



**I. COURSE DESCRIPTION:**

Upon successful completion of this course the student will be able to perform basic calculations of pressure, force, and area using Imperial and Systems International d'Unites (s.i.) measurement, be able to interpret basic hydraulic and pneumatic system schematics and symbols, be able to explain the operation of basic hydraulic and pneumatic components, be able to describe the different types of hydraulic fluids and their applications, be able to describe the inspection and testing procedures for hydraulic and pneumatic conductors and fittings, be able to describe a regularly scheduled maintenance service all following manufacturers' recommendations for hydraulic and pneumatic systems, government regulations and safe work practices.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to:

**1. Fluid Power Fundamentals**Potential Elements of the Performance:

- Define the fundamentals of hydraulic and pneumatic systems.
- Describe terms and applications for hydraulics and pneumatics.
- Perform calculations of force, pressure and area using basic laws.

**2. Fluid Power Component and Graphic Symbols**Potential Elements of the Performance:

- Identify basic hydraulic components and related graphic symbols.
- Describe the construction features and applications of schematics for pneumatic and hydraulic systems.
- Draw a basic hydraulic and pneumatic circuit schematic and apply related graphic symbols.

**3. Fluid Power Principles of Operation**Potential Elements of the Performance:

- Define the purpose and fundamentals of pneumatic and hydraulic components.
- Describe the construction features of pneumatic and hydraulic components.
- Explain the principles of operation of pneumatic and hydraulic components.
- Locate pneumatic and hydraulic components on common system schematics.

**4. Fluid Power Hydraulic Fluids and Filters**Potential Elements of the Performance:

- Define the fundamentals of hydraulic fluids.
- Describe the composition and properties of hydraulic fluids.
- Describe the function and construction features of hydraulic fluid filters.

**5. Fluid Power Conductors and Connectors**Potential Elements of the Performance:

- Define the purpose of pneumatic and hydraulic conductors and connectors.
- Describe the construction features, types, and application of conductors and connectors.
- Describe the procedure to construct, inspect and test hydraulic conductors.

**6. Fluid Power Maintenance Schedule**Potential Elements of the Performance:

- Describe the fundamentals of regular hydraulic and pneumatic system maintenance service.
- Describe the replacement procedures for hydraulic oil filters including identification of oil contamination, inspection of lines and water separators, and completion of a maintenance schedule check-off report.

**III. TOPICS:**

1. Fluid Power Fundamentals
2. Fluid Power Component and Graphic Symbols
3. Fluid Power Principles of Operation
4. Fluid Power Hydraulic Fluids and Filters
5. Fluid Power Conductors and Connectors
6. Fluid Power Maintenance Schedule

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

- Vickers Mobile Hydraulics Manual
- Sault College and SAE approved safety glasses and steel toe work boots required for shop activities, including coveralls or a shop coat.

**V. EVALUATION PROCESS/GRADING SYSTEM:**

***70% Theory Testing***  
***10% Shop Assignments***  
***20% Final Exam***

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<b><i>Grade Point Equivalent</i></b>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

**VI. SPECIAL NOTES:**

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

It is the departmental policy that once the classroom door has enclosed, the learning process has begun. Late arrivers will not be granted admission to the room.

**VII. COURSE OUTLINE ADDENDUM:**

The provisions contained in the addendum located on the Student Portal form part of this course outline.