 2 hrs/week	End Semester Theory Exam: 70 Marks PA Practical: 25 Marks
Credit : 3	
Rationale:	
<p>Surveying- II is the sequential course following Surveying-I. The course covers the technique of preparing survey map by plotting the observed data on the map at the field itself, using the method of Plane Table Surveying. It also covers the technique of handling and use of theodolite, a versatile instrument, in surveying for horizontal and vertical angular measurement, traversing, horizontal linear measurement, setting out curves and layout of different types of structures in the site. The course also gives an exposure to the students about the modern surveying instruments. The theory course is supplemented with practical course in Surveying Practice-II.</p>	
Course outcome :-	
Module/Unit	After completion of the course, will be able to:
1.	Conduct plane table survey by various methods
2.	Draw contour map of an area after conducting survey
3.	Explain the principle of theodolite survey with necessary adjustment of the theodolite
4	Conduct traversing by theodolite with adjustment of error (open and closed traverse)
5	Explain the principle of tachometry and conduct tachometric survey
6	Set out simple and transition curves
7	Demonstrate various features of a Total station and carry out traversing by using total station
Pre-Requisite :-	
1.	Concept of engineering mechanics and surveying I

Contents (Theory)		Hrs	Marks
UNIT - I	PRINCIPLES OF THEODOLITE SURVEYING 1.1 Purpose, definition of terms 1.2 Description of features, component parts of a transit theodolite 1.3 Fundamental axes of a theodolite, concept of vernier, reading a vernier 1.4 Temporary adjustments of theodolite 1.5 Concept of transiting-swinging, face left , face right, changing face 1.6 Measurement of horizontal angles with theodolite by repetition and reiteration method 1.7 Measurement of vertical angles with theodolite 1.8 Determination of magnetic bearings with theodolite 1.9 Measurement of deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite 1.10 Errors in theodolite observations	8	8
UNIT - II	THEODOLITE TRAVERSING 2.1 Methods of traversing with theodolite- included angle method, deflection angle method, bearing method 2.2 Plotting the traverse by coordinate method 2.3 Checks for open and closed traverse 2.4 Traverse Computation - consecutive coordinates, latitude and departure, Gale's traverse table, Numerical problems on omitted measurements of lengths & bearings 2.5 Closing error- adjustment of angular errors, adjustment of bearings, numerical problems 2.6 Balancing of traverse- bowditch's method, transit method, graphical method, axis method 2.7 Calculation of area of closed traverse	8	10
UNIT - III	TRIGNOMETRICAL SURVEYING & TACHEOMETRY 3.1 Determination of elevation and distances of objects whose base is accessible, numerical problems 3.2 Determination of elevation and distances of objects whose base is inaccessible and the object and the instrument station (i)are in the same plane, (ii) are not in the same plane numerical problems 3.3 Principles of stadia tacheometry, stadia constants determination 3.4 Elevations and distances of staff stations-numerical problems	10	15

UNIT - IV	CURVES 4.1 Definitions, degree and radius of curve, types of curves - simple, compound, reverse and transition curve, Purpose & use of different types of curves in field 4.2 Elements of circular curves, numerical problems 4.3 Preparation of curve table for setting out 4.4 Setting out of circular curve by chain and tape and by instrumental angular methods (i) offsets from long chord; (ii) successive bisection of arc (iii) offsets from tangents (iv) offsets from chords produced (v) Rankine's method of tangential angles 4.5 Transition curves -description and their characteristics (numerical problems not required)	10	14
UNIT - V	SETTING OUT WORKS 5.1 Methods of setting out layouts of structures from construction plans of (i) buildings, (ii) culverts, (iii) bridge piers	2	4
UNIT - VI	MINOR SURVEYING INSTRUMENTS 5.1 Essential features and use of - (i) Hand Level, (ii) Abney's Level, (iii) Pantograph, (iv) Ceylone Ghat Tracer, (v) Box Sextant	2	5
UNIT - VI	MODERN SURVEYING METHODS 6.1 Features and use of Total station 6.2 Working principles of a Total Station 6.3 Setting out traverses with Total Station, Determination of elevations of points, building heights 6.4 Introduction to GPS	8	14
Total		48 hrs	70

SURVEYING Practical

Rationale:

Surveying being a practice oriented subject, the theoretical instruction has to be supplemented with practical instructions in the field. This course will give the students the opportunity for intensive hands-on -experience in the handling and use of various equipment and accessories used in surveying. The course will also lead to development of skills in the students of making appropriate recording of data in the field and of plotting the observed data.

