Course Code	Course Title	L	T	P	C
17CE012	CONSTRUCTION PLANNING AND PROJECT MANAGEMENT	3	0	0	3

Course Objectives:

1. To understand planning of construction projects
2. To understand scheduling of activities using network diagrams
3. To study the importance of cost and budget control
4. To understand quality control and safety in construction industry
5. To study various equipment being used for performing various construction activities.

Course Outcomes:

At the end of the course student will be able

1. To divide any project into manageable activities.
2. To perform scheduling using network techniques.
3. To familiarize with the importance of cost, budget, quality control and safety in construction field.
4. To understand the selection criteria behind the equipment used for performing various construction activities.

Activities:

1. Prepare WORK BREAKDOWN STRUCTURE for construction of 3 storey building and assign resources to each activity.
2. Schedule the given activities using bar chart, CPM and PERT methods.
3. Crash and level resources of activities according to the resource availability.
4. Articles in Workmen compensation act.
5. Usage of various equipment for construction activities like earth moving, erection, material transport, dewatering and concreting.

Skills:

1. Develop WBS of any structure and can estimate resources
2. Schedule activities using CPM, PERT
3. Crash and level resources to execute construction economically
4. Assess safety norms to be followed or being followed in construction
5. Decide the right equipment to be used in the construction.

UNIT- I: Introduction to Project Management:

Basic forms of organization with emphasis on Project and matrix structures- project life cycle-planning for achieving time, cost, quality- feasibility study.

Construction Planning

Basic concepts in the development of construction plans-choice of Technology and construction method-Defining Work Tasks-Precedence relationships among activities- Estimating Activity Durations-Estimating Resource Requirements for work activities- coding system.

UNIT- II: Scheduling Procedures and Techniques:

Relevance of construction schedules-Bar charts-The critical path method-Calculations for critical path scheduling. Activity float and schedules-Presenting project schedules-Critical path scheduling for Activity-on –node and with leads, Lags and Windows. Calculations for scheduling with leads, Lags and Windows-Resource oriented scheduling-Scheduling with resource constraints and precedencies- Use of Advanced Scheduling Techniques-Scheduling with uncertain durations-Crashing and time/cost tradeoffs-Improving the Scheduling process.

UNIT- III: Cost Control Monitoring and Accounting:
The cost control problem-The project Budget-Forecasting for Activity cost control-Financial accounting systems and cost accounts-Control of project cash flows-Schedule and Budget updates-Relating cost and schedule information.

UNIT-IV: Quality Control Monitoring and Safety Engineering:
Quality and safety concerns in Construction-Organizing for Quality and safety-Work and Material Specifications. Total Quality control- Quality control by statistical methods- Statistical Quality control with sampling by Attributes-Statistical Quality control by Sampling and Variables, safety measures and safety policies to be adopted- determination of safety parameters- personal protective equipment- Workmen Compensation Act.

UNIT- V: Construction Methods and Equipment:
Factors affecting selection of equipment - technical and economic, construction engineering fundamentals, Analysis of production outputs and costs, Characteristics and performances of equipment for Earth moving, Erection, Material transport, Pile driving, Dewatering, Concrete construction (including batching, mixing, transport, and placement) and Tunneling.

TEXT BOOKS:

1. Chitkara,K.K., "Construction Project Management Planning, Scheduling and Control", Tata McGraw-Hill Publishing Co., New Delhi, 1998.
2. Srinath,L.S., "PERT and CPM Principles and Applications", Affliated East West Press, 2001.
3. Sharma S.C., "Construction Equipment and Management", Khanna Publishers, New Delhi,2011.
4. Kumar Neeraj Jha, "Construction Project Management Theory & practice", Pearson,2012.
5. Punmia B.C., Khandelwal K.K., "Project planning and Control with CPM and PERT", 4th Edition, Laxmi Publications Pvt. Ltd., 2016.

REFERENCE BOOKS:

1. Chris Hendrickson and Tung Au, "Project management for Construction-Fundamentals Concepts for Owners, Engineers, Architects and Builders", Prentice Hall,Pitsburgh,2000.
2. Moder.J., C.Phillips and Davis, "Project management with CPM", PERT and Precedence Diagramming, Van Nostrand Reinhold Co., Third Edition, 1983.