

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



Sault College

**COURSE OUTLINE**

**COURSE TITLE:** Install Methods II

**CODE NO. :** ELR 123 **SEMESTER:** 2

**PROGRAM:** Electrical Engineering Technician/Technologist

**AUTHOR:** S. Gauvreau

**DATE:** 01/2007 **PREVIOUS OUTLINE DATED:** 1/2006

**APPROVED:**

	_____	_____
	<b>DEAN</b>	<b>DATE</b>

**TOTAL CREDITS:** 2

**PREREQUISITE(S):** None

**HOURS/WEEK:** 3

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*For additional information, please contact Colin, Kirkwood, Dean*  
*School of Technology, Skilled Trades, Natural Resources & Business*  
*(705) 759-2554, Ext.2688*

**I. COURSE DESCRIPTION:**

This hands-on course introduces the student to residential wiring practices.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

1. Correctly select and safely install common residential electrical wiring systems and equipment within the regulations and standards set out by the Canadian Electrical Code (CEC).

Potential Elements of the Performance:

- Demonstrate the correct installation procedures and wiring connections for common residential switching devices and outlets, ensuring strict adherence to CEC (Canadian Electrical Code) and NBC (National Building Code) regulations.
- Demonstrate the proper installation procedures required for the following wiring methods while ensuring strict adherence to CEC regulations: non-metallic sheathed cable, armoured cable. Identify other wiring methods, mineral insulated cable, metallic sheathed cable, rigid conduits, flexible conduits, liquid-tight conduit, electrical metallic tubing, and electrical non-metallic tubing.
- Demonstrate the ability to install a complete 100 amp, residential service including the following circuits: hot water heater, range outlet, dryer outlet, split duplex receptacle, bathroom outlet, outside weather-proof receptacle, general branch circuit.
- Prepare a layout drawing for a service mast and indicate the procedure for installation.
- Demonstrate the proper use of common hand tools used in the electrical trade.
- Demonstrate the proper installation of enclosures and fittings common to the electrical trade.
- Demonstrate the proper installation of cable, conduit and enclosure supports common to the electrical trade.
- Demonstrate the proper techniques for the terminating of conductors.
- Identify and terminate copper communication and hard wired cables for telephones.
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**III. TOPICS:**

1. Residential Wiring Practices.

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

- Ontario Electrical Safety Code (current edition) or Canadian Electrical Code Part 1 (Current Edition)
- Electrical Wiring Residential (Current Edition published by Delmar)
- Hand tools including tester, common screw drivers, diagonal pliers, side cutters, adjustable pliers, hack saw, claw hammer, tool pouch and tool box.

**V. EVALUATION PROCESS/GRADING SYSTEM:**

Shop activities, associated reports/ assignments :	40%
Final Practical test :	40%
Final Written test :	<u>20%</u>
	100%

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 postsecondary courses:

<b>Grade</b>	<b><u>Definition</u></b>	<b><i>Grade Point Equivalent</i></b>
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:**Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 493 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

- Attendance to shop activities is compulsory, unless discussed with the instructor in advance of the absence and the absence is for a medical or family emergency.
- Any student that is absent for any shop class will be required to provide a doctor's note immediately upon returning. Failing to do so will result in a grade of 0% being assigned to the missed shop activity.
- At the instructor's discretion a deduction of 7% may be made from the student's final mark for each shop class or portion thereof missed.

**VII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

**VIII. DIRECT CREDIT TRANSFERS:**

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.

Proposed labs subject to change by instructor:

- LAB #1**      **Introduction To The Electrical Lab, Equipment, And Devices**
- LAB # 2**      **Lights, Switches And Receptacles** Note Receptacles Are Not Switched.
- #1      15 amp feed first to the receptacle, then to switch and finally to the light.
- #2      15 amp feed first to the light, from the light to switch and finally light to the receptacle.
- #3      15 amp feed first to the light, then to the switch and from switch finally to the receptacle.
- #4      15 amp feed first to the switch, then to light and from light finally to the receptacle.
- #5      Install a GFCI receptacle to protect receptacle downstream.
- LAB #3**      **3-Way Switch Circuits**
- #1      15 amp feed first to one 3-way switch, then to the other 3-way switch and finally to the light.
- #2      15 amp feed first to the light, from the light to one 3-way switch and finally to the other 3-way switch.
- #3      15 amp feed first to the light, then each switch from the light.
- #4      15 amp feed first to the one 3-way switch, then to the light, then to the other 3-way switch.
- LAB #4**      **4-Way Switch Circuit**
- 15 amp feed first to the one 3-way switch, then to the light, then to the other 3 & 4 way switch.
- Lab #5**      **Kitchen:** A Kitchen Split Receptacle & Range Receptacle.
- Lab #6**      **Door Bell Installation**
- Lab #7**      **Fluorescent Light With Ac90.**
- Fluorescent light and receptacle installation using armoured cable (AC90).
- Lab #8**      **3 Wire Split Circuit**
- One light and one receptacle on each haft of the wire split circuit using only 3 conductor cable
- Lab #9**      **Emt Project:** Bending of EMT conduit, offset, saddle, 90 degree.
- Lab #10**      **SERVICE INSTALLATION** Overhead Drawing only
- Note; do a drawing for both an Overhead Service 100 amp service and Underground 200 amp service include all necessary equipment type and size, conductor type and size and related codes.**
- Lab # 11 To be practical test assigned by instructor.**
- NOTE: Refer to the C.E.C. code and list the references and rules that apply to these installations.*
- Note: All 10 labs must be completed, demonstrated and the write-ups must be turned into the instructor before a student will be permitted to do the practical test. Therefore the student must complete all lab requirements to be able to take the final practical test. A student will receive a mark of zero (0) for the practical test if he/she does not meet the above mentioned requirements or does not complete the practical test.**