

# GUJARAT TECHNOLOGICAL UNIVERSITY

## CIVIL (CONSTRUCTION ENGINEERING AND MANAGEMENT)(14)

### CONSTRUCTION TECHNIQUES

**SUBJECT CODE: 2711402**

M.E. 1<sup>st</sup> SEMESTER

**Type of course:** Core

**Prerequisite:** --

**Rationale:**--

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
4	2#	0	5	70	30	30	0	10	10	150

**Content:**

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Introduction to construction operations, erection work, automation processes and special equipment.	4	8
2	<b>Modular coordination</b> Introduction to modular co-ordination, principles of modular co-ordination, Advantages of modular coordination, Recent Trend of modular technology.	8	13
3	<b>Sub structure construction</b> Under Water Construction of diaphragm walls and basement, Tunneling techniques -Tunnel technique by Advance Planning & Equipments in Geologically adverse condition, piling techniques, driving well and caisson, Box jacking, Pipe Jacking, cofferdam sinking, cable anchoring and grouting, Large reservoir construction with membranes and Earth system, well points, Dewatering , Underground open excavation and stand by plant provisions, Trenchless technology.	12	20
4	<b>Super structure construction</b> Concrete paving technology , construction techniques for continuous concreting operation in Tall buildings , Vacuum Dewatering of concrete flooring , Launching Techniques, Launching techniques for heavy decks in situ pre-stressing in high rise structures, erection of laticetoweras and rigging of transmission line structures , Construction sequences in cooling towers, Silos Chimney, Sky scrapers, bow string bridges, cable stayed bridges , Support structure for heavy Equipment and conveyor and machinery in heavy industries, erection of braced domes and space decks, Advancement in scaffolding and formwork.	12	20
5	<b>Repair techniques.</b> Mud jacking grout, strengthening by Micro piling, Sheet pile protection for pipeline laying, screw, sub grade water proofing under pining advanced techniques and sequence in demolition and dismantling,	8	13

	anchors		
6	<b>Erection technology.</b> Erection cycle, methods for various types of buildings, plant and heavy steel structures.	8	13
7	Recent trends in construction techniques. (Nano technology, lifting technology etc.)	8	13

**Reference Books:**

1. Construction Technology by S.S. Ataev - Mir Publishers
2. Prefabrication of Reinforced Concrete by P. Dyanchenko & S. Mirotvorsky - Mir Publishers
3. Industrial Building and Modular Design by Henrick Nissen - Cement Concrete Association, London.
4. Construction Technology (Vol. I to IV) by R. Chudlay – Longman
5. Practical foundation engineering hand book, RobertwadeBrown, McGraw Hill Publications,
6. Construction Dewatering: New Methods and Applications, Patrick Powers. J., John Wiley & Sons.
7. Advanced Construction Techniques , Roy Chudley&Roger Greeno, Pearson Prentice Hall
8. Construction Planning, Equipment & Method,Peurifoy ,Tata McGraw Hall Pub.
9. Construction Technology, Sanksar S, Saraswati S, Oxford University Press
10. Concrete Technology: Theory and Practice, M.S. Shetty, S.Chand Pub. 5.

**Course Outcome:**

After learning the course the students should be able to:

Select suitable construction techniques adopted on construction projects to manage such projects efficiently & effectively.