Course Number and Name

BCE053 - ADVANCED CONSTRUCTION TECHNIQUES

Credits and Contact Hours

3 & 45

Course Coordinator's Name

Ms.A.Arunya

Text Books and References

REFERENCES:

1. Robertwade Brown, Practical foundation engineering hand book, McGraw Hill Publications, 1995.
2. Patrick Powers. J., Construction Dewatering: New Methods and Applications, John Wiley & Sons, 1992.
3. Jerry Irvine, Advanced Construction Techniques, CA Rocketr, 1984
4. Peter.H.Emmons, "Concrete repair and maintenance illustrated", Galgotia Publications Pvt. Ltd., 2001.
5. Sankar, S.K. and Saraswati, S., Construction Technology, Oxford University Press, New Delhi, 2008.

Course Description

- To bring about a complete understanding of advanced construction techniques in sub structure super structure and repair construction

Prerequisites	Co-requisites
Building Construction Technology	NIL

required, elective, or selected elective (as per Table 5-1)

Course Outcomes (COs)

CO1	Understand the various processes involved in sub-structure construction
CO2	Understand the various processes involved in super-structure construction.
CO3	Understand the construction process of special structures and offshore structures.
CO4	Know about the rehabilitation techniques carried out for a structure.
CO5	Know about the demolition techniques carried out for a structure.

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	M		M		H						
CO2	M		M		H	L				L	
CO3	M		M		H						
CO4	M		M		H						
CO5	M		M		H						

List of Topics Covered

UNIT I SUB STRUCTURE CONSTRUCTION 15

Box jacking - pipe jacking - Under water construction of diaphragm walls and basement - Tunneling techniques - piling techniques - driving well and caisson - sinking cofferdam - cable anchoring and grouting

- driving diaphragm walls, sheet piles - laying operations for built up offshore system - shoring for deep cutting - large reservoir construction - well points - dewatering and stand by plant equipment for underground open excavation.

UNIT II SUPER STRUCTURE CONSTRUCTION FOR BUILDINGS 10

Vacuum dewatering of concrete flooring – concrete paving technology – techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections – launching techniques – suspended form work – erection techniques of tall structures, large span structures – launching techniques for heavy decks – insitu prestressing in high rise structures, aerial transporting handling erecting lightweight components on tall structures.

UNIT III CONSTRUCTION OF SPECIAL STRUCTURES 10

Erection of lattice towers and rigging of transmission line structures – construction sequence in cooling towers, silos, chimney, sky scrapers, bow string bridges, cable stayed bridges – launching and pushing of box decks – Advanced construction techniques for offshore structures – construction sequence and methods in domes and prestress domes – support structure for heavy equipment and conveyor and machinery in heavy industries – erection of articulated structures, braced domes and space decks.

UNIT IV REHABILITATION TECHNIQUES 6

Mud jacking grout through slab foundation - micropiling for strengthening floor and shallow profile - pipeline laying - protecting sheet piles, screw anchors - sub grade water proofing, underpinning, crack stabilization techniques.

UNIT V DEMOLITION 4

Advanced techniques and sequence in demolition and dismantling.