



COURSE OUTLINE: ELR826 - FLUID POWER

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	ELR826: FLUID POWER
Program Number: Name	6522: CONST & MTCE ELE ADV
Department:	ELEC. APPRENTICES
Semesters/Terms:	21W
Course Description:	This course introduces the basic principles of fluid mechanics and the application of these principles to practical and applied problems. After completing this course the student should have a firm foundation in the area of Instrumentation, Process Control and fluid systems.
Total Credits:	3
Hours/Week:	3
Total Hours:	0
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	<p>EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.</p> <p>EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.</p> <p>EES 3 Execute mathematical operations accurately.</p> <p>EES 4 Apply a systematic approach to solve problems.</p> <p>EES 5 Use a variety of thinking skills to anticipate and solve problems.</p> <p>EES 6 Locate, select, organize, and document information using appropriate technology and information systems.</p> <p>EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>EES 10 Manage the use of time and other resources to complete projects.</p> <p>EES 11 Take responsibility for ones own actions, decisions, and consequences.</p>
Course Evaluation:	<p>Passing Grade: 50%, D</p> <p>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.</p>
Other Course Evaluation & Assessment Requirements:	<p>Grading - Witten Tests - 70%</p> <p>Labs - 20%</p>

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.



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Assignments - 10%
Total: 100%

Students who will be absent for a scheduled test must contact instructor in advance. Students absent without prior notification and a valid reason will be given a zero grade for the missed test.

Quizzes - quizzes can be held without notice, throughout the semester. Students who are absent, will receive a zero grade for that quiz

The following semester grades will be assigned to students:

Grade
Definition
A+ 90 - 100%
A 80 - 89%
B 70 - 79%
C 60 - 69%
D 50 - 59%
F (Fail) 49% and below

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.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Perform unit conversions	<ul style="list-style-type: none">• Define the terms fluids and fluid mechanics• Define units of force, energy and pressure in SI and English systems of units• Perform unit conversions and calculations
Course Outcome 2	Learning Objectives for Course Outcome 2
Define, express and relate the properties of fluids and its laws.	<ul style="list-style-type: none">• Pascal's Law - force/area/pressure• Bernoulli's Law• Gauge/atmospheric pressures• Velocity characteristics• Discuss aeration, cavitation, pump flow
Course Outcome 3	Learning Objectives for Course Outcome 3
Describe basic uses of fluids/gases through Hydraulic/pneumatic systems.	<ul style="list-style-type: none">• Understand the functions of fluids in systems• Be knowledgeable of the various types of fluids used and why• Understand basic fluid conditioning monitoring needed• Discuss proper filtering methods and ratings used today• Discuss proper testing methods available
Course Outcome 4	Learning Objectives for Course Outcome 4

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	Be knowledgeable in the safety measures used in fluid systems. Such as hydraulics and pneumatics.	<ul style="list-style-type: none"> List proper safety measures to be used when servicing hydraulic/ Pneumatic systems Understand how to adjust valves using safe practices Be able to safely replace components on any system using safe work habits <ul style="list-style-type: none"> Understand safe lock out practices for systems Understand the dangers involved in various types of high pressure hydraulics
	Course Outcome 5	Learning Objectives for Course Outcome 5
	Understand basic system components.	<ul style="list-style-type: none"> Reservoirs Pumps/Compressors Filters Directional valves Relief valves Pressure valves Actuators Accumulators and other system accessories Understand the operation of single and double acting cylinders
	Course Outcome 6	Learning Objectives for Course Outcome 6
	Identify factors affecting fluid flow and compute the head loss in a fluid flow system.	<ul style="list-style-type: none"> Characterize laminar and turbulent flow Understand frictional head loss Understand losses due to expansion, contraction and fittings <ul style="list-style-type: none"> Be able to select sizes and types of hydraulic piping

Date: August 18, 2020

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.

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