MU108:
Mechanical Engineering for Non-Mechanical Professionals
Training Description:

An understanding, by Engineers and Technicians of all disciplines, of the Basic Concepts that underlie the Application of Mechanical Engineering Practice, is of benefit to both the Individual and the Industry in which the Individual is employed. This course will present the Fundamental Concepts associated with equipment found in many Industries together with practical information on the Types, Operation and Code Requirements. Exercises illustrating many of the concepts are to be completed during the course.

This course introduces the Basic Principles of Mechanical Engineering in a simple, easy to understand format. Participants will learn how to accomplish straight-forward and common Mechanical Engineering Calculations in the Areas of Statics, Kinetics, Kinematics, Materials, Mechanics of Materials, Fluid Mechanics, Hydraulic Machines, Thermodynamics and the Refrigeration Cycle.


This course caters to engineers of all disciplines, as well as Technicians, Facilities Managers and Executives who are not intimately familiar with Mechanical Engineering Principles and Practices. Cross-discipline analogies are used, where applicable, to better illustrate the Fundamental Concepts of Mechanical Engineering.

Training Objective:

By the end of the training, participants will be able to:
- Gain an In-depth Knowledge of all Mechanical Engineering Disciplines including Thermodynamics, Fluid Mechanics, Heat Transfer and Control Systems
- Gain a thorough understanding of the Operating Characteristics of all essential Mechanical Equipment
- Learn all the Codes and Standards applicable for all essential Mechanical Equipment
- Learn about the various types of enclosures and sealing arrangements used for all essential Mechanical Equipment
- Understand all Calculations and Sizing Techniques used for essential Mechanical Equipment
- Understand how to select and size all Mechanical equipment, how to specify all it and how to perform all Maintenance Activities required for all of them
- State, List, Classify, Identify, Explain and Describe the selection, function, Purpose and Applications with Operating Principles of Mechanical Equipment

Training Designed for:

This course is intended for Non - Mechanical Professionals who need to upgrade their current experience and knowledge of Mechanical Engineering within the short period of this five days training course.
Training Program:

DAY ONE:
❖ PRE-TEST
❖ Introduction
❖ Module (01): Engineering Materials
  • Tension and Compression
  • Stress and Strain
  • Elastic Deformation
  • Stress - Strain Diagram
  • Stiffness and Ductility
  • Toughness and Strength
  • Typical Failure Mechanisms, Fracture, Fatigue, Creep, Rupture & Corrosion
❖ Module (02): Torque and Mechanical Power
  • Friction, Mass & Force
  • Pressure & Area
  • Torque & Distance
  • Work, Power & Energy
  • Newton’s Second Law
  • Conservation of Energy

DAY TWO:
❖ Module (03): Static Mechanical Equipment
  • Pressure Vessels
  • Tanks & Reservoir
  • Pipelines & Channel
  • Valves & Actuators
  • Filters & Strainers
  • Electrical Auxiliary Losses
❖ Module (04): Rotating Equipment Machinery
  • Pumps
  • Compressors
  • Fans & Blowers
  • Turbines

DAY THREE:
❖ Module (05): Power Transmission Tools
  • Gears
  • Belt Drives
  • Shaft Couplings
  • Brakes & Clutches
  • Chain Drives
  • Universal Joint
❖ **Module (06): Heat Transfer Technology**
   - Mechanical Sources of Heat
   - Heat & Temperature
   - Heat Capacity
   - Thermal Equilibrium
   - Heat Transfer Modes
   - Conduction, Convection & Radiation

**DAY FOUR:**

❖ **Module (07): Heat Transfer Applications**
   - Boilers
   - Heat Exchangers
   - Cooling Towers
   - Evaporator
   - Condenser
   - HVAC Applications

❖ **Module (08): Fluid Mechanics**
   - Mechanics of Fluids
   - Properties of Fluids
   - Flow of Fluids
   - Flow in Pipes
   - Applications in Fluid Mechanics

**DAY FIVE:**

❖ **Module (09): Lubrication Technology**
   - Factors Affecting Lubrications
   - Classification of Lubrication Oils
   - Properties of Lubrication Oils
   - Types of Greases
   - Grease Lubrication Systems

❖ **Module (10): Mechanical Equipment Failure Modes**
   - Leaks
   - Cavitation
   - Surge
   - Blockage
   - Hammering
   - Vibration
   - Others

❖ Course Conclusion
❖ POST-TEST and EVALUATION
Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request”.

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours: -

- 30% Lectures, Concepts, Role Play
- 30% Workshops & Work Presentations, Techniques
- 20% Based on Case Studies & Practical Exercises
- 20% Videos, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

As per the course location - This rate includes participant’s manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:
- 07:45 - 08:00  Morning Coffee / Tea
- 08:00 - 10:00  First Session
- 10:00 - 10:20  Recess (Coffee/Tea/Snacks)
- 10:20 - 12:20  Second Session
- 12:20 - 13:30  Recess (Prayer Break & Lunch)
- 13:30 - 15:00  Last Session

For training registrations or in-house enquiries, please contact:

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Training & Career Development Department