MeTec
EMPWER YOUR TECHNICAL SKILLS

PREDICTIVE ANALYTICS FOR OPERATIONS AND MAINTENANCE OPTIMIZATION

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PREDICTIVE ANALYTICS FOR OPERATIONS AND MAINTENANCE OPTIMIZATION

OVERALL DESCRIPTION:

Equipment failures and unplanned downtime are costly and disruptive. This course is designed to bridge the gap between your operational data and actionable insights, empowering you to move from a "fix-it-when-it-breaks" model to a sophisticated, predictive approach. We'll equip you with the practical skills to leverage predictive analytics, enabling you to anticipate equipment failures, optimize maintenance schedules, and significantly improve operational efficiency. This isn't just about theory; it's a hands-on journey to transform your maintenance processes using real-world data and proven analytical techniques.

Course Objectives:

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

- Articulate the value and business case for implementing a predictive maintenance program.
- Identify and source relevant data from operational assets, sensors, and maintenance records.
- Perform essential data preprocessing steps, including cleaning and feature engineering, to prepare data for modeling.
- Apply and evaluate a range of machine learning models for predicting equipment failure.
- Interpret model results to generate actionable insights and make data-driven decisions about maintenance scheduling.
- Develop a clear roadmap for deploying a predictive analytics solution within your organization.

Course Outline:

1. **Introduction to Predictive Maintenance:** Understanding the shift from reactive to proactive strategies and the core principles of predictive analytics.
2. **Data Acquisition and Management:** Identifying key data sources (SCADA, sensors, work orders), data formats, and the importance of data quality.

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Course Outline:

3. Data Preprocessing and Feature Engineering: Practical techniques for data cleaning, handling missing values, and creating meaningful features that drive model accuracy.

4. Machine Learning Fundamentals for Predictive Maintenance: An overview of supervised and unsupervised learning, and an introduction to relevant models like classification and regression trees, random forests, and survival analysis.

5. Model Building and Evaluation: A hands-on session where you'll build predictive models using provided datasets, learning how to tune models and evaluate their performance using industry-standard metrics.

6. From Prediction to Action: Interpreting model outputs, setting alert thresholds, and integrating predictive insights into your maintenance planning and scheduling processes.

7. Case Studies and Implementation Roadmap: Analyzing successful real-world examples and developing a step-by-step plan for piloting and scaling a predictive maintenance program within your own organization.

WHO SHOULD ATTEND?

This course is ideal for operations and maintenance managers, reliability and asset engineers, data analysts, and supervisors who are responsible for asset performance and maintenance planning. It is also highly beneficial for IT and business professionals who need to understand how predictive analytics can drive business value in an industrial context. No advanced programming or data science background is required, but a basic understanding of operational data is helpful.

Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.