The course content of surveying-II practical includes the handling and use of theodolite in traversing, trigonometrical surveying, application of tacheometry, setting out of curves and civil engineering works at the site. The course also gives an exposure to modern surveying techniques including the instruments used.

UNIT - I	PLANE TABLE SURVEYING		
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	<p>1.1 Setting up of Plane Table and plotting five points by radiation method and five inaccessible points by intersection method</p> <p>1.2 Conducting Plane Table surveying in a given plot of area by traversing (at least a 5-sided traverse and locating the objects</p>	4	
UNIT - II	<p>THEODOLITE</p> <p>2.1 Study of essential features and parts of transit theodolite, to describe the theodolite with neat sketches</p> <p>2.2 Carry out temporary adjustment of a transit theodolite and read horizontal and vertical angles to objects</p> <p>2.3 Measurement of horizontal angles (3nos.) by repetition and reiteration method and compare two methods</p> <p>2.4 Prolonging a given straight line with the help of a Theodolite</p> <p>2.5 Determination of magnetic bearing of 3 given straight lines</p>	6	
UNIT - III	<p>THEODOLITE TRAVERSING</p> <p>3.1 Setting out a closed traverse with 6 sides and entering the field data</p> <p>3.2 Plotting the traverse from exercise 4.1 and checking the error of closure</p> <p>3.3 Setting out an open traverse with 5 sides and entering the field data</p> <p>3.4 Plotting the traverse from exercise 4.3 and checking the error of closure</p>	8	
UNIT - IV	<p>TRIGNOMETRICAL SURVEYING & TACHEOMETRY</p> <p>4.1 Determination of height of 3 objects whose bases are accessible</p> <p>4.2 Determination of stadia constants</p> <p>4.3 Determination of horizontal distance and elevation with Staff vertical , by stadia method</p>	6	
UNIT - V	<p>SETTING OUT CURVES</p> <p>5.1 Setting out a simple circular curve by offsets from long Chord</p> <p>5.2 Setting out a simple circular curve by Rankine's method of tangential angle (Deflection angles)</p>	6	
UNIT - VI	<p>SITE SURVEYING</p> <p>6.1 Setting out at site the center line and foundation width of a building from the given plan</p> <p>6.2 Setting out the foundation line for a culvert</p> <p>6.3 Dividing an area into plots of given size</p>	6	
UNIT - VII	<p>MODERN SURVEYING INSTRUMENTS</p> <p>7.1 Total Station with EDM and GPS</p> <p>7.2 Measure distance between two points with electronic distance meter</p> <p>7.3 Measure distance, elevation, horizontal and vertical angle of an object with modern theodolite</p> <p>7.4 Typical site layout by using Total Station.</p>	12	

		Total	48	25
S.no.	Skills to be developed			
1	Intellectual skills- <ol style="list-style-type: none"> 1. Use of equipment in correct manner. 2. Accuracy while positioning of instrument, observing and taking readings. 3. Follow safety instructions properly. 4. Accurate plotting of maps with the help of field data. 			
2	Motor skills- <ol style="list-style-type: none"> 1. Operate instruments properly. 2. Use proper marking tools. 			
3	Social skills- <ol style="list-style-type: none"> 1. Will learn to work with peer as group. 2. Able to communicate with teachers and peers to clarify doubts. 			

Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
T.P.Kanetkar & S.V.Kulkarni	Surveying & Levelling Vol.I ,II		Griha Prakash, Pune
B.C.Punmia	Surveying Vol.I, II, III		Laxmi Publications, Delhi-6
R.agor	A text book of surveying and levelling		Khanna Publishers, Delhi-6
Hussain and Nagraj	Surveying and Levelling		S.Chand & Co, Delhi
S.C.Rangawala	Surveying & Levelling		Charotar Book Stall, Pune
N.N.Basak	Surveying & Levelling		Tata Mcgrew Hill
A.De	Plane Surveying		S.Chand & Co

