Construction Project Scheduling and Resource Leveling Training Course

Professional Development Training Course Outline

Category	Civil Engineering and Infrastructure Management	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Effective construction project scheduling and resource leveling are paramount to the successful and efficient delivery of civil engineering and building projects in today's demanding environment. Construction Project Scheduling and Resource Leveling Training Course equips professionals with essential techniques to plan, manage, and optimize project timelines and resource allocation effectively. Project schedules, often complex and dynamic, serve as the backbone for coordinating various trades, materials, and equipment. However, simply creating a schedule isn't enough; projects frequently face resource constraints?whether it's limited skilled labor, specialized equipment, or available funds?which can lead to delays, cost overruns, and inefficiencies. Resource leveling is a critical technique that optimizes the use of these limited resources by adjusting activity start and finish times within their available float, aiming to create a smoother, more efficient demand curve without extending the project's overall duration. Mastering these interconnected disciplines ensures that projects are not only completed on time and within budget but also executed with a consistent and sustainable flow of resources. This course is meticulously designed to equip civil engineers, project managers, site managers, planners, schedulers, quantity surveyors, and contractors with the expert knowledge and practical methodologies to develop robust project schedules and effectively level resources in complex construction environments. The program focuses on scheduling techniques (CPM, PERT), critical path analysis, resource identification and allocation, various resource leveling techniques, software applications for scheduling, and practical considerations for implementation, blending rigorous analytical frameworks with practical, hands-on application, global case studies (including those from Kenya), and interactive scheduling and leveling exercises. Participants will gain the strategic foresight and technical expertise to confidently manage project timelines and optimize resource utilization, fostering unparalleled project efficiency, cost control, and timely delivery, thereby securing their position as indispensable leaders in successful construction project management.

Programme Curriculum

Construction Project Scheduling and Resource Leveling Training Course

Introduction

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Course Objectives

Upon completion of this course, participants will be able to:

1. **Analyze core concepts and strategic responsibilities** of **construction project scheduling and resource leveling.**
2. **Master sophisticated techniques** for **developing comprehensive Work Breakdown Structures (WBS)** and defining project activities.
3. **Develop robust methodologies** for **applying Critical Path Method (CPM)** and Program Evaluation and Review Technique (PERT) for schedule development.
4. **Implement effective strategies** for **identifying the critical path, calculating floats**, and determining project duration.
5. **Manage complex considerations** for **identifying, categorizing, and allocating various types of project resources** (labor, equipment, materials).
6. **Apply robust strategies** for **performing resource leveling** to optimize resource utilization and manage over-allocations.
7. **Understand the deep integration of time-cost trade-offs** and their impact on scheduling decisions.
8. **Leverage knowledge of global best practices and lessons learned** in construction scheduling and resource management.

9. **Optimize strategies for utilizing project management software** (e.g., Primavera P6, Microsoft Project) for complex scheduling tasks.
10. **Formulate specialized recommendations** for **monitoring schedule progress and managing schedule deviations** effectively.
11. **Conduct comprehensive assessments** of resource histograms and S-curves to analyze project performance.
12. **Navigate challenging situations** such as **unforeseen delays, resource unavailability, and scope changes** in project execution.
13. **Develop a holistic, systematic, and software-supported approach** to **construction project scheduling and resource leveling,** ensuring efficient and timely project delivery.

Target Audience

This course is designed for professionals interested in Construction Project Scheduling and Resource Leveling:

1. **Civil Engineers & Construction Engineers:** Involved in project execution and oversight.
2. **Project Managers & Assistant Project Managers:** Responsible for overall project planning and control.
3. **Project Planners & Schedulers:** Dedicated to developing and maintaining project schedules.
4. **Site Managers & Superintendents:** Managing daily operations and resource deployment.
5. **Quantity Surveyors & Cost Engineers:** Involved in resource costing and budget management.
6. **Contractors & Subcontractors:** Seeking to improve their planning and execution efficiency.
7. **Procurement Specialists:** Coordinating material and equipment delivery with project schedules.
8. **Consultants:** Providing advisory services in project controls and management.

