



Data-Driven Maintenance Scheduling and Simulation Training Course

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Overview

Data-Driven Maintenance Scheduling and Simulation Training Course is a one-week course for maintenance planners, reliability engineers, asset managers, operations analysts, and digital transformation professionals, who leave with a Maintenance Scheduling Simulation Pack. Participants connect condition signals and work history to priorities, define resources and constraints, represent assets and crews as agents, test disruptions and policies, and govern schedule execution. The course links analytics to practical planning decisions. Agile Leaders Training Center develops data-driven maintenance scheduling capability.

Who Should Attend

- Maintenance planning functions responsible for executable weekly and shutdown schedules
- Reliability functions responsible for condition evidence and failure priorities
- Asset management functions responsible for cost, risk, and performance choices
- Operations functions responsible for access windows and production coordination
- Analytics functions responsible for work-order and sensor data preparation
- Digital transformation functions responsible for connected maintenance workflows

The course assumes participants can interpret maintenance work orders, equipment hierarchies, basic reliability measures, and schedules, and leaves out sensor installation, production coding, advanced machine-learning development, and software certification.

Departments and Industries

The course supports departments and industries coordinating maintenance resources around asset condition and operating requirements.

- Maintenance, reliability, asset management, and engineering
- Operations, production, planning, and digital transformation
- Manufacturing, energy, utilities, and process industries
- Transport, logistics, facilities, and infrastructure
- Mining, construction, aviation, and marine operations

Learning Objectives

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



- Build a scheduling dataset from connected and historical sources
- Analyze condition, failure, backlog, and work-order signals
- Prioritize work by asset criticality and execution risk
- Build agent-based maintenance simulation scenarios
- Compare resource, policy, and disruption alternatives
- Apply schedule-control measures and governance rules

Course Agenda

Day 1: Frame the Scheduling System

- Asset, Work, and Decision Boundary Map
- Maintenance Policy and Trigger Catalogue
- Asset Criticality and Risk Priority Matrix
- Planning Horizon and Schedule Freeze Rules
- Maintenance Scheduling Data Model

Day 2: Prepare Connected Maintenance Data

- IoT Signal and Condition Indicator Register
- CMMS, Work-Order, and Failure History Mapping
- Big-Data Ingestion and Processing Flow
- Timestamp, Asset-ID, and Event Quality Checks
- Feature, Threshold, and Alert Governance

Day 3: Build the Scheduling Logic

- Job Priority and Due-Date Logic
- Crew Skill, Tool, Spare, and Permit Constraints
- Production Window and Asset Access Rules
- Dependency, Bundling, and Route Decisions
- Maintenance Resource Constraints Register

Day 4: Simulate Assets and Resources

- Agent, State, Event, and Interaction Definition
- Agent-Based Maintenance Simulation Map
- Failure, Request, Queue, and Service Logic
- Experiment, Scenario, and Replication Plan
- Validation, Calibration, and Assumption Log



Day 5: Control the Maintenance Schedule

- Exercise: Test Condition-Triggered Work
- Exercise: Compare Crew and Spare Policies
- Exercise: Model Breakdown and Access Disruptions
- Exercise: Review Schedule Performance Measures
- Capstone: Maintenance Scheduling Simulation Pack

Practical Exercises

The course uses suggested activities based on connected industrial assets, constrained maintenance teams, and changing operating windows.

- Suggested activity: combine asset, sensor, work-order, failure, resource, and calendar fields into a governed scheduling dataset.
- Suggested activity: design priority rules that balance condition, criticality, due dates, dependencies, permits, and production access.
- Suggested activity: represent assets, crews, spares, requests, queues, failures, and maintenance actions in a simulation design.
- Suggested activity: compare baseline and disruption scenarios and convert findings into schedule controls and review actions.

FAQs

Who suits a data-driven maintenance scheduling course, and what does it assume?

Maintenance, reliability, asset, operations, analytics, and digital functions suit the course; it assumes familiarity with work orders, equipment hierarchies, basic reliability measures, and schedules.

How does data-driven maintenance scheduling differ from conventional planning training?

It combines work history, condition signals, explicit resource constraints, simulation experiments, and execution controls, while conventional training may concentrate on static job plans, calendars, and manual sequencing.

How does IoT maintenance scheduling use condition signals?

Condition signals become governed indicators, thresholds, alerts, and work triggers that influence priority and timing alongside criticality, due dates, production windows, and available resources.

What does agent-based maintenance simulation represent?

It represents individual assets, crews, vehicles, spares, requests, queues, failures, states, and decision rules so their interactions produce schedule and performance outcomes.



Which maintenance schedule controls matter after simulation?

Useful controls cover frozen work, readiness, resource loading, schedule compliance, emergency work, overdue risk, deferrals, data quality, assumption review, and scenario revalidation.

Conclusion

Participants take back a Maintenance Scheduling Simulation Pack containing the data model, condition indicators, priority logic, constraint register, agent map, experiment plan, scenarios, validation log, measures, and control dashboard. It changes disconnected asset signals into testable scheduling decisions. The pack supports planning, cross-functional review, disruption analysis, execution control, and continuous schedule improvement.



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