Lesson 6
Course Conclusion

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Outline

• Summary of Course Highlights

• Emerging Trends/Tools in Project Planning

• Industry Perspective – Prof. N. Raghavan

• Exam Pattern

• Acknowledgements
Week 1 – Introduction, Course context, Construction Project Management
Management & Project Management

• What is Project Management? Is Project Management an Art/Science?

• Objectives of a Project, Scientific Way of Managing of Objectives

• Construction Industry and National Growth

• Project Stakeholders, Project Phases, Project Organization

• Project Scheduling Levels (Scheduling Engineer Responsibilities)
Week 2 – Time Management, WBS, Gantt Chart

• **Time Management, Work Breakdown Structure (WBS), Gantt Charts**

• **Basics of Work Breakdown Structure (WBS)**

• **Tools for Time Management**

• **Gantt / Bar Chart - History, Representation, Progress Monitoring, Uses, Steps to draw a Bar Chart**

• **Bar Charts for Resource Usage, Pros and Cons**
Week 3 – Duration Estimation, Network Representation & Analysis - 1

- Factors influencing Productivity, Example for Ideal Productivity, Factored Productivity and Working Time Factor

- Piling Activity Example, Applicability of different methods to Estimate Activity Duration

- Types of Networks

- Networks - Introduction, Techniques

- Representing Results in a Bar Chart, AON Examples
Week 4 – Network Representation & Analysis-2, Two-Span Bridge

- Network Representation & Analysis -2; Two-Span Bridge: Scheduling, Network Analysis and Application
- Example 4, Usage of Floats for Project Decisions
- Two-Span Bridge: Activity Identification and Duration Estimation (Cont.,)
- Two-Span Bridge: Activity Identification and Duration Estimation
- Two-Span Bridge: Activity- Duration- Predecessors
- Review Network Analysis Concepts, Apply Network Analysis to Two-Span Bridge
- Two-Span Bridge: Network Analysis
- Two-Span Bridge: Resource Constraints in Network Logic
Week 5 – Time-Cost Trade-off (Crashing)

• *Time-Cost Trade-off* (Crashing)

• *Time-Cost trade-off: A*BCD Example Project, Steps for Crashing*

• *Time-Cost trade-off: Class Exercises*

• *Time-Cost trade-off: Problem- 3, Tabulation Approach*

• *Incorporating Factors such as Bonus and Penalty; Problem- 4*
Week 6 – Resource Scheduling

• **Resource Scheduling**

• **Projects & Resources, Example of Two Resources, Exercise, Two-Span Bridge Example**

• **Review Problem -1; Problem -2 (Cash Resource); Resolving Over-Allocation**

• **Problem 1 - Two Resources; Resolving Resource Allocation Problems**

• **Resource Profile Requirements**

• **Resource Levelling – Example Network**

• **Minimum Moment Concept**

• **Applying Improvement Factor - Illustration**
Week 7 – PDM, Project Monitoring & Control Basics

- Introduction to Precedence Diagramming method (PDM)
- PDM Network representation and its issues, network calculation
- PDM - Problem #1
- Issues in PDM, Negative lags, Problem #2 Solution
- PDM – Analysis with non-continuous duration, floats
- Defining Relationship (Based on Construction Method) – Simple Shed
- Project Monitoring & Control – Typical Project Time Monitoring Process, Levels and Frequency of updates
- Project control process, daily progress report, macro level update-data needed, Standard Progress Reports
- Application: Two Span Bridge – ES Schedule % Complete measurement
Week 8 – Project Monitoring & Control EV Concepts, Probabilistic Scheduling PERT

- **Earned Value Analysis (EVA)** –
  - % Complete of the Project;
  - Cost & Schedule Performance – CPI; SPI
  - Forecasts
  - EVA Examples

- **Uncertainty in Project Schedules**
  - PERT Background & Assumptions
  - PERT – Stepwise Procedure
  - PERT Examples

- **Course Summary Conclusion**