Name of the course : HYDRAULICS	
Course code: CE404	Semester : Fourth
Teaching Scheme	Maximum Marks : 150
	PA and End Examination Scheme
Theory : 3 hrs/week	Class test: 15 Marks
Tutorial: 0 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical : 2 hrs/week	End Semester Theory Exam:70 Marks
Credit : 4	PA & End Semester Practical Exam: 50 Marks
Rationale:	
The subject of Hydraulics deals with behaviour of fluid at rest and in motion. The Civil Engineering profession is much concerned with subjects like Water supply, Sanitary Engineering and Irrigation Engineering, which need a sound knowledge of Hydraulics. Therefore, hydraulics is a very important basic subject for students of civil engineering.	
Course outcome :-	
Module/Unit	After completion of the course, students will be able to:
1.	Explain fundamentals of fluid mechanics and define different term
2	Apply the basic equation of fluid statics to determine forces on plain and curved surfaces submerged in a static fluid; for determination of buoyancy and stability
3	Develop an understanding of fluid mechanics in civil engineering as well as a variety of other practical fields.
4	Understand the kinematics of fluid particles, including the concepts of substantive derivatives
5	Apply the Bernoulli equation to solve real problems in fluid mechanics
6	Determine flow rates, pressure changes, minor and major head losses for viscous flows through pipes, ducts, simple networks
7	Apply principles of fluid mechanics to the operation, design, and selection of fluid machinery such as pumps
Pre-Requisite :-	
	Basic concepts of engineering mechanics, engineering mathematics

Contents (Theory)		Hrs	Marks
1.0 HYDROSTATICS			
1.1	Properties of fluids, density, specific gravity, surface tension,		

UNIT - I	<p>capillarity, viscosity and their uses</p> <p>1.2 Pressure and its measurements : Definitions- intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure; Relation between atmospheric pressure, absolute pressure and gauge pressure, pressure head, pressure gauges</p> <p>1.3 Pressure exerted on an immersed surface; Definitions- total pressure, resultant pressure, expression of equation for total pressure exerted on horizontal, vertical and inclined immersed surface (No deduction); Center of pressure and its expression.</p> <p>1.4 Floatation and buoyancy: Archimedes principle- buoyancy & center of buoyancy, center of pressure, metacenter, metacentric height, determination of metacentric height by experimental method, equilibrium of floating bodies- stable, unstable & neutral equilibrium</p>	12	16
UNIT- II	<p>2.0 KINEMATICS OF FLUID FLOW</p> <p>2.1 Basic equations of fluid flow and their application (No deduction): rate of discharge, equation of continuity of a liquid flow, total energy of a liquid in motion- potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.</p>	4	8
UNIT III	<p>3.0 FLOW THROUGH ORIFICES & MOUTH PIECES</p> <p>3.1 Flow through Orifices: Orifices, types of orifices, venacontracta, hydraulic coefficients and their relations, determination of hydraulic coefficients, discharge formulae for different types of orifices and their application (No deduction)</p> <p>3.2 Flow through mouthpieces: mouthpieces, types of mouthpieces, discharge formulae for different types of mouthpieces and their application (No deduction)</p>	8	12
UNIT - IV	<p>4.0 FLOW OVER WEIRS & NOTCHES</p> <p>4.1 Flow over Notches: notch, types of notches, discharge formulae for different types of notches and their application (No deduction)</p> <p>4.2 Flow over Weirs: weir and its difference with notches, types of weirs, discharge formulae for different types of weirs and their application (No deduction)</p>	8	12
UNIT V	<p>5.0 FLOW THROUGH PIPES</p> <p>5.1 Types of Flow through pipes: uniform & non-uniform; laminar & turbulent; steady & unsteady; Reynold's number and its implication.</p> <p>5.2 Losses of head of a liquid flowing through pipes: due to friction (statement of Darcy's equation), sudden enlargement, sudden contraction, change of direction of flow, loss at inlet & exit (No deduction, only statement of formulae and their application), total</p>	6	8

	energy lines and hydraulic gradient lines.		
UNIT V	6.0 FLOW THROUGH OPEN CHANNELS 6.1 Types of channel sections - rectangular, trapezoidal & circular, Discharge formulae: Chazy's and Manning's equation, best economical section, phenomenon of hydraulic jump (only description and no deduction)	6	8
UNIT - VI	7.0 PUMPS 7.1 Types of pumps 7.2 Centrifugal pumps- basic principles, discharge, horse power of pump, efficiency of centrifugal pump, simple numerical problems 7.3 Reciprocating pumps: types, operation, discharge, calculation of horse power, efficiency, simple numerical problems	4	6
	8.0 PRACTICAL 4.1 Determination of metacentric height of a floating body 4.2 Verification of Bernoulli's theorem 4.3 Determination of the co-efficients of discharge, contraction and velocity of an orifice 4.4 Determination of coefficient of discharge of a rectangular notch fitted in an open channel 4.5 Determination of coefficient of discharge of a V- notch fitted in an open channel 4.6 Determination of coefficient of discharge of a venturimeter, orificemeter fitted in a pipe 4.7 Determination of head loss due to friction and coefficient of friction for flow through pipes. 4.8 Study of the parts of a centrifugal pump 4.9 Study of the parts of a reciprocating pump 4.10 Demonstration of discharge measurement by a current-meter	32	25
Total		48 hrs	
Practical :-			

