

B.E. (Civil) Semester: V

Subject Name: ADVANCED CONSTRUCTION TECHNOLOGY (CV501)

A. Course Objective:

- To give an experience in the implementation of new technology concepts which are applied in field of Advanced construction.
- To study different methods of construction to successfully achieve the structural design with recommended specifications.
- To involve the application of scientific and technological principles of planning, analysis, design and management to construction technology.
- To study of construction equipments, and temporary works required to facilitate the construction process
- To provide a coherent development to the students for the courses in sector of Advanced construction technology.
- To present the new technology of civil Engineering and concepts related Advanced construction technology.

B. Teaching /Examination Scheme

Teaching scheme				Total Credit	Evaluation Scheme					Total
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract/ Tut.	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
03	00	02	05	04	03	70	30	20	30	150

C. Detailed Syllabus:

Unit No	Topics
1	Pile Foundations : Introduction, uses, selection of pile, types of piles, pile spacing, group of piles, efficiency of group of piles, pile cap and pile shoe, load tests on piles, pile driving, pulling of piles, loads on piles, causes of failures of piles, pile driving formulas.
2	Coffer Dams: Definition, uses, selection of coffer dams, types of coffer dams, design

features of coffer dams; leakage prevention, economic height.

- 3 Caissons:**
Definition, uses, construction material, types of caissons, loads on caisson, design features of caissons, floating of caissons, cutting edges, sinking of caisson, tilting of caisson, caisson diseases.
- 4 Control of Ground Water in Excavations:**
Methods- pumping, well points, bored wells, electro-osmosis, injections with cement, clays and chemical, freezing process, vibro-flotation
- 5 Temporary Works:**
Form work for R.C.C. wall, slab, beam and column, Centering for arches of large spans and dams, design features for temporary works, Slip formwork, False work for bridges, Specialty form work.
- 6 Construction of Earthquake Resistant Buildings:**
Planning of earthquake resistant building, Construction of walls –provision of corner reinforcement, Construction of beams and columns. Base isolation
- 7 Special Structures:**
Tall structures, Spatial structures, Pre-stressed structures.

D. Lesson Planning

Unit No	Topics	Lectures (Hours)	Weightage (%)
1	Pile Foundations :	7	16
2	Coffer Dams:	9	20
3	Caissons:	7	16
4	Control of Ground Water in Excavations:	6	13
5	Temporary Works:	5	11
6	Construction of Earthquake Resistant Buildings:	6	13
7	Special Structures	5	11
TOTAL NO OF LECTURES		45	100

E. Term work and Field Visit :

- Shall be based on the above mentioned course content
- Field visits based on course content are suggested.

F. Instructional method and pedagogy (Continuous Internal Assessment Scheme) (CIA)

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- Attendance is compulsory in lectures and practical which carries marks.
- At regular intervals assignments will be given. Students should submit all assignments during given period.
- Classroom participation and involvement in solving the problems in Tutorial rooms Carries Marks
- Internal exam of 30 marks will be conducted as a part of Mid semester evaluation.
- Experiments shall be performed in the field related to course contents.
- The course includes a practical, where students have an opportunity to build an appreciation for the concept being taught in lectures.

G. Students Learning Outcomes:

- The students will gain an experience in the implementation of new construction technology on engineering concepts which are applied in field Advanced construction technology.
- The students will get a diverse knowledge of Advanced technology practices applied to real life problems.
- The students will learn to understand the theoretical and practical aspects of new technology in civil engineering along with the design and management applications.

H. Recommended Study Materials

A. Text Books:

- S.P. Arora & S.P. Bindra, A Text Book of Building Construction, Dhanpat Rai & Sons, New Delhi.
- S.K. Sarkar and S. Saraswati, Construction Technology, Oxford University Press, New Delhi.
- B.C. Punamia, Building Construction, Laxmi Publications, New Delhi
- S.C. Rangwala, Building Construction, Charotar Publication Pvt Ltd. Anand

B. Reference Books:

- R. Chudley, Construction Technology Vol. I, II, III, IV, Longman Group Limited, London, 1st Edition, 1977.

- R. Chudley (revised by R. Greeno), Building Construction Handbook, Addison Wesley, Longman Group, England, 3rd ed., 1999.
- S.S. Ataev, Construction Technology, Mir Publishers, Moscow, 1985