

## **Flow And Measurement Calibration (INTC1358)**



**Credit:** 3 semester credit hours (3 hours lecture)

**Prerequisite/Co-requisite:** None.

### **Course Description**

A study of Fluid Power. Hydraulics and Pneumatics. Comprehensive exposure to the fluid field, ranging from historical information to details on the design and operation of hydraulic and pneumatic components, circuits, and systems.

### **Required Textbook and Materials**

Fluid Power, ISBN number 978-1-60525-081-6

1. Notebook

### **Course Objectives**

Upon completion of this course, the student will be able to:

1. Perform flow calculations. (SCANS C5.4, C19.4, C20.3, F1.3, F2.3, F3.4, F4.4, F5.3, F9.4, F12.4)
2. Select the proper orifice under stated conditions. (SCANS C5.4, C19.4, C20.3, F1.3, F2.3, F3.4, F4.4, F5.3, F9.4, F12.4)
3. Understand basic fluid power concepts, systems and components. (SCANS C5.4, C19.4, C20.3, F1.3, F2.3, F3.4, F4.4, F5.3, F9.4, F12.4)

### **Course Outline**

- A. Introduction
  1. Introduction of faculty and students
  2. Review Syllabus
- B. Review Class Policies
  1. Definition of Fluid Power
  2. Fluid power industry
  3. Fluid Power Systems
  4. Advantages and Disadvantages of a Fluid Power System
- C. Fluid Power System
  1. Functions
  2. Structure
  3. Basic System Components
  4. Basic System Operation
- D. Fluid power Standards and Symbols
- E. Controlling the System
- F. Compressed Air
- G. Conditioning and Distribution
- H. Controlling the Pneumatic System
- I. Apply Pneumatic Power

Approved 12/2013

### Grade Scale

|          |   |
|----------|---|
| 90 – 100 | A |
| 80 – 89  | B |
| 70 – 79  | C |
| 60 – 69  | D |
| 0 – 59   | F |

### Course Evaluation

Final grades will be calculated according to the following criteria:

| <i>Activity</i> | <i>Percentage</i> |
|-----------------|-------------------|
| Classwork       | 20%               |
| Quizzes         | 30%               |
| Exams           | 50%               |
| <b>Total</b>    | <b>100%</b>       |

Late Penalties will be assessed on all work turned in late. 10 points per day

### Course Requirements

1. Introduction to the Fluid Power field.
2. Hydraulic Systems.
3. Pneumatic Systems.
4. Understanding of the operation of fluid power component parts and circuits.
5. Concepts in designing functional circuits.
6. Fluid Power : Safety and Health

### Attendance Policy:

1. Missing more than 20% of classes will result in an automatic “F” for the course.
2. Absences are counted for unexcused, excused and coming to class late.
3. Missing more than 20% of a class period will count as an absence.
4. Being tardy 3 times equals 1 absence.

### Course Policies

1. No food, drinks, or use of tobacco products in class.
2. No foul or harsh language will be tolerated
3. Turn off all Cell Phones during lectures
4. Headphones may be worn only upon Instructor approval
5. Do not bring children to class.

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Course Syllabus

6. No Cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result from expulsion from LIT.
7. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.

### Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

### Course Schedule

| Week  | Topic  | Reference      |
|-------|--|----------------|
| 1     | Course introduction, and policies <ul style="list-style-type: none"><li>• Lecture:</li><li>• Chapter exercises and worksheets</li></ul>  | Handouts       |
| 2     | Introduction to Fluid Power <ul style="list-style-type: none"><li>• Lecture:</li><li>• Chapter exercises and worksheets</li></ul>  | Chapter 1      |
| 3/4/5 | Systems/Standards and Symbols <ul style="list-style-type: none"><li>• Lecture:</li><li>• Test 1</li></ul>  | Chapter 2/4    |
| 6/7   | Safety and Health/Hydraulic Fluids <ul style="list-style-type: none"><li>• Lecture</li><li>• Chapter exercises and worksheets</li><li>• Chapter exercises and worksheets</li></ul> | Chapter 5/6    |
| 8/9   | Controlling the System <ul style="list-style-type: none"><li>• Lecture:</li><li>• Chapter exercises and worksheets</li><li>• Test 2</li></ul>                                      | Chapter 10     |
| 10    | Compressed Air/Conditioning/Distribution <ul style="list-style-type: none"><li>• Lecture:</li><li>• Chapter Exercises and worksheets</li></ul>                                     | Chapters 14/16 |
| 11/12 | Directional Control Valves <ul style="list-style-type: none"><li>• Lecture:</li><li>• Chapter Exercises and worksheets</li></ul>   | Chapters 18    |
| 13    | Pressure Control Valves <ul style="list-style-type: none"><li>• Lecture:</li></ul>   | Chapter 18     |

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Course Syllabus

| Week  | Topic  | Reference  |
|-------|--|------------|
|       | <ul style="list-style-type: none"><li>• Chapter Exercises and worksheets</li></ul>   |            |
| 14/15 | Flow Control Valves <ul style="list-style-type: none"><li>• Lecture:</li><li>• Chapter Exercises and worksheets</li><li>• Test 3</li></ul>                                 | Chapter 18 |
| 16    | Applying Pneumatic Power <ul style="list-style-type: none"><li>• Lecture:</li><li>• Chapter Exercises and worksheets</li><li>• Test 4</li><li>• Review for Final</li></ul> | Chapter 19 |