S.No	Skills to be developed
1.	Intellectual skills: 1. Analyze and solve problems of hydrostatics and kinematics of fluid flow 2. Application of basic principles of fluid mechanics for flow of fluid through orifices, pipes and over notches and weirs
2.	Motor skills- 1. Development of understanding for operation of pumps
3	Social skills- 3. Will learn to work with peer as group

4. Able to communicate with teachers and peers to clarify doubts.

Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Jagdish Lal	Hydraulics		Metro Publishing Books Limited
S. Ramamrutham;	Hydraulics, Fluid Mechanics and Fluid Machines -		Dhanpat Rai & Sons, Delhi
P.N.Modi &S.M.Seth	Hydraulics, Fluid Mechanics including Hydraulic Machines	20 th	Standard Book House (New Delhi)
V. Thanikachalam,	Hydraulics and Hydraulic Machinery —		Tata McGraw-hill Publishing Company Limited

Name of the course : DESIGN AND DETAILING-I			
Course code: CE405		Semester : Fourth	
Teaching Scheme		Maximum Marks : 125	
		PA and End Examination Scheme	
Theory :	3 hrs/week	Class test: 15 Marks	
Tutorial:	0 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks	
Practical :	2 hrs/week	End Semester Theory Exam:70 Marks	
Credit :	4	PA Practical : 25 Marks	
Rationale:			
This course is designed to provide the students with the knowledge and skills of reinforced concrete design and detailing with the fundamental principles of design and relevant specifications as per Indian Standards.			
Course outcome :-			
Module/Unit	After completion of the course, students will be able to:		
1.	Effectively design different types of structural elements made of different construction materials		
2.	Apply the basic principles governing the design in a proper manner		
3.	Apply the basic requirements envisaged in the relevant Indian Standards in design to ensure safety and serviceability of structures		
4	Analyze and convey to others how success and failure of a major Civil Engineering project can have a severe impact on the human society		
5	Translate theory to practice at the site including good quality detailing and fabrication		
6	Update oneself regularly with latest technological developments in this field as the knowledge in this field is expanding in leaps and bounds		
Pre-Requisite :-			
Contents (Theory)		Hrs	Marks in %
UNIT - I	INTRODUCTION	3	
	1.1 Concept of reinforced cement concrete		
	1.2 Suitability of steel as reinforcing material		

	1.3 Salient Properties of concrete and different types of steel (mild steel, tensile steel, TMT and deformed bars)		
UNIT- II	FUNDAMENTALS OF WORKING STRESS METHOD 2.1 Overview of the method 2.1.1 Assumptions as per IS:456 2.1.2 Permissible stresses in concrete and reinforcements 2.1.3 Position of neutral axis, moment of resistance of the section, 2.1.4 Concept of balanced section, under reinforced and over reinforced section.	6	
UNIT - III	3.0 LIMIT STATE METHOD OF DESIGN 3.1 Flexure- 3.1.1 Assumptions as per IS:456 3.1.2 Stress strain diagram for concrete and steel 3.1.3 Limiting strains and corresponding stresses in concrete and steel 3.1.4 Load factors and material safety factors 3.1.5 Concept of balanced section, under reinforced, Why over reinforced sections are not permitted 3.1.6 Design of Singly reinforced and doubly reinforced sections 3.1.7 Bond and development length as per IS code- in tension as well as in compression 3.1.8 Detail of longitudinal reinforcement with simple rules for curtailment for simply supported, cantilever and continuous beams.	12	
UNIT - III	4.0 SHEAR 4.1 Relevant clauses of IS:456 4.2 Design of vertical stirrups only 4.3 Detailing of stirrups	5	
UNIT - III	5.0 COMPRESSION 5.1 Concept of short and long column 5.2 Assumptions of IS:456 5.2 Limiting strains and stresses 5.3 Design of axially loaded short column only with IS 456 requirements 5.4 Detailing of longitudinal and transverse reinforcement as per Is 456	6	