Course Duration: 5 Days

Course Modules

- **Module 1: Foundations of Construction Project Scheduling**
  - **Introduction to Project Planning and Control**: Importance in construction.
  - **Work Breakdown Structure (WBS)**: Decomposing projects into manageable activities.
  - **Activity Definition and Sequencing**: Identifying dependencies (finish-to-start, start-to-start, etc.).
  - **Estimating Activity Durations**: Techniques for realistic time estimations.
  - **Overview of Scheduling Techniques**: Bar charts (Gantt charts) and network diagrams.
- **Module 2: Critical Path Method (CPM) and Network Analysis**
  - **Drawing Network Diagrams**: Activity-on-Node (AON) and Activity-on-Arrow (AOA) methods.
  - **Forward Pass and Backward Pass Calculations**: Determining Early Start/Finish and Late Start/Finish.
  - **Identifying the Critical Path**: The longest path determining project duration.
  - **Calculating Total Float and Free Float**: Understanding schedule flexibility.
  - **Program Evaluation and Review Technique (PERT)**: Handling uncertainty in activity durations.
- **Module 3: Resource Identification and Allocation**
  - **Types of Project Resources**: Labor, equipment, materials, and money.
  - **Resource Breakdown Structure (RBS)**: Categorizing and defining resources.
  - **Resource Estimation and Availability**: Assessing resource needs and constraints.
  - **Resource Histograms**: Visualizing resource demand over time.
  - **Initial Resource Loading**: Assigning resources to activities.
- **Module 4: Principles and Techniques of Resource Leveling**
  - **Defining Resource Leveling**: Smoothing resource demand to avoid peaks and valleys.

    - **Objectives of Resource Leveling**: Reducing over-allocation, minimizing idle time, optimizing resource utilization.
    - **Heuristic Resource Leveling Methods**: Prioritization rules (e.g., shortest duration, lowest float).
    - **Optimization-Based Resource Leveling**: Using algorithms to find optimal solutions.
    - **Trade-offs in Resource Leveling**: Time-cost implications, impact on critical path.
- **Module 5: Advanced Scheduling and Resource Management Concepts**
    - **Time-Cost Trade-offs and Crashing**: Accelerating project completion by adding resources.
    - **Lag and Lead Times**: Adjusting activity relationships for practical constraints.
    - **Schedule Compression Techniques**: Fast-tracking and crashing.
    - **Baseline Schedule Development**: Establishing a reference for performance measurement.
    - **Introduction to Earned Value Management (EVM)**: Monitoring schedule and resource performance.
- **Module 6: Utilizing Project Management Software for Scheduling**
    - **Overview of Popular Software**: Microsoft Project, Primavera P6 (conceptual understanding, no full software training).
    - **Setting up a Project in Software**: Entering WBS, activities, durations, and dependencies.
    - **Resource Allocation in Software**: Assigning resources and costs.
    - **Performing Resource Leveling in Software**: Using built-in functions.
    - **Generating Reports and Visualizations**: Gantt charts, resource histograms, S-curves from software outputs.
- **Module 7: Monitoring, Control, and Risk Management in Scheduling**
    - **Schedule Monitoring Techniques**: Progress updates, actual vs. planned.
    - **Managing Schedule Deviations**: Identifying causes and implementing corrective actions.
    - **Re-scheduling and Baseline Updates**: Adapting to changes.
    - **Scheduling Risks and Mitigation Strategies**: Identifying potential delays and developing responses.
    - **Communication of Schedule Status**: Reporting to stakeholders and team members.
- **Module 8: Practical Application and Case Studies**
    - **Analyzing Real-World Construction Project Schedules**: Critiques of actual project plans.
    - **Case Studies in Resource Leveling Challenges**: Examining complex scenarios and solutions.
    - **Interactive Scheduling Exercise**: Participants develop a detailed schedule for a hypothetical construction project (e.g., a commercial building or road section in Nairobi).
    - **Resource Leveling Simulation**: Applying learned techniques to optimize resource allocation in the hypothetical project.
    - **Developing a Project Controls Action Plan**: Participants outline steps to improve scheduling and resource leveling practices in their own organizations.

Training Methodology

- **Interactive Workshops:** Facilitated discussions, group exercises, and problem-solving activities.
- **Case Studies:** Real-world examples to illustrate successful community-based surveillance practices.
- **Role-Playing and Simulations:** Practice engaging communities in surveillance activities.
- **Expert Presentations:** Insights from experienced public health professionals and community leaders.
- **Group Projects:** Collaborative development of community surveillance plans.
- **Action Planning:** Development of personalized action plans for implementing community-based surveillance.
- **Digital Tools and Resources:** Utilization of online platforms for collaboration and learning.

- **Peer-to-Peer Learning:** Sharing experiences and insights on community engagement.
- **Post-Training Support:** Access to online forums, mentorship, and continued learning resources.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

- Participants must be conversant in English.
- Upon completion of training, participants will receive an Authorized Training Certificate.
- The course duration is flexible and can be modified to fit any number of days.
- Course fee includes facilitation, training materials, 2 coffee breaks, buffet lunch, and a Certificate upon successful completion.
- One-year post-training support, consultation, and coaching provided after the course.
- Payment should be made at least a week before the training commencement to Fineskill Training Center account, as indicated in the invoice, to enable better preparation.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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