

NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	B Tech Civil Engineering
Course Code:	
Course Title:	Construction Project Management
Course Type:	Core
Year of Introduction:	2024-2025

L	T	Practical component				C
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Course Learning Outcomes (CLOs):

At the end of the course, the student will be able to –

1. appraise the need for a construction management (BL5)
2. analyse CPM and PERT network (BL4)
3. organize the construction site and resources (BL3)
4. apply appropriate quality and safety management practices (BL3)
5. select the appropriate tool for monitoring and controlling construction projects. (BL5)

Unit	Contents	Teaching Hours (Total 45)
Unit-I	Introduction Introduction to the construction industry and project management, need for construction management, construction project life cycle, project feasibility, and appraisal.	05
Unit-II	Network Analysis Construction Project planning, work breakdown structure, bar chart, Network analysis: basic terminology, logical relationship between activities, preparation of CPM networks: computation of various floats and critical path. PERT network: determining three-time estimates, computations of slack, and probability of project completion. Resource allocation: need, resource levelling, and smoothing.	15
Unit-III	Construction Site and Resource Organization Site organization: construction site layout including enabling structures and services, organizational structures. Human Resource Management: Needs and functions. Material Management: Scope, importance, functions, classification and codification, inventory management; Equipment Management: classification, selection, depreciation, evaluating replacement alternatives.	15
Unit-IV	Project Monitoring and Controlling Supervision, record keeping, common causes of time and cost overruns and corrective measures, updating network, time-cost trade-off, Introduction to Construction Project Management Software.	05

Unit-V Quality and Safety Management

05

Quality control: the concept of quality, quality control and quality assurance, use of manuals and checklists for quality control; Safety, Health, and Environment: accidents and their causes, effects and preventive measures, costs of accidents, occupational health problems in construction, impact of construction activities on environment.

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

**Suggested Readings/
References:**

- Jha, K.N., *Construction and Project Management*, Pearson
- Chitkara K. K., *Construction Project Management: Planning, Scheduling and Controlling*, Tata McGraw-Hill Publishing Company Ltd.
- Peurifoy R.L., *Construction Planning, equipment and methods*, McGraw-Hill
- Mubarak, S., *Project Scheduling and Control*, Wiley
- Schexnayder, K., Mayo, F., *Construction Management Fundamentals*, McGraw-Hill Publishing.
- Gahlot P.S. & Dhir B.M, *Construction Planning and Management*, New Age International Ltd.
- Punmia, B.C., Khandelwal, K.K., *Project Planning with PERT and CPM*, Laxmi Publications
- Hendrickson C., Au, T., *Project Management for Construction - Fundamental Concepts for Owners, Engineers, Architects and Builders*, Prentice Hall.
- Willis, E. M., *Scheduling Construction Projects*, John Wiley & Sons.

**Suggested List of
Exercises:**

Laboratory work will be based on the above syllabus with a minimum of 07 exercises to be incorporated. The students in a suitable group size will design and perform one experiment as a part of laboratory work.

Sr. No.	Name of Experiment/Exercise	Hours
1	Prepare Work Break Down structure for the construction project	06
2	Develop the network from the WBS	06
3	Network analysis, calculate floats and identify the critical path	04
4	Optimizing the time-cost of the project	02
5	Updating the network	02
6	Resource allocation	04
7	Use of planning and scheduling software	04