UNIT - IV	6.0 FOOTING AND STAIRCASE 6.1 Design of footings using LSM 6.2 Detailing of reinforcements 6.3 Layout of doglegged staircase with necessary details of all relevant parts and definitions 6.4 Load analysis and typical detailing of a stair flight	8	
UNIT - V	7.0 SLABS 7.1 Basic difference between beam and slab 7.2 Behavior under uniformly distributed load 7.3 Supports for slab 7.4 Analysis and design of one- way and two way slab 7.5 Detailing of reinforcement in slabs with simple rules for curtailment 7.6 Use of chair and corner bars	8	
Practical	LIST OF DRAWINGS/ DEMONSTRATIONS 1.0 Detailing of cantilever, simply supported, continuous beam and lintel. 2.0 Detailing of one way and two way slabs. 3.0 Detail of a column with typical foundation (isolated footing). 4.0 Detailing of staircase- dog legged	32	50
Total		80 hrs	150
Practical :-			
S.No	Skills to be developed		
1.	Intellectual skills- 1 Apply the basic principle to the design and use the relevant Indian Standards in design to ensure safety and serviceability of structures		
2.	Motor skills- 1 Development of understanding for design and detailing of Civil Engineering structures		
3	Social skills- 1. Will learn to work with peer as group 2. Able to communicate with teachers and peers to clarify doubts.		
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
A.K Jain	Reinforced concrete- Limit state design		
B.C Punmia	Reinforced Concrete structures		
Pillai & Menon	Reinforced Concrete		
P.C Varghese	Reinforced Concrete		

	Design aids for reinforced concrete- IS: 456- SP 16		
	Handbook on concrete reinforcement and detailing- SP-34		

Name of the course : ESTIMATING I

Course code: CE406		Semester : Fourth
Teaching Scheme		Maximum Marks : 100
		PA and End Examination Scheme
Theory :	2 hrs/week	Class test: 15 Marks
Tutorial:	1 hrs/week	Assignment : 5 Marks Quiz : 5 Marks Attendance : 5 Marks
Practical :	0 hrs/week	End Semester Theory Exam:70 Marks
Credit :	3	PA : 0 Marks
Rationale:		
The subject of estimating is very important for the diploma holders in Civil Engineering. In order to construct any item, pertaining to Civil Engineering, one should have knowledge of resource required for the works as also the money required for completion of the job.		
Course outcomes:-		
Module/ Unit	After completion of the course, students will be able to:	
1.	Use IS 1200 for measurement & schedule of rates for estimation	
2.	Estimate quantity of earthwork for a particular job and various items related road work	
3.	Estimate quantity and cost of concrete (mass & reinforce cement) for a various job and prepare bar bending schedule for reinforced concrete work	
4	Estimate quantity of material and cost for different types of flooring, finishing and decorating items of a particular job	
5	Estimate requirement of sanitary and plumbing items and their cost in residential buildings	
6	Estimate requirement of various components of timber and steel trusses and their cost	
7	Estimate independently bill of quantities and cost of buildings (up to single storied RCC buildings with three rooms), roof trusses and typical bituminous road	
Pre-Requisite :-		
1	Basic knowledge of engineering drawing and mensuration	

Contents (Theory)	Hrs	Marks
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UNIT - I	<p>INTRODUCTION</p> <p>1.1 What is estimating, uses of standard estimating forms, use of schedule of rates (procedure of taking out quantities) and mode of measurement as per IS:1200</p> <p>1.2 Preparation of standard proforma of estimate and abstract of various engineering works</p> <p>1.3 Unit of measurement and rate of payment</p>	3	6
UNIT- II	<p>Earth Work</p> <p>2.1 Method of calculating quantity of earth, mid-sectional area method, prismoidal formula method, lead and lift, tabular forms for each method of calculating Road Work</p> <p>2.2 Unit of measurement and method of estimating various items of work</p>	3 2	10
UNIT - III	<p>3.0 CONCRETE WORK</p> <p>3.1 Method of estimating and costing mass concrete, reinforced concrete work and centering and shuttering work, preparation of bar bending schedule and taking out quantities of steel reinforcement in RCC for load bearing wall type buildings, RCC framed structures, RCC slab culverts, RCC retaining walls etc.</p>	6	10
	<p>4.0 FLOORING</p> <p>4.1 Method of estimating and costing of floor, floor finishing and DPC</p>	2	6
UNIT - IV	<p>5.0 FINISHING & DECORATING</p> <p>5.1 Unit of measurement and method of estimating plastering and pointing</p> <p>5.2 Method of estimating white washing, colour and painting</p>	2	6

