# Fundamentals of Mechanical Systems

FESTO

Level 1

Mechanical systems are the driving force behind most industrial applications, with gears, drives, bearings, pulleys, and more found in nearly everything that moves. The Mechanical Systems certification covers the installation, use, maintenance, and troubleshooting of mechanical drive components and systems. The curriculum is organized into topics focused on industry-relevant components, emphasizing practical, hands-on tasks to develop expertise in operating and maintaining these essential systems.

**Industry Recognized Certification Topics**

- Safety protocols and risk management strategies
- Mechanical system design principles
- Mechanical properties of materials
- Introduction to mechanical drive systems
- Belt, chains, and gear drives
- Couplings and shaft alignment
- Bearings and linear bearings
- Gaskets, seals, ball screws, clutches, and brakes
- Laser alignment, lubrication, and vibration analysis

**Units - 26 / Labs - 26**

**Industry Recognized Certification Competencies**

- Machine safety
- Identification of the components of a mechanical system, including: belt drives, chain drives, gear drives, & couplings
- Important calculations: speed, torque, force and system efficiency
- Mechanical drawing
- Motors, keys, and soft foot alignment
- Belt drives, chain drives, alignment and couplings, lubrication
- Gear drives, bearings, gaskets and seals
- Understand and demonstrate techniques for diagnosing and solving vibration issues
- Describe strategies for maintaining system reliability and longevity
- Understand environmental consideration and mitigation strategies
- Clutches and brakes, ball screw and linear bearings