



COURSE OUTLINE

ELR822

Prepared: Sasha Coleman Approved: Corey Meunier

Course Code: Title	ELR822: INSTRUMENTATION - LEVEL 3
Program Number: Name	
Department:	ELEC. APPRENTICES
Semester/Term:	18W
Course Description:	Upon successful completion of Instrumentation III, the apprentice is able to: describe: explain the terminology of instrumentation systems: explain the principles of On/Off control: identify the four basic elements of control: explain automatic control: Explain the operation and application of position measurement devices: Explain the principles of PID control: Revise and explain loops on instrumentation drawings. /understand pneumatic systems.
Total Credits:	4
Hours/Week:	3
Total Hours:	30
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	<p>EVALUATION PROCESS/GRADING SYSTEM:</p> <p>Theory tests 50%</p> <p>Labs written portion 20%</p> <p>Labs Practical tests 20%</p> <p>Assignments & quiz 10%</p> <p>Total 100%</p> <p>Grade Definition Grade Point Equivalent 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</p> <p>CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area.</p>

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W Student has withdrawn from the course without academic penalty.

Books and Required Resources:

Lab Volt Process Control Training Manual by Sault College

Course Outcomes and Learning Objectives:

Course Outcome 1.

Explain the principles of measured variable vs controlled variable.
Feed back, open loop vs. closed loop, transducers.

Learning Objectives 1.

Course Outcome 2.

Describe the use of and list requirements for instrumentation air supplies.

Learning Objectives 2.

Course Outcome 3.

Describe the construction and application of mechanical and electrical operated valves.

Learning Objectives 3.

Course Outcome 4.

Identify the ISA and European symbols used for pneumatic control devices.

Learning Objectives 4.

Course Outcome 5.

Describe the theory of operation and the typical application of proportional 3-15 psi pneumatic instrumentation systems.

Learning Objectives 5.

Course Outcome 6.

Explain the operation and application of typical position measurement devices found in industry including shaft encoders, resolvers, proximity switches, LVDTs, and synchros.

Learning Objectives 6.

Course Outcome 7.

Explain the principles of PID control.

Learning Objectives 7.

Course Outcome 8.

Connect and test PID controlled process to demonstrate the effects of varying P,I and D.

Learning Objectives 8.

Course Outcome 9.

Revise and explain control loops on instrumentation drawings using ISA standards.

Learning Objectives 9.

Date:

Wednesday, February 28, 2018

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