UNIT - V	6.0 SANITARY & PLUMBING 6.1 Unit of measurement, method of estimating and costing of sanitary fittings and plumbing work in residential buildings	2	6
UNIT - VI	7.0 STEEL WORK & TIMBER WORK 7.1 Unit of measurement and method of estimating and costing of a simple steel structure 7.2 Unit of measurement, method of estimating and costing of timber work like roof trusses, timber bridges etc.	4	6
UNIT - VII	8.0 ESTIMATING, ABSTRACTING AND BILLING OF COMPLETE ITEMS OF WORKS 8.1 Double room/single storied building with wall foundation 8.2 Double roomed single storied with front verandah, with wall foundation 8.3 Three roomed single storied RCC framed building with front and back verandah 8.4 Timber roof and steel roof trusses 9.5 Bituminous road with cross slope		20
	TUTORIAL 10.1 To estimate the volume of earthwork required for excavation and filling of the trench for road construction 10.2 To prepare an estimate for sanitary & plumbing as required in a building. 10.3 To prepare an estimate for timber works for a roof trussed building. 10.4 To prepare an estimate for flooring items including finishing and decorating works 10.5 To prepare an estimate of a double storied R.C. building	16	
Total		48 hrs	70

Practical :-			
Sl.No	Skills to be developed		
1.	Intellectual skills- 3. Use IS 1200 for measurement & schedule of rates for estimation 4. Estimate bill of quantities and cost of double storied residential house 5. Estimate the bill of quantities and cost of roof trusses 6. Estimate the bill of quantities and cost of typical road section		
2.	Motor skills : Not Applicable		
3	Social skills- 5. Will learn to work with peer as group 6. Able to communicate with teachers and peers to clarify doubts.		
Text /Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
B.N. Dutta	Estimating and costing		
D.D. Kohli & R.C. Kohli	A Text Book of Estimating Costing and Accounts	Revised Edition	S. Chand Publishing
M. Chakraborty	Estimating, Costing and Specification		
S. C. Rangwala	Estimating, Costing & Valuation		

Name of the course : COMPUTER AIDED DRAWING			
Course code: CE407		Semester : Fourth	
Teaching Scheme		Maximum Marks : 50	
		PA and End Examination Scheme	
Theory :	0 hrs/week	Class test: 0 Marks	
Tutorial:	0 hrs/week	Assignment / Quiz etc.: 0 Marks Attendance : 0 Marks	
Practical :	3 hrs/week	End Semester : 0 Marks	
Credit :	2	PA Practical : 50 Marks	
Rationale:			
<p>Drawing is very important for diploma holders in Civil Engineering. Now adays different softwares are available for efficient drawing. This course provides students with a broad introduction into 2-dimensional and 3-dimensional Computer-Aided Drawing (CAD) with a focus on construction- and architecture-specific applications. Students will learn how to use industry-leading CAD software programs (Autodesk AutoCAD) to draw construction projects, and then create and distribute basic, industry-standard architectural drawings.</p> <p>The students should have basic understandings about computer aided drawing.</p>			
Course outcome :-			
Module/Unit	After completion of the course, students will be able to:		
1.	Demonstrate basic concepts of the AutoCAD software		
2.	Apply basic concepts to develop construction (drawing) techniques		
3.	Ability to manipulate drawings through editing and plotting techniques to assemble these drawings in industry-standard plan form and produce plotted hardcopies ready for distribution;		
4	Understand geometric construction		
5	Produce template drawings		
6	Construct accurate 2D geometry as plan view, elevations and sections		
7	Understand and demonstrate dimensioning concepts and techniques		
8	Become familiar with the use of Blocks, Design Center, and Tool Palettes		
9	Become familiar with Solid Modelling concepts and techniques and construct complex 3D shapes and surface objects		
Pre-Requisite :-			
	CE 302		
Contents (Theory)		Hrs	Marks in %

UNIT - I	COMPUTER AIDED DRAWING 1.1 Introduction to AutoCAD 1.2 Editing /modifying of existing drawing. 1.3 Dimensioning, drawing section lines and hashed section lines. 1.4 Writing texts on Drawings. 1.5 Display of drawings on Computer screens 1.6 Making use of different settings of drawings related to scale unit, co-ordinate system. 1.7 Creating and editing layers 1.8 Creating and editing blocks 1.9 Object dimensioning	25	35
UNIT- II	PLOTTING OF DRAWING Architectural Views & Drafting Views, including sectional view, plan and elevation.	8	5
UNIT - III	3D modeling with AutoCAD (Surfaces, Solids)	15	10
Total		48 hrs	50

Practical :-

S.No	Skills to be developed
1.	Intellectual skills- 1. Apply basic concepts to develop drawing techniques 2. Use of software for drawing
2.	Motor skills- 1. Handle the drawing software
3	Social skills- 1. Will learn to work with peer as group 2. Able to communicate with teachers and peers to clarify doubts.

