

Course Title	Mechanical Engineering for Non-Mechanical Engineers
Course Duration	5 Days (9 am to 4 pm)
Location	Middlesbrough, Teesside.

Who should attend this course and why?

This course is aimed at engineers and technicians from a non mechanical background.

Course Pre-requisites

Candidates should possess a reasonable command of written and spoken English.

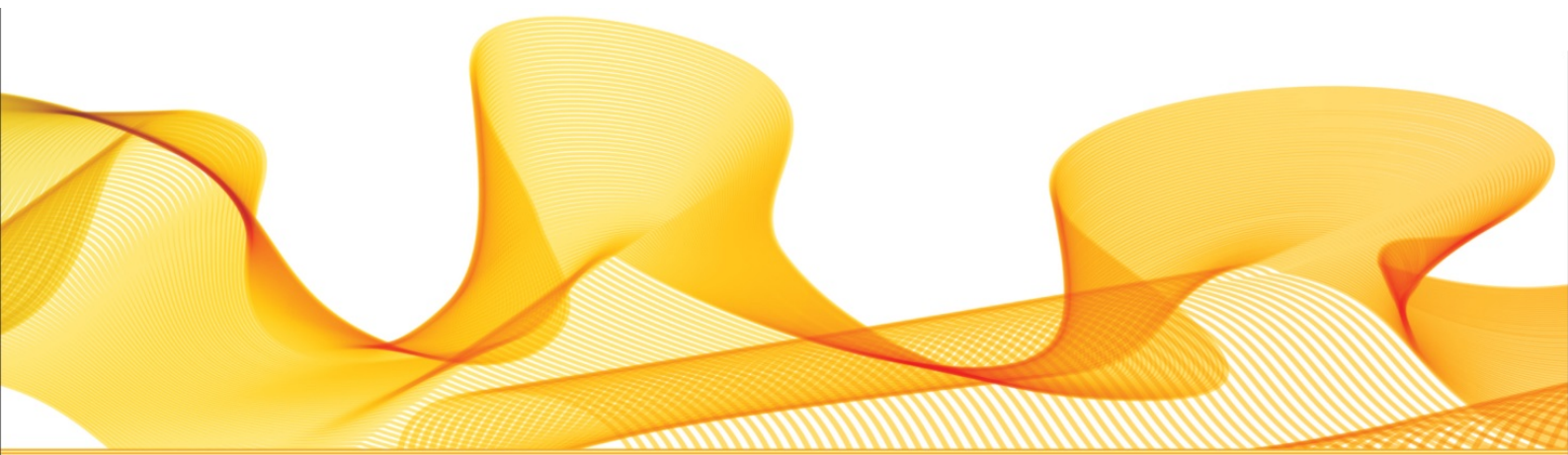
The candidate is required to bring photographic identification to the course (ie passport/photo driving licence).

Course Overview

The course is designed to give practical and theoretical experience of fitting, inspection and examination of mechanical equipment used in the mechanical field for non-mechanical personnel.

Aims

- To work safely within the established legislation set out for tasks in a workshop or industrial context
- To be able to explain the principle of operation of: gear, diaphragm, centrifugal and reciprocating pumps
- Gain an insight into measurement, tolerance, limits and fits
- Identify and describe the operation and function of different types of valves including: ball/butterfly/gate/globe/parallel slide/diaphragm and needle
- Carry out general valve maintenance procedures
- The theoretical and practical elements involved in the Hand Torque tightening of Bolted Connections
- The selection of components for the various types of flange connections found in the Oil and Gas, Petrochemical and Processing Industries materials focusing on gaskets/sealing elements and bolting materials.



Course Objectives

At the end of the course delegates will have an understanding of:

- Explain the relevance of specific legislation applicable to Health and Safety, COSSH
- Explain the principles of operation, application, common faults and associated symptoms, operational parameters to be monitored to assure performance, seals and seals systems involved for the following types of pumps:
 - Single stage and centrifugal pumps
 - Reciprocating pumps
 - Positive displacement pumps
- Identify, explain principles of operation for valves (ball/butterfly/gate/globe/parallel slide/diaphragm/needle) including stops, seats, seals, movement and actuator systems, greasing systems
- Identify, explain principles of operation for valves (ball/butterfly/gate/globe/parallel slide/diaphragm/needle) including stops, seats, seals, movement and actuator systems, greasing systems
- Identify and perform basic on-line maintenance on major valve types (greasing)
- Identify and perform operations involving flanges
- Explain and identify different types of gaskets, material selection and identification
- Explain gasket installation procedures and requirements
- Explain various types of tightening methods, applied torque, the lubricant effects, bolt elongation yield
- Perform a number of practical tasks based on course content

Mode of Delivery/ Method of Assessment

A combination of classroom delivery and practical hands-on in the workshop.
The course will be assessed by a 1 hour, written / multi- choice examination.

Results

Results should be received approximately 4 weeks after the last day of course.

Certification

Successful course delegates will achieve a City & Guilds Certificate.

Course Content

- Manual Handling
- HASAWA Employee Responsibilities
- Care of exposed skin
- Use of PPE
- COSHH
- Hazard Identification (General)
- Risk Assessments and Work plans for tasks to be conducted
- Take 2 Risk Assessment
- Pump run outs, concentricity, float lift
- Types of bearings
- Permit to Work
- Spanners, bolt and nut identification
- Right tools for the Job
- Pump types
- Positive Displacement
- Reciprocating, single screw (Mono) pumps
- Pump types
- Persuasive (Non-Positive displacement)
- Centrifugal pumps
- Mechanical Seals
- PCD, hole diameter, ID/ Bore OD
- Gearboxes, bearings, couplings & lubrication
- Alignment, Straight edge, DTI, Soft foot, Laser
- Bolts, bolt types (lubricant and torque)