

€ TRAINING

Fundamentals of Mechanical Technology





Fundamentals of Mechanical Technology

Introduction:

Mechanical technology encompasses the principles, tools, and systems used to design, develop, and maintain mechanical devices and processes. It plays a critical role in enhancing efficiency, automation, and innovation across various industries. This training program provides comprehensive instruction on leveraging fluid mechanics principles to optimize the design and operation of hydraulic systems. Through it, participants will be equipped with the knowledge and skills necessary to design efficient and reliable hydraulic systems for various industrial applications.

Program Objectives:

At the end of this program, participants will be able to:

- Perform NDE Non-Destructive Examination for static and rotating equipment.
- Select proper materials for static and rotating equipment.
- Explore the principle of operation and design for this equipment.
- Protect the equipment from corrosion.
- Identify different mode failures of static and rotating equipment.

Targeted Audience:

- Mechanical Engineers.
- Maintenance and Operations Technicians.
- Process Engineers.
- Technical Managers and Supervisors.
- Equipment and Asset Managers.

Program Outlines:

Unit 1:

Introduction to Mechanical Technology:

- Overview of mechanical engineering principles.

- Introduction to various mechanical systems and components.
- Understanding the importance of mechanical technology in different industries.
- Basic concepts of mechanical design and analysis.
- Historical background and evolution of mechanical technology.

Unit 2:

Mechanics and Materials:

- Fundamentals of statics and dynamics.
- Properties of engineering materials such as metals, polymers, and ceramics.
- Stress, strain, and deformation analysis.
- Mechanical behavior of materials under different loading conditions.
- Introduction to material testing techniques.

Unit 3:

Machine Elements and Mechanisms:

- Machine components such as gears, bearings, shafts, and couplings.
- Analysis of mechanical power transmission systems.
- Introduction to mechanical linkages and mechanisms.
- Understanding the principles of motion control and transmission.

Unit 4:

Thermodynamics and Heat Transfer:

- Basics of thermodynamics and heat transfer principles.
- Understanding energy conversion processes in mechanical systems.
- Heat transfer mechanisms such as conduction, convection, and radiation.
- Analysis of thermal systems and heat exchangers.
- How thermodynamics and heat transfer are applied in engineering design.

Unit 5:

Fluid Mechanics and Hydraulic Systems:

- Fundamentals of fluid mechanics and fluid properties.
- Analysis of fluid flow behavior in pipes, channels, and ducts.
- Hydraulic systems and components.
- Hydraulic principles such as Pascal's law and Bernoulli's equation.
- Fluid mechanics in the design and operation of hydraulic systems.