

**GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT****COURSE CURRICULUM****Course Title: CONSTRUCTION TECHNOLOGY****(Code: 3330602)**

<b>Diploma Programme in which this course is offered</b>	<b>Semester in which offered</b>
<b>CIVIL ENGINEERING</b>	<b>THIRD</b>

**1. RATIONALE**

Construction technology is a core subject in civil engineering. This subject is intended for gaining useful knowledge with respect to facts. Concepts, principles and procedures related to building construction system so that student can effectively able to execute building construction work and carry out repairs and maintenance of existing building with safety and quality in construction.

**2. COMPETENCY :**

The course content should be taught and with the aim to develop different types of skills so that are able to acquire following competencies:

- (i) Understand different types of technology used in construction works.
- (ii) Students are able to appreciate various types of construction machineries, formworks and safety measures involved in construction works.

**3. TEACHING AND EXAMINATION SCHEME**

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	150
3	0	2	5	70	30	20	30	

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

**Note:** It is the responsibility of the institute heads that marks for **PA of theory & ESE and PA of practical** for each student are entered online into the GTU Portal at the end of each semester within the dates specified by GTU.

**4. COURSE DETAILS**

<b>Unit</b>	<b>Major Learning Outcomes</b>	<b>Topics and Sub-topics</b>
<b>Unit – I INTRODUCTION</b>	1a. Appreciate various types of civil engineering structures.  1b. Develop concept of various types of components of building.	1.1 Introduction of various Civil Engineering structures 1.2 Functions of various components of building and other structures
<b>Unit – II FOUNDATION S</b>	2a. Know type of foundation and its suitability to different type of soil. 2b. Explain the failure of foundation and remedial measures	2.1 Classification and types of foundations 2.2 Selection of the suitable type of foundation for required structure and as per situation 2.3 Foundations in black cotton soil, loose soils etc. 2.4 Timbering in trenches 2.5 Failures in foundation Precautions & remedial measures
<b>Unit – III BUILDING CONSTRUCTION</b>	3a. Develop concept of different types of brick and stone masonry. 3b. Explain construction procedure. 3c. Explain different types of concrete and its type. 3d. Develop concept about various type of form work.	3.1 Brick and stone masonry 3.2 Selection of suitable type of masonry 3.3 Construction procedures. 3.4 Ingredients of concrete. 3.5 Production of concrete, transportation, placing, compaction, curing 3.6 Concrete in different situations viz. hot weather, cold weather, under water etc. 3.7 Purpose & types of scaffolding and centering 3.8 Suitability of scaffolding as per situations and type of structures. 3.9 Erection of centering for different component
<b>Unit – IV BUILDING ITEMS</b>	4a. Appreciate the different types of building items. 4b. Explain various construction activity like damp proof course ( D.P.C) and anti termite treatment. 4c. Able to know the different types of plumbing and electric fittings and laying procedure.	4.1 Plastering & pointing- its purpose, various types, construction procedures, advantages and disadvantages, suitability of each. 4.2 Damp proof course (DPC) 4.3 Anti-termite measures and treatments 4.4 Construction joints-need and materials used. 4.5 Plumbing and electrification- various types of fittings and laying procedure.
<b>Unit – V CONSTRUCTION MACHINERY</b>	5a. Able to introduce different types of construction machinery, its features and Working.	5.1 Purpose, advantages and disadvantages. 5.2 Machineries used for earthwork and for other construction works. Mortar – Types & specific uses 5.2.1 Their details, special features, suitable uses, specifications.

Unit	Major Learning Outcomes	Topics and Sub-topics
<b>Unit – VI BUILDING MAINTENANCE AND SAFETY MEASURES</b>	6a. Describe concept about the maintenance work , know causes, types and its remedial measures 6b. Understand about the important laws/norms and act of safety. 6c. Explain precautions and precautionary measures of safety.	6.1 Purpose, need, importance, methods. 6.2 Causes and types of defects in buildings. 6.3 Preparation of report on maintenance work. 6.4 Remedial measures and execution procedure of any one type of building maintenance work. 6.5 Importance of various Laws / Norms / Regulations / Acts for safety. 6.6 Precautions and precautionary Measures. 6.7 Post-accident procedures. Give Examples.

