

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM

Course Title: Civil Engineering Workshop Practice
(Code: 3320603)

Diploma Programmes in which this course is offered	Semester in which offered
Civil Engineering, Environment Engineering, Transportation Engineering	Second Semester

1. RATIONALE

At the beginning of Civil Engineering profession, students are required to be given exposure to different activities related to construction work. Students should be given basic skills of various construction activities with all the safety measurement required for the same.

The course of Civil Engineering Workshop practices would facilitate the opportunity to appreciate the basic construction activities that a Diploma holder is expected to perform. Supervision of construction activities like brick masonry, woodwork, concreting, welding etc. and quality control and maintenances of safety to self, coworkers and the constructed components of the building.

This course would develop confidence in the student about the future tasks and major activities to be learned during the rest of Diploma program.

The workshop experiences would also help the students to understand the complexity and interrelations of site specific activities and events in relatively shorter duration of time. Moreover , the necessary technical aspects and safety precautions will be observed and perceived on the sites. Also the tools, labor and time required for completing a specific quantum of a particular job would be perceived.

The students are advised to practice each of the experiences with an understanding of necessary technical aspects and safety precautions needed to be observed.

2. LIST OF COMPETENCIES

The content is designed with the aim that at the end of study of Civil Engineering Workshop practices the student is expected to develop following competencies

- **Develop awareness & knowledge & skills of various Civil Engineering practice with safety precautions and quality control**
- **Identify appropriate materials , tools and equipments required for each construction activity**

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
			C	ESE	PA	ESE	PA	
0	0	4	4	0	0	40	60	100

Legends: L-Lecture; T – Tutorial/Teacher Guided Student Activity; P - Practical; C – Credit; ESE - End Semester Examination; PA - Progressive Assessment.

4. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I	1.a Develop insight about construction site basic activities 1.b Report about various construction site basic activities 1.c Visit a Construction Site	1.1 INTRODUCTION TO CIVIL ENGINEERING SITE: i) Observe various construction activities such as excavation, brick masonry, carpentry, welding ii) Study of various civil engineering drawings. Interdependency of various activities iii) Technical aspects involved in workmanship Safety precautions iv) Site visit
Unit– II	2.a Develop skills about basic Civil activities 2.b Identify appropriate materials required for each activity 2.c Identify various sizes of Bricks, wood ,Steel Bars, nails screws, available in the market 2.d Identify the appropriate tools and equipments involved in various activities for specific uses 2.d Observe Construction works	2.1 STUDY OF BASIC CONSTRUCTION ACTIVITIES 2.1.1 Brick Masonry work, Plastering, Pointing, Flooring, Skirting and Dado: i) Quality of bricks, sand and cement ii) On site brick, sand and cement tests iii) Staking and storage of bricks, sand and cement iv) Preparation of material for onsite use like Watering of bricks, Sand sieving, Mortar preparation etc v) Site visit 2.1.2 Carpentry Work i) Type and quality of material to be used in carpentry work for construction activities ii) Staking and storage of Timber on site iii) Study of Wooden floors, sills, tile stripes, joints etc iv) Site visit 2.1.3 Concrete Laying: i) Ingredients, proportions of mixing, laying

Unit	Major Learning Outcomes	Topics and Sub-topics
		and compaction ii)Site visit
Unit– III	3.a Identify bonding and installation of various fixtures on site 3.b Observe Welding / Drilling/ Riveting, Erection and Removal of formwork etc., Plumbing on site	3.1STUDY OF VARIOUS CONSTRUCTION RELATED ACTIVIES 3.1.1Welding/ drilling/ riveting i)Steel, Aluminum, tie steels and pipe, hack saw drilling and riveting machines 3.1.2Technique and precaution for erection and removal of: i)Formwork ii)Scaffolding iii)Centering/ Shuttering 3.1.3Plumbing for residential building i)Different types of pipes, joints and fixtures in plumbing ii)Drawing for Water Supply and sanitary system.
Unit– IV	4.a Value and respect the involvement of each and every man-hour of a technician or a labor 4.b Observe the technical aspects involved in workmanship of various site tasks 4.c Observe the safety consciousness 4.d Observe and follow Safety precautions	4.1TECHNICAL ASPECTS AND SAFETY PRECAUTIONS 4.1.1 Brick Masonry work, Plastering, Pointing, Flooring, Skirting and Dado 4.1.2Carpentry Work 4.1.3Welding/ drilling/ riveting 4.1.4 Plumbing

5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks (Duration –Hours)			
			R Level	U Level	A Level	Total
I	Introduction to Civil Engineering Site	10	N.A			
II	Study of basic construction activities	24				
III	Study of various construction related activities	12				
IV	Technical aspects and safety precautions	10				

Legends:

R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

6. SUGGESTED LIST OF EXPERIMENTS

The experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency -

- Write and maintain a progress book.
- Write Technical Aspects and Safety Precautions involved in the job
- Study and Make drawing of the job to be practiced
- Write a report/ Make a model / Prepare a Demonstration of the given job for practice

The teacher will have to facilitate, check and assess the progress of the student in above activities; and collect the progress book at the end of the semester.

S. No.	Unit No.	Experiment / Practice	Hrs. Req.
1.	I	<ul style="list-style-type: none"> • List of various construction activities • Collection and study of various civil engineering drawing like plan elevation, structural drawing plumbing drawing etc • Site visit • Preparation of visit report. 	12
2.	II	<ul style="list-style-type: none"> •Site visit for: <ul style="list-style-type: none"> ➤ onsite testing, storage, quality and onsite preparation of material for construction work ➤Observation of Carpentry work ➤Observation of Concrete Laying and Curing •Preparation of Visit report 	16
3.	III	<ul style="list-style-type: none"> •Site visit for: <ul style="list-style-type: none"> ➤ Erection and removal form work, scaffolding, centering and shuttering •Sketches for pipe joints and fixtures for plumbing •Study of water supply and sanitary drawing for residential building 	14
4.	IV	<ul style="list-style-type: none"> •Seminar on technical aspects and safety precautions. 	14

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- Visit Construction site and observe the course/topic based practices on the field
- Teacher guided self-learning activities
- Course/ library /internet based mini-projects etc.

These could be individual or group-based.

8. SUGGESTED LEARNING RESOURCES

A. List of Books

Sr.No.	Author	Title of Books	Publication
1	Bull, J.W.	The Practical design of Structural Elements in Timber	Gower Press, 1989
2.	E.Keith Blan KenBanker	Modern Plumbing	

B. List of Major Equipment/ Instrument

- Workbench, Vice, Saw, Plane, Chisel, Level, Tri-square with spirit level
- String, Level / Water tube, Plumb bob, Right Angle
- Welding machine

C. Civil engineering related websites and softwares

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

1. Prof. K Venkateshwarulu , HAMD , Tolani Polytechnic, Adipur,
2. Prof. Vikram M. Patel, I/C HC , R. C. Technical Institute, Ahmedabad
3. Prof. Arti Pamnani. Lecturer, BBIT, Vallabh Vidhyanagar.
4. Prof. Bhavesh Modi, Principal, BVPIT (DS), UmraKh.
5. Mrs. Rina Chokshi, Lecturer, PIET (DS), Limda, Vadodara

Co-ordinator and Faculty Member from NITTTR Bhopal

1. Dr. J.P. Tegar, Professor Dept of Civil and Environmental Engg, NITTTR, Bhopal.