Prepared: Frank Musso Approved: Corey Meunier

Course Code: Title	ELR722: INSTRUMENTATION - LEVEL 2
Program Number: Name	6541: IND.ELECT. - INTERM.
Department:	ELEC. APPRENTICES
Semester/Term:	18S
Course Description:	This course will introduce the student to instrumentation theory relating to the measurement of pressure and flow in industrial processes. The theory is supported by appropriate labs.
Total Credits:	4
Hours/Week:	4
Total Hours:	40
Essential Employability Skills (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. #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #6. Locate, select, organize, and document information using appropriate technology and information systems. #7. Analyze, evaluate, and apply relevant information from a variety of sources. #8. Show respect for the diverse opinions, values, belief systems, and contributions of others. #9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. #10. Manage the use of time and other resources to complete projects. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	The student must pass both the written tests and the practical tests to pass the course. Grade Definition Grade Point Equivalent A+ 90 â€ 100% 4.00 A 80 â€ 89%

B 70 - 79% 3.00
C 60 - 69% 2.00
D 50 â€ 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W Student has withdrawn from the course without academic penalty.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignmnets and quizes	10%
Labs	20%
Practical Tests	20%
Written Tests	50%

Books and Required Resources:

Lab Volt

Course Outcomes and Learning Objectives:

Course Outcome 1.

Describe the concept of direct and indirect measurement

Learning Objectives 1.

Define the term direct and indirect measurement
Examine how indirect measurement is accomplished

Course Outcome 2.

Describe the concept and operation of level sensing elements
Describe the concept of hydrostatic and determine the pressure exerted by a column of fluid

Learning Objectives 2.

Examine float switches, point contact, sight glass, capacitance devices, ultrasonic, radiation and bubblers systems

Course Outcome 3.

Draw basic process diagrams according to ISA standards

Learning Objectives 3.

?Examine ISA symbols

	Draw basic balloon and P&I diagrams **Course Outcome 4.** Explain the concept of weight, mass density and specific gravity **Learning Objectives 4.** - Connect and test a system to measure the hydrostatic pressure - Describe the concept of fluid flow - Identify and describe the operation of various flow sensing elements including rotameter, venturi, and orifice plate. - Demonstrate flow devices by connecting and testing differential pressure transmitters - Explain the operation of voltage and current instrumentation loops. - Install, connect, zero, and span an instrumentation control loop.
Date:	Thursday, April 19, 2018
	Please refer to the course outline addendum on the Learning Management System for further information.