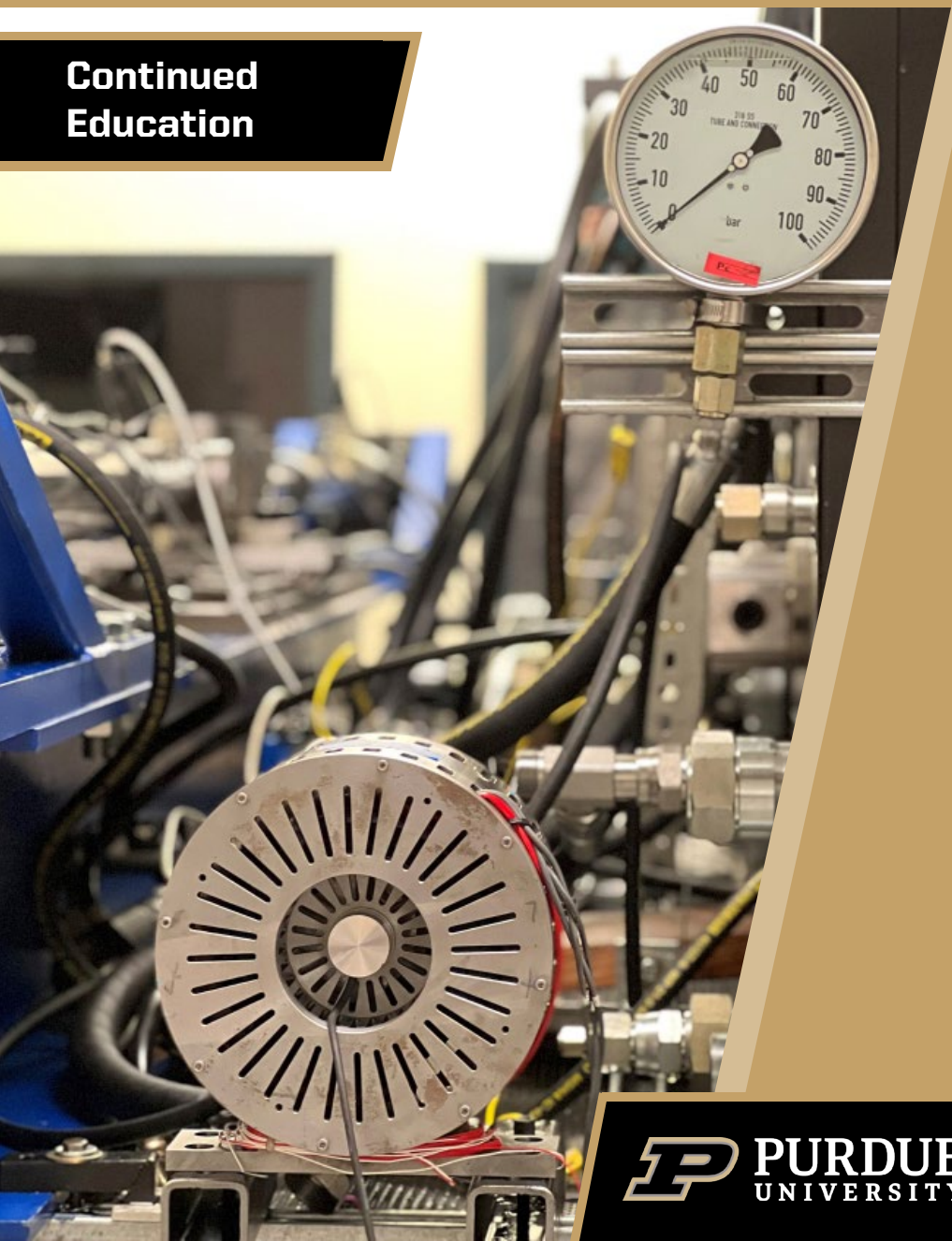


Maha Fluid Power Research Center

Continued
Education



PURDUE
UNIVERSITY®

Intensive Course on Hydraulic Control Systems (Advanced)

Offered in the Spring
at Purdue University (online option)

Professor Dr. Andrea Vacca

For more details: avacca@purdue.edu

<https://engineering.purdue.edu/Maha/>

This five-day intensive course covers:

Today's state-of-the-art hydraulic control systems for industrial and mobile applications, with example cases on heavy duty vehicles and industrial applications.

Day 1: Basics of Hydraulic Control and metering control concepts

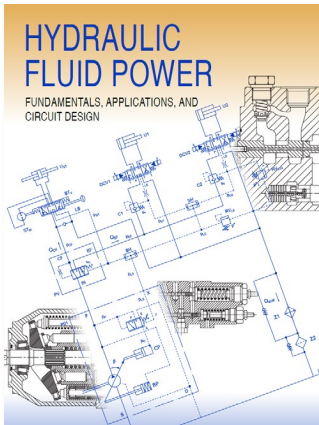
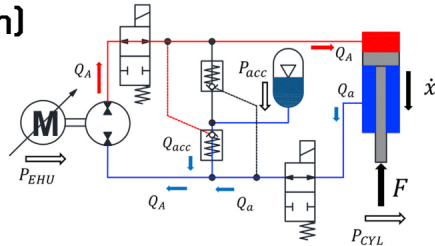
Day 2: Single-actuator control (constant pressure, load sensing, open center, etc)