Text /Reference Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
N.D. Bhatt	Elementary Engineering Drawing -		Charotar Publishing House
G.R. Nagpal	Geometrical Drawing -		Khanna Publishers
Prof. C. H. Khadilkar	A Text book Of Bridge Construction by -		Allied Publishers, Bombay, New Delhi and Calcutta.

Warren J. Luzadder	Graphics for Engineers -		Prentice Hall of India (Pvt.) Ltd.
N.D. Bhatt	Elementary Engineering Drawing -		Charotar Publishing House
Donnie Gladfelte	AutoCAD and AutoCAD LT (any recent version): No Experience Required		Sybex
Alexander Schreyer	Architectural Design With SketchUp		John Wiley & Sons

Name of the course : CE WORKSHOP

Course code: CE408		Semester : Fourth	
Teaching Scheme		Maximum Marks : 50	
		PA and End Examination Scheme	
Theory :	- hrs/week	Class test: ---	
Tutorial:	- hrs/week	Assignment / Attendance :	
Practical :	3 hrs/week	End Semester Theory Exam:---	
Credit :	2	PA : 50 Marks	
Rationale:			
<p>The subject of CE workshop is very important for the diploma holders in Civil Engineering. In order to effectively supervise and monitor constructin activities, he should have prior knowledge about construction procedure and environment of the workplace and construction areas. This will enable them to have hands on practice about various activities related to civil engineering construction.</p>			
Course outcomes:-			
Module/ Unit	After completion of the course, students will be able to:		
1.	Supervise different types of welding jobs and identify defects		
2.	Monitor various plumbing and sanitary works		
3.	Give layout for simple structures.		
4	Supervise various masonry, concreting and laying reinforcement in civil engineering construction works as per Indian standard code of practice.		
5	Study drawing for electrical wiring.		
6	Identify, various electrical installation in buildings		
7	Coordinate electrical installation jobs during civil construction		
Pre-Requisite :-			
1	Basic work ethics in workshop		

Contents (Theory)	Hrs	Marks
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UNIT - I	<p>WELDING SHOP</p> <p>1.0 SHOP TALK</p> <p>1.1 What is welding and its engineering importance</p> <p>1.2 Safety precautions to be observed during welding</p> <p>1.3 Types of welding – Gas and Arc.</p> <p>1.4 Equipment and accessories required for high and low pressure gas welding, their functions with demonstration. Adjustment of flame and their characteristics, use of flux, filler rod and their specifications.</p> <p>1.5 Arc welding tools and equipment, their functions with demonstrations, selection and specification of electrodes.</p> <p>1.6 Common welding joints and their edge preparation</p> <p>1.7 Welding defects and maintenance of arc and gas welding equipment</p> <p>1.8 Demonstration of cutting by Gas.</p> <p>2.0 SHOP PRACTICE</p> <p>2.1 Practice on gas welding, setting of flame carbonizing, neutral and oxidizing, metal depositing using filler rod on 4 mm. Thick flat or sheet and running a single bead.</p> <p>2.2 Practice on are welding fusion run on M.S. flat bar 6mm.thick both left ward and right ward for hand balancing.</p> <p>2.3 Single Vee-Belt joint on M.S. flat 4 to 6 mm. thick with at least two runs.</p>	4	8
		4	

UNIT- II	<p>PLUMBING SHOP</p> <p>3.0 SHOP TALK</p> <p>3.1 Role of plumbing in our day to day life</p> <p>3.2 Description and use of plumbing tools and equipment</p> <p>3.3 Plumbing materials and fitting e.g. various types of valves, taps etc. with demonstrations.</p> <p>3.4 Pipe threading with die set</p> <p>3.5 G. I. Pipe joints (flange, union, nipple sockets) C.P.A.C. and polyethylene pipe joints (with practical demonstration of at least two pipe joints)</p> <p>3.6 Study and demonstration of various types of water supply and sanitary fittings with layout.</p> <p>3.7 Study of simple hand pumps and centrifugal pumps</p> <p>3.8 Estimation of water supply and sanitary fittings for a domestic Building.</p> <p>4.0 SHOP PRACTICE</p> <p>4.1Practice of thread cutting on G. I. Pipes with adjustable click (making a short nipple)</p>	2	6
		4	

