SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	ELECTRICAL & ELECTRONIC CONTROLS II		
CODE NO. :	ELR213	**SEMESTER:**	THREE
PROGRAM:	MECHANICAL ENGINEERING TECHNICIAN – MANUFACTURING		
AUTHOR:	AL GOODERHAM		
DATE:	SEPTEMBER 2015	**PREVIOUS OUTLINE DATED:**	SEPTEMBER 2014

APPROVED:

"Corey Meunier"

CHAIR **DATE**

TOTAL CREDITS:	ONE
PREREQUISITE(S):	ELR111
HOURS/WEEK:	ONE

For additional information, please contact Corey Meunier, Chair
Technology & Skilled Trades
705-759-2554, Ext. 2610

I. COURSE DESCRIPTION:

This course covers the basic knowledge of electrical and electronic controls. Students will learn about safely removing and resetting electrical and electronic devices such as fuses, circuit breakers and about lockouts and shutoff procedures. The student will appreciate diagnostic testing and applications of electronic devices in control systems

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. To develop the student's basic knowledge concerning electrical and electronic theory.

Potential Elements of the Performance:

- Review the use of basic electrical testing instruments
- Review and safely demonstrate the troubleshooting, removal, and resetting of electrical and electronic overload devices such as:
  - Fuses
  - Circuit breakers
  - Ground fault circuit interrupters GFCI
- Review and safely demonstrate the following:
  - Basic general lock-out and tag-out equipment and procedures
  - General shut off procedures

2. To develop the student's basic knowledge concerning control systems.

Potential Elements of the Performance:

- Introduce open and closed loop control systems.
- Differentiate between analog and digital signals
- Describe, briefly, the devices used in a control system such as:
  - Limit switches
  - Proximity switches
  - Photo cells
  - Inductive and capacitive sensors
  - Solenoids
  - Linear variable differential transformers (LVDT)
  - Vibration transducers
  - Displacement, velocity and accelerometer devices

Thermal devices such as:

- Thermostats
- Thermocouples
- Bimetallic strip devices
- Metal resistance thermometers
- Thermistors
- Thermal expansion devices

Miscellaneous transducers such as:

- Bourdon tube
- Pressure switches
- Diaphragm
- Bellows
- Piezoelectric
- Strain gauge

III. TOPICS:

1. Overload Devices / Disconnects
2. Open and Closed loop control systems
3. Digital and Analog Signals and where they apply to industry
4. Various types of instrumentation found in industry

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Handouts

V. EVALUATION PROCESS/GRADING SYSTEM:

Theory testing, 2 tests, 40% each	80%
Application assignments, 2 , 10% each	20%
	100%

While marks are not given for attendance, 1% marks will be deducted for classes missed.

See Special Notes Section

The following semester grades will be assigned to students:

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

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.

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

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

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located in D2L and on the portal form part of this course outline.