

Course Title:
Project Planning and Control

Course Code:
Credit Units: 4

L	T	P/S	SW/FW	TOTAL CREDIT UNITS
2	0	2	2(SW)	4

Course Objectives:

The subject intends to impart basic knowledge, skills, tools and techniques involved in planning and execution of projects within the estimated time and as per the specified scope.

Objectives of this course are:

- To introduce students to project management processes involved in planning, scheduling, monitoring and control of construction projects including time scheduling and resource scheduling.
- To learn the use and application of advanced tools to the planning, monitoring, and control of construction projects; familiarize students with tools and techniques required for above processes.
- To develop expertise in dealing with problems such as uncertainty in projects performances.
- To learn the techniques for managing risks in projects.
- To introduce students to the concepts of Theory of Constraints.

Pre-requisites:

- Construction Project Management
- Fundamentals of Construction

Student Learning Outcomes:

- Upon completion of the subject, students will be able to:
- Understand the tools and methods necessary to be the leading construction managers
- Prepare Work Breakdown Structures for projects, Convert Scope of Works into scheduling activities
- Prepare, analyse and update bar charts and project schedules
- Identify and analyse resource requirements of a project
- Control costs by applying the earned value analysis and other techniques
- Understand the ways and techniques for time/cost optimization
- Recognize techniques to assess and manage risks

Course Contents/Syllabus:

	Weightage (%)
Module I -	
Concept of project management and phases of a project, Definition and scope of a project, parameters affecting a project, Project planning and implementation cycle, role of project manager, strategic planning and projects, phases of a project - Identification, execution, completion and commissioning, organizations for project.	10%
Module II - Work Breakdown Structure	
Definition, concept; role of project manager in developing WBS; Rules facilitating the preparation of WBS; Typical hierarchy in the WBS of a project; Desirable characteristics of work packages, Determinants having critical influence on the work packages; Project oriented WBS; Functionally	20%

oriented WBS; Integration of WBS and organization structure	
Module III – Project Scheduling and Planning	
Project scoping, Scheduling principles; Bar charts (Gantt charts); Milestone charts, S-curve, Line of Balance (LOB), Project network representation laddering and tags, Critical Path method: Arrow diagram; Network logic diagram, Time estimates; Slack; Total, free and independent floats, Crashing of Activities and Resource Levelling, PERT Network Analysis, Resource management and Scheduling techniques	25%
Module IV - Project Monitoring and Control	
Concept, Monitoring information system, Control cycle, Basic controlling parameters, Role of project management of control cycle, Basic planning and developing a classification system for controlling, communication management, performance management, time control, Project variance and performance indices, Corrective actions and updating project plans, Influence of decision making authority in project monitoring, Earned Value Analysis, Optimization models for decision making; Project Leadership, Audit and Closure	20%
Module V- Computer Application in Construction Project Planning	25%
MS Project- Introduction to MS Project; Project Scheduling with MS Project-Setting Up a New Project, Defining a Project Break-down Structure, Scheduling Basics, Advanced Task Scheduling. Resource Management in MS Project- Building a Basic Resource List, Allocation of Resources to Tasks, Advanced Resource Management, Resource Leveling; Tracking Project Schedules (With and Without Resources)-Setting Baseline, Schedule Updating (With and Without Resources), Tracking a Schedule through a Specific Date, Advanced Project Tracking in MS Project; Generation of Project Reports from MS Project-Organizing Project Details, Identifying Delays, Examining task/ resource cost, Generating Cash Flow Reports, Reporting Project Cost Variance, Creating Custom Reports, Formatting Views/ Displays; Multiple Project Management with MS Project. Earned Value Management with MS Project. Introduction to the key features of Primavera.	

Pedagogy for Course Delivery:

Based on the learning outcomes, pedagogy for course delivery includes theoretical lectures supported by industry related case studies/assignments. Student assignments would include individual and group submissions with focus on presentations and individual viva, if needed.

In conjugation with other subjects this course aims for the following competencies:

- Business Skills & Client Care
- Entrepreneurial Skills
- Managerial Skills
- Leadership Skills
- Procurement and tendering
- Programming and planning
- Project process and procedures
- Project administration and control
- Building control inspections

- Environmental audit (and monitoring)
- Inspection
- Analysis of client requirements
- Data Management
- Conduct rules, ethics and professional practice
- Health and safety
- Sustainability

Lab/ Practicals details, if applicable: Yes
Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)
50%	50%

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment				End Term Examination
Components (Drop down)	Project/Home Assignments	Class Test	Attendance	
Weightage (%)	15%	10%	5%	70%

Lab/ Practical/ Studio Assessment: N/A

	Continuous Assessment /Internal Assessment			End Term Examination
Components (Drop down)	Test/Assignment	Project/ Presentation	Attendance	
Weightage (%)	20%	25%	5%	50%

Text & References:

- Jha, K.N. (2011), Construction Project Management - Theory and Practice, Pearson Education, New Delhi.
- Chitkara, K.K. (2012), Construction Project Management - Planning, Scheduling and Controlling (2nd Ed.), Tata Mcgraw Hill.
- Patrick, C. (2012), Construction Project Planning and Scheduling, Pearson Education.
- Schexnayder, C. and Mayo, R.E. (2004), Construction Management Fundamentals, Mc Graw Hill.
- Fewings, P. (2005), Construction Project Management: An Integrated Approach, Taylor and Francis.
- Project Management Body of Knowledge (PMBOK), (5th Ed.), Published by Project Management Institute, USA, (2013).
- Construction Project Scheduling, by Callahan, Quackenbush and Rowings, published by McGraw Hill, 1992.
- Construction Planning and Scheduling, by Associated General Contractors of America, 1994.
- Design of Construction and Process Operations, by Halpin and Woodhead, published by John Wiley and Sons, 1976.

Any other Study Material:

- **Relevant reading material**
- Copy of presentation slides of lectures