Day 3: Servovalves and servo - controls. - Multiple-actuator control concepts

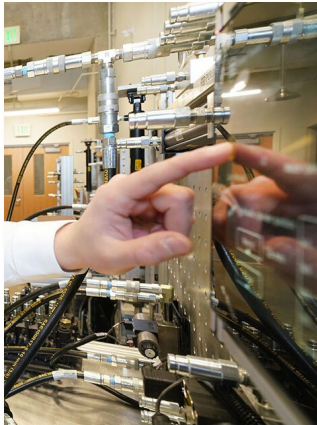
Day 4: Hydrostatic transmissions and actuators, Electro-Hydraulic Actuators

Day 5: Case studies (loader circuits, excavator circuits)

Prerequisite: fundamental knowledge of fluid power components
(pumps, hydraulic valves and actuators)



THEORY



HANDS ON



CASE STUDIES

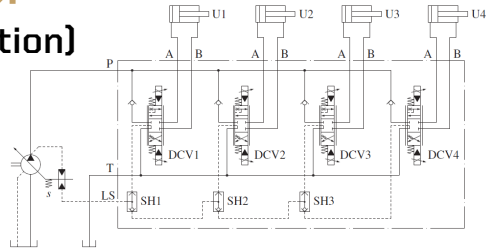
Intensive Course on Fundamentals in Industrial and Mobile Hydraulics

Offered in the Summer
at Purdue University (online option)

Professor Dr. Jose Garcia

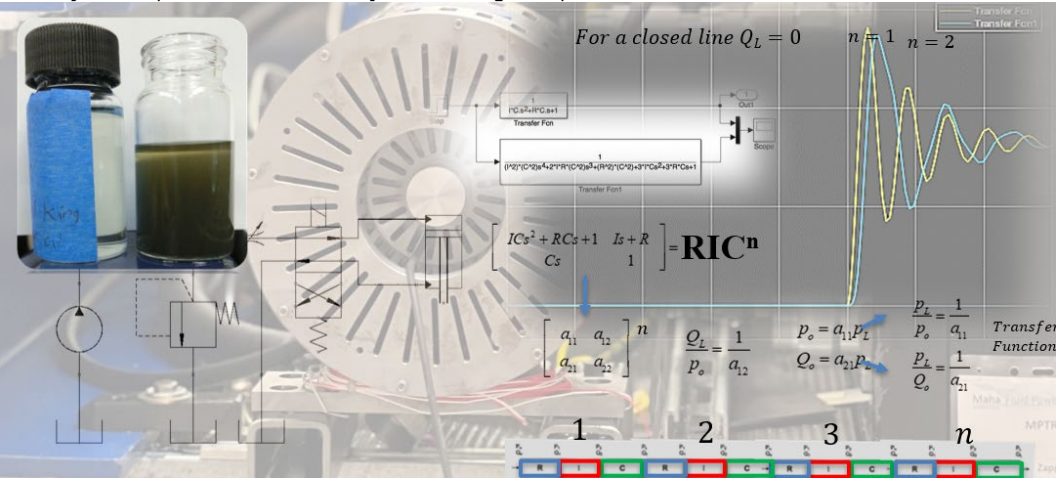
For more details: jmgarcia@purdue.edu

<https://engineering.purdue.edu/Maha/>



This course covers the aspects of fluid flow, standardized symbols, common hydraulic circuits and typical functioning principles for the moving parts inside of the components. The course is paired with hands on laboratory and testing exercises with computer simulations, tear down of components and real-life circuits on hydraulic trainers.

- Significance of fluid selection and conditioning on a fluid power system.
- Sources of pressure, flow or power loss in a hydraulic system.
- Performance of a fluid power component in operation through computer simulation.
- Standardized testing procedures needed to measure the performance of a component or system.
- Commonly used fluid power systems.
- Dynamic performance of a system using computer-based simulations.



Intensive Course on Hydrostatic Pump and Motors

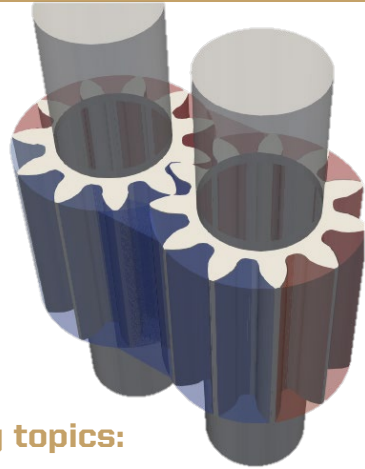
Offered in the Fall

at Purdue University (online option)

Professor Dr. Lizhi Shang

For more details: shangl@purdue.edu

<https://engineering.purdue.edu/Maha/>



This five-day course covers the following topics:

- Essential physics: viscous flow, compressibility, cavitation
- Working principles of common types of hydrostatic machines:
Axial/Radial Piston, External/Internal Gear, Gerotor, Vane, and Screw Types
- In-depth dive into piston and gear machines – major sources of power loss and design considerations
- Hands-on experience in pump performance measurement
- Simulation models (including AI) and basic design optimization approaches