	<p>4.2 Practice of thread cutting on both ends and bending of G.I. pipe pieces (making a G.I. bend)</p> <p>4.3 Practice on cast iron to cast iron pipe joint using lead.</p> <p>4.4 Practice on joining two A.C. Pipes with cement mortar</p> <p>4.5 Practice on water pipe line connection for water tap, shower, wash basin and water closet (group task)</p>		
UNIT - III	<p>R.C.C AND MASONRY SHOP</p> <p>5.0 SHOP TALK</p> <p>5.1 Role of R.C.C. and Masonry work in the field of construction</p> <p>5.2 Demonstration of various tools and equipment used in various R.C.C. and masonry work.</p> <p>5.3 Common materials used for R.C.C. and Masonry works</p> <p>5.4 Various brick bonds and use of closer, plastering, flooring</p> <p>5.5 Bending and binding M.S. rods for RCC structure (Lap, hook, crank-up bar)</p> <p>5.6 Lay-out of building plinth in the field</p> <p>5.7 White washing and distempering preparation and demonstration</p> <p>5.8 Form work of RCC structure-column, beam and slab.</p> <p>5.9 Method of inspection of a job.</p> <p>6.0 SHOP PRACTICE</p> <p>6.1 Preparation of cement Mortar at a given proportion for plastering</p> <p>6.2 Practice on brick bond - (i) English bond (ii) Flemish bond for a corner wall and a Tee-joint</p> <p>6.3 Casting of Reinforced cement concrete beam/slab with given proportion</p> <p>(a) preparation of reinforcement including stirrups</p> <p>(b) study and revision of cover and form work</p> <p>(c) preparation of dry mixture and its calculation</p> <p>(d) methods of mixing and casting of the beam/slab</p> <p>(e) curing.</p> <p>6.4 Lay-out of a simple building (single storeyed)</p> <p>6.5 Making of mosaic tiles (size about 150 mm. x 150 mm. x 20 mm. thick)</p>	6	20
		14	

Name of the course : Professional Practice-III		
Course code: EC 308		Semester : FOURTH
Teaching Scheme		Maximum Marks : 25
		IA and End Examination Scheme
Theory :	00 hrs/week	Class test: 0 Marks
Tutorial:	00 hrs/week	Assignment / Quiz etc.: 0 Marks Attendance : 0 Marks Sessional(IA) : 25
Practical :	02 hrs/week	EE Theory Exam: 00 Marks
Credit :	01	EE Practical Exam: 00 Marks
Rationale / Aim :-		
<p>Students in the discipline of engineering and technology need to acquire skill, knowledge and attitude that fits the requirement of the industry, to develop right temperament to be a job fit the students must have some ability such as team work, team management, working on projects, meeting deadlines, problem solving ability, critical thinking, knowledge of society etc. hence during the study of the engineering course it is also necessary that the students is imbued with above required professional skills.</p> <p>The course curriculum professional practice III incorporates students micro seminar, expert lectures, industrial visits, report writing, Mini Project and workshop/training which will give some input to their required professional knowledge of the trade, as this course will continue in the next semester some other aspect will be address there too.</p>		
Course Objective :-		
Module/Unit	After completion of the course, students will be able to:	
1.	Interact with peers to share thoughts.	
	Write report on field visit.	
2.	Implement conceptual idea into practice	
3.	Prepare presentation material	
4.	Implement mini projects	
Sr.	Activities	Hours
UNIT – I	Students Micro Seminar/Presentation: Seminars on information searched by the student as a part of lab talk. (Minimum: one nos.)	
UNIT – II	Structured field visit: Field visit be arranged and report of the same should be submitted by the individual student.	7
UNIT – III	Guest Lecture by Professional/Industry expert: Lectures by professional /Industrial expert to be organized.	2
UNIT – IV	Mini projects/ Activities: The students in group will be assigned a project for which they themselves has to do a preliminary research and bring forward the idea, get approved from the faculty and complete it within the given timeframe and present the work done by them and make a report on it. A group must not consist more than 5 members.	7

UNIT – V	Workshop/Training: Students must attend at least one workshop or training in current trends of technology of their field of studies during the year	18
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1.	Intellectual skills- <ol style="list-style-type: none"> 5. Interact with industry people- executive and working level 6. Implementation of theoretical concept. 7. Exchange of ideas. 8. Adopting safety precautions.
2.	Motor skills- <ol style="list-style-type: none"> 2. Development of supervisory skill.
3	Social skills- <ol style="list-style-type: none"> 4. Development of ethics. 5. Will learn to work with peer as group. 6. Able to communicate with teachers and peers to clarify doubts.



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