

Branch Name:	Civil Engineering
Program Code:	ET106
Course Name:	Construction Planning & Management
Course Code:	2ET1060702P
Pre-requisite Course:	An introductory knowledge of Surveying, and Engineering Drawing along with some basic understanding of Construction Technology and Civil Engineering practices.

Course Objective:

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.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Subject Contents:

List of Experiments / Practical

- 1. Study of Construction Project Management Concepts**
 - Case study on construction project life cycle, stakeholders, and organization structure
- 2. Preparation of Work Breakdown Structure (WBS)**
 - Develop WBS for a small construction project (building/road)
- 3. Preparation of Bar Chart (Gantt Chart)**
 - Scheduling of activities using bar charts
- 4. Network Diagram Preparation**
 - Draw AOA and AON network diagrams for given project data
- 5. CPM Calculations**
 - Perform forward pass and backward pass
 - Determine EST, EFT, LST, LFT and identify critical path
- 6 Float Calculation**
 - Calculate total float, free float, and independent float
- 7. Time-Scaled Network Diagram**
 - Preparation of time grid diagram for project scheduling
- 8. Resource Allocation**
 - Basic resource allocation and leveling for labour/equipment
- 9. Project Updating**
 - Update network based on project progress and delays

10. Time-Cost Optimization (Crashing)

- Determine cost slope and optimum project duration

11. Earned Value Analysis (EVA)

- Calculate PV, EV, AC, CPI, SPI for given data

12. PERT Analysis

- Calculate expected time and variance for project activities

13. Line of Balance (LOB) Method

- Application for repetitive construction projects

14. Software-Based Scheduling

- Use of MS Project / Primavera / ProjectLibre for:
 - Task scheduling
 - Resource allocation
 - Tracking and reporting

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

Course Learning Outcome:

CO1: Explain the concepts of construction management, project life cycle, and roles of project participants.

CO2: Apply project planning techniques such as WBS, bar charts, network diagrams, and Line of Balance (LOB).

CO3: Develop and analyze CPM networks (AOA/AON) to determine critical path, floats, and project duration.

CO4: Evaluate project performance using monitoring techniques, time-cost optimization, and Earned Value Analysis (EVA).

CO5: Use advanced scheduling methods and software tools like MS Project and Primavera for project planning and control.

Course Learning Outcomes (CLO):

After successful completion of the course the students shall be able to:

CLO	Descripti on	Bloom's Taxonomy Level
CLO1	Explain the concepts of construction management, project life cycle, and roles of project participants.	L-1, L-2
CLO2	Apply project planning techniques such as WBS, bar charts, network diagrams, and Line of Balance (LOB).	L-3
CLO3	Develop and analyze CPM networks (AOA/AON) to determine critical path, floats, and project duration.	L-4
CLO4	Evaluate project performance using monitoring techniques, time-cost optimization, and Earned Value Analysis (EVA).	L-5
CLO5	Use advanced scheduling methods and software tools like MS Project and Primavera for project planning and control.	L-3

L1- Remember, L2- Understand, L3- Apply, L4- Analyze, L5- Evaluate, L6- Create

Mapping of CLOs with Pos & PSOs

	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
Course Learning Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	M	M							L	L			M		
CLO2	M	H	M		L				M				H	M	
CLO3	H	H	M	L	M				M				H	M	
CLO4	M	H	M	M	M				M		L		H	H	
CLO5	M	M	M	L	H				M				M	H	M

H: High, M: Medium, L: Low