

Fundamentals of Hydraulic (FOH) Course Outline

The FOH course is designed for plant engineers, plant maintenance, technicians/mechanics, millwrights, & hydraulic equipment operators.

The One-Week Course includes the following:

- **Basic Math & Physics Review**
- **Introduction to Hydraulics Section:**
 - Safety
 - What hydraulics is and is not
 - Why use hydraulics
 - Advantages of hydraulics
- **Hydraulics General Principles:**
 - Principles of Pressure
 - Principles of Flow
 - Pressure Drop
 - Power
- **Fixed Hydraulic Pumps Section:**
 - What pumps do and don't do
 - How pumps work (four types)
 - Flow rate and pressure
 - Pump math
 - Pump ratings
 - Mounting types
 - Shaft types & alignment
 - Pump efficiency
 - Power required to drive a pump
 - Pump inlet conditions
 - Cavitation
 - Aeration
- **Actuators Section:**
 - Cylinders
 - Motors (fixed displacement)
 - Speeds
 - Force/Torque
 - Types, mounts, shafts/rods
 - Actuator math
 - Actuator power

- **Basic Circuit Symbols:**
 - Symbols explanations
 - How to read circuit drawings
- **Industrial Valves Section:**
 - Directional Control Valves
 - Pressure Control Valves
 - Flow Control Valves
 - Valve math
- **Fundamentals of Conductors:**
 - Hose
 - Tubing
 - Pipe
 - Fittings
- **Fluids Section**
- **Reservoirs Section**
- **Fluid Conditioners Section:**
 - Filters
 - Heat Exchangers
 - Heaters
- **General Safety Section**

Classes: 8 Am to 5 PM Daily (Mon thru Fri)

Friday may end earlier, but plan for a full day.

Class Format: 75% Lecture; 25% Hands-On

Students will receive (3) Books & various handouts.

Lectures/labs begin promptly at the top of the hour and run for 50 minutes, with a 10-min break each hour.

Lunch break: 11:50 AM – 1:00 PM Daily

ETS provides lunch in the classroom each day, but students are free to leave if they choose.

Coffee, soda, water & snacks are provided in the classroom throughout each day.

ETS hosts a group dinner on Thursday at a local venue.