SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	INSTALLATION METHODS: LEVEL III		
CODE NO. :	ELR824	**SEMESTER:**	TWO
PROGRAM:	CONSTRUCTION & MAINTENANCE/INDUSTRIAL ELECTRICIAN APPRENTICESHIP		
AUTHOR:	SEAN HAGER		
DATE:	January 2013	**PREVIOUS OUTLINE DATED:**	January 2012
APPROVED:	*"Corey Meunier"* **CHAIR**		_____ **DATE**
TOTAL CREDITS:			
PREREQUISITE(S):	NONE		
HOURS/WEEK:			

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

I. COURSE DESCRIPTION:

This course introduces the student to three phase AC transformers, motors, loads and associated equipment. Lab exercises will provide the students with hands-on experience with typical commercial AC motor control circuit connections.
The student will develop an understanding of the hardware and software associated with the Allen Bradley 5 family PLCs. PLC programming techniques using RS logic 5 software will be used to design, document and commission basic to intermediate PLC lab assignments.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Connect, test and analyze single phase and poly phase transformers.

Potential Elements of the Performance:

- Describe and demonstrate the operation of single-phase transformer in terms of polarity, impedance and winding ratios.
- Describe and demonstrate the operation of three phase transformers in wye and delta configurations.
- Describe and demonstrate three phase transformer connections for RLC balanced loads.
- Describe and demonstrate single and three phase autotransformers for reduced voltage motor starting

2. Connect, test and analyze wound rotor motors.

Potential Elements of the Performance:

- Identify the mechanical parts, windings and connections for three phase wound rotor induction motors.
- Describe and demonstrate the operation of a three phase wound rotor induction motor and its external control circuits.
- Connect and describe the effects of differing resistances in the rotor circuit of a wound rotor motor under varying loads.

3. Connect, test and analyze synchronous and squirrel cage motors.

Potential Elements of the Performance:

- Describe and demonstrate the operation of synchronous motors in power factor correction and constant speed applications.
- Describe and demonstrate the controller circuit for a two-speed squirrel cage motor.

III. TOPICS:

1. Single phase and poly phase transformers.
2. Wound rotor motors.
3. Synchronous motors.
4. Squirrel cage motors.

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Notes supplied by instructor
- Hand tools
- Safety Glasses, High Voltage Gloves

V. EVALUATION PROCESS/GRADING SYSTEM:

Labs and Lab reports 25%
Testing 25%

Total 50 %

The other 50% for this course is made up of the PLC labs

While marks are not given for attendance, marks may be deducted for classes missed. See Special Notes section.

The following semester grades will be assigned to students in apprenticeship courses:

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.

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 been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

Other:

If a student misses a test he/she must have a valid reason (i.e. medical or family emergency – documentation may be required). In addition, the instructor must be notified prior to the test sitting. If this procedure is not followed the student will receive a mark of zero on the test with no make-up option.

Deadlines will be specified for submission of assignments for grading. Late assignments will not be accepted and a grade of 0 will be assigned.

Required texts are brought to each class. Sections of the course text books may be highlighted however they are not to be written in. Tests will be 'open book' as far as the textbooks are concerned (the code book may be used for code tests, code book and prints text will be permitted for prints tests). However, use of a book containing markings other than the aforementioned highlights is not permitted and will be considered as academic dishonesty. Students are responsible for supplying their own texts for tests. Sharing books during a test is not permitted.

Use of cell phones/PDAs for any form of communication (voice, text…) during class time is strictly prohibited. Cell phones/PDAs must be silenced during regular classes and must be turned off and kept out of sight during test sittings. Failure to follow the latter requirement during a test sitting will result in a grade of 0 being assigned.

Students may not wear earphones of any kind during test sittings. This does not include hearing aids required for the hearing impaired.

Students are expected to maintain an active Sault College email account. They are required to check this email account daily. The instructor may announce details of test requirements and scheduling through the Sault College email system (as well as sharing other important information).

VII. COURSE OUTLINE ADDENDUM:

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