Foundations of Industrial Maintenance and Operations Training Course



19 - 23 Oct 2026

Cape town

4600 € (Per Person)

Ref: #INM5407_265762

Course Introduction / Overview:

This training course provides a foundational yet comprehensive understanding of modern industrial maintenance and operations. It is designed to bridge the gap between theoretical knowledge and practical application, equipping participants with the essential skills to ensure operational efficiency and safety. The course curriculum is built upon recognized industry standards and best practices, drawing from the expertise of figures like Anthony M. Smith, an author well known for his contributions to the field. His seminal work, "Introduction to Industrial Engineering," provides a structured approach to asset management, operational planning, and process optimization. This program at BIG BEN Training Center covers a wide array of topics, from basic electrical and mechanical systems to safety protocols and the principles of preventive and predictive maintenance. We also dive into the fundamentals of material handling, quality control, and the integration of smart technologies in a manufacturing setting. Participants will learn how to read technical drawings, use diagnostic tools, and implement a systematic approach to identifying and resolving common operational issues. The course is a critical first step for anyone looking to build a career in industrial maintenance or operations, providing a solid base of knowledge and practical skills that are essential in today's complex industrial environments.

Target Audience / This training course is suitable for:

- Entry-level maintenance technicians.
- Operations and production floor staff.
- Facility and plant supervisors.
- Maintenance and reliability engineers.
- Quality control specialists.
- Health and safety officers.
- Government agency personnel managing public facilities.

Target Sectors and Industries:

- Manufacturing and production.
- Logistics and warehousing.
- Energy and utilities.
- Chemical processing.
- Food and beverage.
- Aerospace and defense.
- Government agencies and equivalents are responsible for public infrastructure.

Target Organizations Departments:

- Maintenance.
- Operations.
- Production.
- Quality assurance.
- Health, safety, and environment (HSE).
- Supply chain and logistics.
- Engineering.

Course Offerings:

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

- Apply fundamental principles of industrial maintenance.
- Perform basic troubleshooting for mechanical and electrical systems.
- Implement safety protocols and best practices in an industrial setting.
- Understand and apply preventive and predictive maintenance techniques.
- Interpret technical drawings and schematics.
- Optimize operational efficiency and productivity.
- Contribute to a culture of continuous improvement and reliability.
- Utilize diagnostic tools for routine maintenance tasks.

Course Methodology:

BIG BEN Training Center uses a hands-on, interactive training methodology designed to make complex topics easy to understand and apply. Our approach combines instructor-led sessions with practical exercises, case studies, and group discussions. For example, participants might work in small teams to simulate common equipment failure, using their newly acquired skills to diagnose the problem. The curriculum emphasizes active learning over passive listening, ensuring that participants are fully engaged and can retain the information effectively. We use a variety of tools, from visual presentations to real-world equipment models, to demonstrate key concepts and techniques. Instructors provide continuous feedback, guiding participants as they develop their problem-solving abilities. Case studies drawn from real industrial scenarios are a core part of the course, allowing learners to apply theoretical knowledge to realistic challenges. This methodology ensures that every participant not only understands the principles of industrial maintenance and operations but also gains the practical experience needed to excel in their roles.

Course Agenda (Course Units):

Unit One: Introduction to Industrial Maintenance and Safety

- Fundamentals of industrial maintenance.
- Understanding maintenance types: preventive, corrective, and predictive.
- Workplace safety protocols and personal protective equipment (PPE).
- Lockout/tagout (LOTO) procedures.
- Hazard identification and risk assessment.
- Basic tool usage and maintenance.
- The role of a maintenance technician.

Unit Two: Mechanical Systems Fundamentals

- Principles of mechanical systems.
- Understanding power transmission components: belts, chains, and gears.
- Fundamentals of bearings and lubrication.
- Troubleshooting common mechanical issues.
- Reading and interpreting mechanical schematics.
- Basics of pumps and valves.
- Introduction to fluid power systems.

Unit Three: Basic Electrical and Control Systems

- Fundamentals of electricity and circuits.
- Reading electrical schematics.
- Understanding common electrical components.
- Basic troubleshooting of electrical systems.
- Introduction to control systems and PLCs.
- Motor control circuits.
- Safety procedures for working with electricity.

Unit Four: Operations and Process Optimization

- Introduction to learning manufacturing principles.
- Understanding process flow and efficiency.
- Material handling and storage best practices.
- Quality control and inspection techniques.
- Understanding common causes of downtime.
- Using data to improve operations.
- Continuous improvement methodologies.

Unit Five: Predictive and Proactive Maintenance

- Introduction to predictive maintenance (PdM).
- Using condition monitoring techniques like vibration analysis and thermal imaging.
- Basics of non-destructive testing (NDT).
- Developing a maintenance schedule.
- Introduction to computerized maintenance management systems (CMMS).
- Predicting equipment failure.
- Final project: a comprehensive maintenance plan.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can a proactive approach to industrial maintenance not only prevent costly equipment failures but also fundamentally transform a company's entire operational and safety culture?

What unique qualities does this course offer compared to other courses?

This training course is designed to provide a cohesive and practical foundation for a career in industrial maintenance and operations. Unlike many courses that focus on a narrow area, our curriculum provides a holistic view of the industrial environment, connecting mechanical, electrical, and operational knowledge. Participants learn not just how to fix things, but why they fail in the first place, and how to prevent future issues through proactive maintenance strategies. The course stands out due to its heavy emphasis on real-world application, incorporating numerous hands-on exercises and case studies that are directly relevant to the challenges professionals face every day. Our content, developed by BIG BEN Training Center, integrates established academic principles with modern industry practices, ensuring that the knowledge gained is both robust and current. This dual focus on foundational theory and practical skills gives participants a significant advantage, empowering them to become valuable assets in their organizations from day one.