



# N631: Introduction to Centrifugal, Reciprocating and Rotary Pumps - Design, Application and Operation

Tutor(s): John Henderson

2 Days

Competence Level:  
Basic Application



Classroom Course

## Summary

This two day course provides an introduction to the design, application and operation of centrifugal, reciprocating and rotary pumps. It emphasizes practical understanding, design guidelines and "rules of thumb" with a minimum of mathematics. It covers application and sizing, system design, basic theory and operation, different types of pumps, pump components, pump auxiliaries, pump selection and specification. A course specific textbook is also provided.

## Learning Outcomes

Participants will learn to:

- Introductory level course to understand all aspects of the pump industry
- Develop an understanding of the different types of pumps used in the Petroleum Industry
- Learn the art of selecting the right pump for the right service
- Understanding basic system design, cavitation, NPSH and pump theory
- Learn about Pump components and options and what to use where
- Understand pump curves and selection charts
- Explanation of different type of drive systems and how to select the optimum configuration
- Discuss Predictive Maintenance techniques
- Discuss major items to consider when purchasing pumps

## Duration and Training Method

Two classroom days providing 1.6 CEU (Continuing Education Credits) or 16 PDH (Professional Development Hours)

## Who Should Attend

This course is technical but introductory in nature and covers all aspects of the pump industry. It provides specific technical training for Engineers, Technologists, Millwrights, and Operations personnel involved in the design, operation, maintenance or purchase of pumps and pumping systems. It also provides an excellent overview/refresher/general technical training course suitable for Project Engineers, Managers, Procurement Specialists, Technical Sales staff and students.

## Course Content

### Course Agenda

#### Day One: Centrifugal

- Basic Hydraulics
- How Pumps Work
- Selection and Sizing
- NPSH and Cavitation
- Pump Components
- Mechanical Seals
- Bearings
- Pump Types



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## Day Two: Positive Displacement

- Reciprocating Pumps
- Rotary Pumps
- Gear Pumps
  - -Triple Screw
  - -Double Screw
  - -Progressive Cavity
- Couplings & Drive Arrangements
- Pump Drivers
- Slide Show
- Predictive & Preventative Maintenance
- How to Specify and Procure