Introduction:

Effective decision-making is an essential aspect of operations and maintenance, where decisions can have a direct impact on efficiency, cost, and performance. This **Operation and Maintenance Decision Analysis** course focuses on the methods and practices used in decision analysis, highlighting the importance of a lean approach and responsiveness to customer requirements. This course is specifically designed for professionals in the operation and maintenance sectors, equipping them with the necessary tools and frameworks to make informed decisions that optimize performance and reduce costs.

In an environment where decisions are made continuously, the ability to evaluate multiple alternatives and understand the consequences of decisions is crucial. This workshop will introduce advanced decision analysis techniques, helping participants understand how to use them in real-world operational settings.

Enhancements with Decision Analysis:

Through this course, participants will deepen their understanding of decision analysis and its application in operations and maintenance. Key decision-making tools and frameworks will be explored, helping participants make more structured, informed, and efficient decisions.

Key Learning Outcomes:

- Understand the **decision analysis process** and its role in operations.
- Learn how to apply **Multi-Criteria Decision-Making (MCDM)** tools to practical issues.
- Gain proficiency in **risk management** strategies, such as **Failure Mode & Effect Analysis (FMEA)**.
- Discover how **Monte Carlo Simulation** and **decision tree analysis** can be used for optimization and risk evaluation.
- Implement a **pragmatic action plan** that aligns decision analysis with operational strategy.

Targeted Groups:

This course is tailored for professionals in operational and maintenance roles, such as:

- **Operation Professionals**
- **Maintenance Professionals**
- **Reliability Engineers**
- **Key Operations Supervisors**
- **Internal Improvement Consultants**

Conference Objectives:

By the end of this conference, participants will be able to:

1. Use improved decision-making frameworks to enhance productivity.
2. Tackle asset management challenges effectively, improving planning and scheduling.
3. Perform detailed failure analysis to identify root causes of issues.
4. Integrate decision analysis techniques into their operational strategies and track measurable improvements.
5. Optimize resource allocation and minimize equipment failure costs.
6. Apply advanced tools such as **Monte Carlo Simulation** and **Analytic Hierarchy Process (AHP)** for better decision outcomes.

Targeted Competencies:

After completing this conference, participants will be able to:

- Break down complex problems into manageable components.
- Effectively rank alternatives based on comprehensive decision criteria.
- Apply **MCDM** and other operational research tools.
- Align decisions with specific goals and criteria, ensuring optimal outcomes.

Conference Content Overview:

Unit 1: Introduction to Decision Making

- **Scope of Decision Making**: Importance and nature of decision-making in operations.
- **Projective Analysis**: Choosing between different outcomes and understanding the impact of decisions.
- **Decision Tree Analysis**: Crafting decision models and evaluating high-consequence events.
- **Monte Carlo Simulation**: Optimizing decision-making and evaluating its advantages and limitations.

Unit 2: Implementing Multiple Criteria Decision Analysis (MCDA)

- **Decision Analysis Overview**: The fundamentals and relevance of decision analysis.
- **Pitfalls in Decision-Making**: Identifying common mistakes and how to avoid them.
- **Setting Guidelines**: Establishing a robust decision analysis framework.

Unit 3: The Analytic Hierarchy Process (AHP)

- **Introduction to AHP**: Understanding the components and structure of the AHP model.
- **Constructing Comparative Matrices**: Techniques for evaluating alternatives using AHP.
- **Sensitivity Analysis**: How to evaluate consistency and adjust models based on new data.
- **Real-World Applications**: Examples, such as maintenance strategies and planning for large projects like highways.

Unit 4: Risk Management through Failure Mode & Effect Analysis (FMEA)

- **Risk Mitigation Strategies**: Using FMEA to identify and manage risks in maintenance operations.
- **Fault Tree Analysis**: Techniques for mapping and analyzing system failures.
- **Risk Priority Numbers**: Assigning priority to risks and managing equipment criticality.

Unit 5: MRP and ERP Systems

- **Enterprise Resource Planning (ERP)**: Understanding ERP systems and their role in resource planning.
- **Material Requirements Planning (MRP)**: Techniques for managing materials and production resources.
- **Planning and Control Mechanisms**: How to optimize scheduling and resource management.

Unit 6: Optimum Performance Measurement

- **Challenges in Performance Measurement**: Addressing common obstacles in assessing maintenance performance.
- **Continuous Improvement**: Using performance measures as part of ongoing process improvements.
- **Best Practices in Performance Measurement**: Identifying desirable features and establishing benchmarks.

Unit 7: Overall Equipment Effectiveness (OEE) for Maintenance

- **OEE as an Improvement Program**: Implementing OEE for maximizing equipment efficiency.
- **Lean Maintenance**: Using OEE metrics to reduce waste and optimize performance.
- **Six Big Losses**: Analyzing the major factors impacting maintenance efficiency.

Unit 8: The House of Quality

- **Design Evaluation**: Translating customer feedback into actionable design improvements.
- **Practical Applications**: Using the House of Quality in operational and maintenance decisions.

Unit 9: Decision Analysis for Maintenance Optimization

- **Computerized Maintenance Management Systems (CMMS)**: Leveraging CMMS to maximize maintenance effectiveness.
- **Optimizing Maintenance Policies**: How to make decisions that enhance maintenance outcomes.
- **Future Trends**: Understanding the evolution of next-generation maintenance systems and how to incorporate them.

Conclusion:

This **Operation and Maintenance Decision Analysis** workshop provides attendees with the essential decision-making tools to optimize their daily operations. With a comprehensive focus on advanced decision analysis methods, risk management, and performance improvement, this conference equips participants with the skills to make better, more informed decisions. Whether you are involved in maintenance planning, reliability engineering, or resource management, this workshop will provide the frameworks and strategies needed to improve performance and reduce costs across your organization.