

CONSTRUCTION METHODS AND EQUIPMENT**Course Code: 13CE2111****L P C**
4 0 3**Course Educational Objectives:**

1. To impart the knowledge on special earth work excavation techniques and methods of concreting in superstructure.
2. To familiarize the student with the knowledge of erection of construction units and management of construction equipment.

Course Outcomes:

1. The students will demonstrate the ability to identify and plan construction equipments for various construction units.
2. To impart the students, with the knowledge of substructures and super structure.
3. To impart the students, with the knowledge of construction equipment and machinery

UNIT- I

SUBSTRUCTURE: Digging and excavation of trenches – Grading – Special earth work excavation – Drilling and blasting techniques. Pile driving techniques – sinking wells.

SUPERSTRUCTURE: Concrete and reinforced concrete works – forms work – reinforcement – concreting – mechanized methods of erection of Buildings and installations. Cast-in-situ and pre-cast concrete. Concreting below G.L. – wall in situ method for cast in situ and precast concrete – under water concreting design of forms.

UNIT- II

ERECTION OF CONSTRUCTION UNITS: different types – scaffolding. Erection of steel structures – Tunneling techniques. Pre cast and prefabricated construction – need and advantages. Modular co-ordination – I.S. recommendations for modular planning, standardization, mass production and methods of transportation.

UNIT- III

CONSTRUCTION EQUIPMENT AND MACHINERY: Earthmoving Equipment Power shovels, Back hoe, Dragline, Clam shell; tunneling machine – types.

EXCAVATING EQUIPMENT: Scraper, Bulldozer.

COMPACTING EQUIPMENT: Smooth wheel roller sheep-foot roller – Pneumatic typed rollers.

UNIT- IV

CONSTRUCTION EQUIPMENT: Hoisting equipment – such as hoist winch, hoisting chains, and hooks and slings, various types of cranes –tower crane, mobile crane and derrick crane. Their characteristics, performance and safety in operation.

HAULING EQUIPMENT: Dump trucks and dumpers.

CONVEYING EQUIPMENT: Belt Conveyors, Screw conveyor, Bucket conveyor.

AGREEMENT AND CONCRETE PRODUCTION EQUIPMENT Concrete mixers, truck mixers, pneumatic concrete placer, concrete vibrators. Pile Driving Equipment - Tunneling and rock drilling equipment – Pumps and dewatering equipment.

UNIT- V

TIME AND MOTION STUDIES: process charts – application of queuing or wait line models management of construction equipment

MANAGEMENT OF CONSTRUCTION EQUIPMENT: Need for mechanization of construction – planning and financing construction plant and equipment – Owning and operating equipment versus hiring – planning for infrastructure mechanization equipment management – equipment maintenance and repair.

TEXT BOOKS

1. S.Seetharaman, “*Construction Engineering and Management*”, 4th Edition , Umesh publications, New Delhi, 1999.
2. Mahesh varma, , “*Construction Equipment and its Planning and Applications*”, 5th edition, Metroplolitan Book Co. Publishers,, 2005.

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- 1.Sengupta and Guha, “*Construction Management and Planning*”, 2nd edition, TMH, 2002.
- 2.Rangwala, S.C., “*Construction of Structures and Management of Works*”, 5th edition, Charotar publishers , 2005
- 3.Srivatsava, U.K., “*Construction Planning and Management*”, 1st edition, Galgotia Publications Pvt. Ltd., New Delhi, India, 1999.
- 4.“*Construction Machinery and Equipment in India*”. (A compilation of articles Published in Civil Engineering and Construction Review) Published by Civil Engineering and Construction Review, New Delhi, 1991.
- 5.Jay P.K. “*Hand Book of Construction Management*” 1st edition, – Mamillan India Ltd., New Delhi, 1990.
- 6.National Building Code, ISI, New Delhi, 2005.
- 7.Ghalot P.S. and Dhir B.M., “*Construction Management*”, 2nd edition, Wiley-Eastern, 1999.
8. Peurifoy, R.L., “*Construction Planning, Equipment and Methods*”, 2nd edition, 1996.