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

Unit	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	INTRODUCTION	4	04	02	00	06
II	FOUNDATIONS	6	04	02	04	10
III	BUILDING CONSTRUCTION	10	02	08	08	18
IV	BUILDING ITEMS	8	02	06	06	14
V	CONSTRUCTION MACHINERY	6	00	06	04	10
VI	BUILDING MAINTENANCE AND SAFETY MEASURES	8	02	04	06	12
<b>Total</b>		<b>42</b>	<b>14</b>	<b>28</b>	<b>28</b>	<b>70</b>

## 6 SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills so that students are able to acquire the competency. Following is the list of experiments for guidance.

S. No.	Unit No.	Practical/Exercise	Apprx. Hrs. Required
<b>1</b>		<b>Sketches for</b>	<b>10</b>
	II	Foundations – various types, Layout plan, timbering in trenches	
	III	Brick and stone masonry work	
	III	Scaffolding works and cantering	
	IV	Different types of Damp Proof Course	
<b>2</b>		<b>Field work</b>	
	II	Exercise for layout using foundation plan of a given building on site	8
	III	Exercise for carrying out different types of masonry	
<b>3</b>		<b>Field Visit</b>	<b>10</b>
		Arrange field visit at construction site where the following works are in progress	
	II	(a) Excavation for foundation <ul style="list-style-type: none"> <li>Describe machinery involved</li> <li>Describe types of structure</li> <li>Precautions and safety measures</li> </ul>	
	III	(b) Concreting <ul style="list-style-type: none"> <li>Grade of concrete</li> <li>Admixtures and its effects</li> <li>Batching of concreting</li> <li>Transporting, placing and curing of concrete</li> </ul>	
	III	(c) Masonary <ul style="list-style-type: none"> <li>Types of masonry</li> <li>Types of mortar and ratio</li> <li>Types of bond and construction procedure</li> <li>Methods involved in quality control of masonry work</li> </ul>	
	IV	(d) Flooring <ul style="list-style-type: none"> <li>Types of flooring</li> <li>Proportion and procedure of flooring</li> <li>Anti termite treatment</li> </ul>	
	IV	(e) Plastering & Pointing <ul style="list-style-type: none"> <li>Types of mortar and ratio</li> <li>Types of plastering work and its suitability</li> <li>Types of pointing work and its suitability</li> <li>Quality check for plastering and pointing work</li> </ul>	
		Total	28

## 7 SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like: Course/topic based seminars, internet based assignments, teacher guided self learning activities, course/library/internet/lab based mini-projects etc. These could be individual or group-based.

## 8. SUGGESTED LEARNING RESOURCES

### A. List of Books:

S. No.	Title of Books	Author	Publication
1	Building Construction	B.C. Punmia	
2	Building Construction	Shushil Kumar	
3	Building Construction	S. C. Rangwala	
4	Building Construction	Sharma And Kaul	
5	Construction Planning, Equipments and methods	R. L. Perurifoy	

### B. List of Major Equipment/Materials

### C List of Software/Learning Websites

## 9. INSTRUCTIONAL STRATEGIES

## 10. COURSE CURRICULUM DEVELOPMENT COMMITTEE

### Faculty Members from Polytechnics

1. **Mrs. Vandana P. Pandya**, Head, Civil Deptt., Parul Polytechnic Institute , Limda, Vadodara
2. **Mr. Chintan D. Bhatt**, Lecturer, Civil Deptt., Tolani F.G.Polytechnic, Adipur

### Coordinator and Faculty Members from NITTTR Bhopal