

COURSE OUTLINE

Introduction to Fluid Power

Course Description

IT 117. Introduction to Fluid Power. 3 hours credit. This course will enable the student to apply the basic principles of fluid power. This course will focus on entry level usage of fluid power systems and fluid control systems in an industrial manufacturing and maintenance environment.

Course Relevance

The foundational information related to fluid power theory and practice is relevant for engineering, manufacturing, and maintenance personnel.

Required Materials

IT 117 Textbook:

Kokernak, R. P. (1999). *Fluid power technology (2nd ed.)*. Philadelphia, PA: Prentice-Hall.

Learning Outcomes

The intention is for the student to be able to

1. Design a simple hydraulic system
2. Troubleshoot malfunctioning fluid power systems
3. Apply various hydraulic system components

Primary Learning PACT Skills that will be DEVELOPED and/or documented in this course

Through the student's involvement in this course, he/she will develop his/her ability in the following primary PACT skill areas:

1. Critical Thinking
 - The student will develop critical thinking through a variety of concepts implemented in the use of fluid power in an industrial setting.
2. Problem Solving
 - The student will demonstrate problem solving through the use of a variety of skills and practical theories developed in this course.

Secondary skills (developed but not documented):

Health Management
Reading
Public Speaking

Major Summative Assessment Task(s)

These learning outcomes and the primary Learning PACT skills will be demonstrated by

1. The student completing a practical fluid power project which demonstrates application of Lab-Volt equipment

Course Content

- I. Themes – Key recurring concepts that run throughout this course:
 - A. Accuracy
 - B. Quality
 - C. Safety
 - D. Repeatability
- II. Issues – Key areas of conflict that must be understood in order to achieve the intended outcome:
 - A. Theoretical vs. practical knowledge in the field of fluid power
 - B. Best practices vs. acceptable practices when time constraints limit options
- III. Concepts – Key concepts that must be understood to address the issues:
 - A. Current industrial usage of fluid power
 - B. Best process principles in fluid power
- IV. Skills/Competencies – Actions that are essential to achieve the course outcomes:
 - A. Demonstrate the ability to predict fluid power capability from a system before it is put into use
 - B. Design fluid power systems in a limited time frame

Learning Units

- I. Fluid Properties
- II. Fluid Statics
- III. Fluid Dynamics
- IV. Practical hydraulic and fluid power usage
- V. Determining best practice in fluid power usage

Learning Activities

The student will design and use a basic fluid power system. Each student will be required to make a short in-class presentation.

Grade Determination

The student will be graded on exams given during the course, as well as completion of the lab practical exam.