

Branch Name:	Civil Engineering
Program Code:	ET401
Course Name:	Civil Engineering Workshop Practice
Course Code:	2ET4010102
Pre requisite	

RATIONALE:

Civil diploma technician is expected to have basic skills in, Carpentry, Masonry, Welding, Fitting, Drilling, Tapping, plumbing works etc. Therefore, students should be given basic practices of these skills with the safety aspects required for the same. The course of Civil Engineering Workshop Practices would facilitate the development of basic skills a Diploma holder is expected to possess. He/she should be able to supervise construction activities like brick masonry, woodwork, concreting, welding, finishing etc. including quality control and maintenances of safety to self, coworkers and the constructed components of the building. The students are advised to practice each of the experiences with an understanding of necessary technical aspects and safety precautions needed to be observed.

Course Objectives:

The content should be taught and implemented with the aim to develop skills so that students are able to acquire following competencies:

1. Perform basic tasks in Masonry, Concreting, Carpentry, Welding, Fitting, Drilling, Tapping, Plumbing and False Ceiling Works etc.
2. Follow safety norms for handling materials, tools and equipment's required for each construction activity

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total (T+P)
				University Assessment	Continuous Assessment	University Assessment	Continuous assessment	
-	-	4	2	-	-	-	100	100

DETAILS OF COURSE CONTENTS:

S. NO.	TOPIC	Total Hrs.	WEIGHTAGE
1	Civil Engineering Activities At Construction Site: 1.1 Construction activities such as excavation, brick masonry, concreting, carpentry, welding, plumbing, etc. 1.2 Importance and Interdependency of various activities 1.3 Building components of residential building.	08	15
2	Masonry and Concreting: 2.1 Brick and stone Masonry work, Different type of joints/bonds, Concept of line, plumb, right Angle and water level. 2.2 Plastering, Pointing,	18	30

	2.3 Different types of newly invented materials used in masonry work 2.4 Concrete Laying: Proper Mixing of concrete, use of tools like concrete mixtures and vibrators, different types of vibrators. Formwork, Scaffolding, Centering/ Shuttering		
3	Building Material, Quality & Techniques: 3.1 Different types of materials for different activities used in construction. 3.2 Market rate survey of material. 3.3 Quality Parameters and properties of material (Brick, Cement, Water, Aggregate, Sand) 3.4 Quality check and test for material quality Quantity measurement units 3.5 Advance construction techniques in used in industry.	18	35
4	Plumbing: 4.1 Different types of pipes, joints, taps, fixtures and accessories used in plumbing. 4.2 Components (pipes, bends, chambers etc.) used insanitary/sewerage lines 4.3 Scheme/plan for water supply and sanitary system for a simple residential building.	04	05
5	Finishing Works: 5.1. False ceiling, POP work, aluminum –glass works 5.2. Whitewashing and painting: brush, roller and spray painting, types of finishing, preparation of surface, need of primer for timber, steel and plastered surface.	08	15
	TOTAL HOUR	28	

COURSE OUTCOME:

1. Develop basic technical know-how of construction activities works.
2. Apply basic techniques for masonry and concreting works and Use quality control measures.
3. Identify appropriate materials required for each activity Select appropriate tools and Equipment's involved in various activities for specific uses.
4. Install the plumbing and fixtures in buildings observe the technical aspects Involved in workmanship of various plumbing tasks.
5. Observe the safety precautions.

LISTS OF PRACTICAL:

The practical should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency. Following is the list of practical for guidance.

SR. No.	Experiment
1	Visit a nearby site where construction is at initial stage and observe for following: 1. Digging and filling 2. Foundation preparations 3. Brick/stone masonry 4. Concrete laying and Curing 5. Laying of sewerage/sanitary lines 6. Bar bending and bar laying for columns, beams and ceiling. 7. On site testing for quality 8. On site preparation for construction work 9. Erection and removal of form work, scaffolding, Centering/shuttering
2	Visit a nearby site where construction is at advance stage and observe for following: 1. Plumbing 2. Welding, fittings, 3. Plastering 4. Flooring 5. POP work
3	Visit a nearby site where construction is at finishing stage and observe for following: 1. Carpentry work 2. False ceiling and aluminium –glass works 3. White washing/painting work
4	Assemble a brick wall of 120 cm length and 20 cm thickness and 60 cm height by arranging bricks in different bonds (using only wet mud as mortar). Ensure that wall is in line, plumb and at right angle to a given structure.
5	Mark level of given height from ground level at different locations in the workshop using Water pipe technique.
6	Assemble a pipe line as per given drawing using pipes of one inch diameter, pipes of half Inch diameter, nipple, reducer, union, etc.

REFERENCE BOOKS:

Sr.no.	Title	Author
1	Bull, J.W.	The Practical design of Structural Elements
2	Basic Plumbing With Illustrations Revised Edition	Howard C.Massey
3	Modern Plumbing	E.KeithBlanKenBanker
4	Workshop Technology-	B.S. Raghuwansh
5	PWD-Standard Data Book for Building Work	PWD
6	CPWD work manual	CPWD

List of Open Source Software/learning website:

- a. [http://www.nptel.iitm.ac.in/civil engineering](http://www.nptel.iitm.ac.in/civil%20engineering)
- b. <https://definecivil.com/civil-engineering-site-basic-knowledge-pdf-important-points/>
- c. <https://civiconcepts.com/blog/civil-engineering-basic-knowledge>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Develop basic technical knowledge of construction activities	4 Analyzing 2 Understanding
CLO2	Apply basic techniques for masonry and concreting works	3 Applying 2 Understanding,
CLO3	Identify appropriate materials required for each activity	4 Analyzing 2 Understanding,
CLO4	Observe the technical aspects involved in workmanship of various plumbing tasks	2 Understanding
CLO5	Observe the safety precautions	4 Analyzing 2 Understanding
CLO6	Understanding the false ceiling, aluminium –glass works	2 Understanding

Course Learning Outcomes	Program Outcomes(Pos)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO10	PO12
CLO1			H		M	L						
CLO2				M	H					L		
CLO3	H						M		L			
CLO4	H		M			L						
CLO5	H			M								L
CLO6	H			M			L					

H: High, M:Medium, L:Low