

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE (CIVIL AND INFRASTRUCTURE ENGINEERING)**  
**CONSTRUCTION PLANNING AND MANAGEMENT**  
**SUBJECT CODE: 2174002**  
**B.E. 7<sup>th</sup> SEMESTER**

Type of Course: Core

Prerequisite: NIL

**Teaching and Examination Scheme**

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE	PA(M)	Viva	PA (I)	
3	2	0	5	70	30	30	20	150

**Course Contents**

Sr.No.	Topics	Hrs.	% Weightage
1	<b>Introduction to Construction Management:</b> Construction projects & their features, Purpose and functions of construction management, Construction management process & scope, Construction project life cycle, Construction project organisations, Project Team and their roles, Relevance of construction management in project success.	4	10
2	<b>Introduction to Construction Project Planning:</b> Work Breakdown structure (WBS), Planning & Scheduling inputs/data, Tools for project scheduling: Bar charts, Network diagrams, LOB method.	4	10
3	<b>Project Scheduling &amp; Monitoring using CPM:</b> AOA and AON Networks, Event time/Activity time calculations, Critical activities and critical paths, Activity floats, Time grid diagrams & resource allocation, Project updating, Time-cost optimization of networks, Cost control and monitoring using CPM networks, Network based Time & Cost variance analysis/Earned Value Analysis	18	45
4	<b>Advanced Networks and Scheduling Concepts/Tools:</b> PERT Network Analysis, Precedence Network Analysis, Line of Balance Methods	6	15
5	<b>Introduction to Software for Project Planning &amp; Scheduling:</b> MS PROJECT/PRIMAVERA	8	20
	<b>Total</b>	<b>40</b>	<b>100</b>

### **Suggested Specification table with Marks (Theory):**

<b>Distribution of Theory Marks</b>					
R Level	U Level	A Level	N	E Level	C
<b>10</b>	<b>25</b>	<b>20</b>	<b>20</b>	<b>15</b>	<b>10</b>

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above

### **Reference Book(s)**

1. Sharma, M.R., Fundamentals of Construction Planning and Management, S.K. Kataria & Son, New Delhi, 2012
2. Seetharaman, S., Construction Engineering & Management, Umesh Publications, 2007.
3. Srinath, L.S., PERT & CPM Principles and Applications, Tata McGraw Hill, New Delhi.
4. Peurifoy, L., Schexnayder, C.J. and Shapira, A., Construction Planning, Equipment and Methods, McGraw Hill, New Delhi, 8th Edition, 2010.
5. Punamia, B.C. and Khandelwal, K.K., Project Planning and Control with PERT and CPM, Laxmi Publications, New Delhi, 2004.
6. Gahlot, P.S. and Dhir, B.M., Construction Planning & Management, New Age International (P) Ltd., New Delhi
7. Chitkara, K. K., Construction Project Management Planning, Scheduling and Controlling, Tata McGraw Hill, New Delhi.

### **Course Outcome**

1. Student can demonstrate an ability to develop the various components of project controls including planning, scheduling, cost and resource management
2. Students will be able to demonstrate planning, scheduling and monitoring of projects using professional software.

### **List of Tutorials**

1. Work breakdown structure (WBS)
2. Development of Activity logical Relations
3. Bar charts
4. CPM network developments (AOA & AON)
5. CPM network analysis (Event times/activity times/floats)
6. Project updating
7. Project crashing (time-cost optimization)
8. Time-grid diagrams & resource allocation/resource histogram
9. Earned value analysis

10. PERT network analysis
11. PD network analysis
12. Line of Balance Method (LOB)
13. Software Based Project (To be issued at the beginning and to be developed throughout)

**List of Open Source Software/learning website:** [www.nptel.iitm.ac.in/courses/](http://www.nptel.iitm.ac.in/courses/)

**Active learning Assignments (AL) :** Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The Power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.