SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: CANADIAN ELECTRICAL CODE, LEVEL I

CODE NO. : ELR 623 **SEMESTER:** ONE

PROGRAM: CONSTRUCTION & MAINTENANCE ELECTRICIAN APPRENTICESHIP

AUTHOR: R. McTaggart

DATE: 05/2005 **PREVIOUS OUTLINE DATED:** 05/2004

APPROVED:

_____ _____

DEAN **DATE**

TOTAL CREDITS: 4

PREREQUISITE(S): NONE

HOURS/WEEK: 4

I. COURSE DESCRIPTION:

This course introduces the student to the Canadian Electrical Code (utilizing the Ontario Electrical Safety Code). The primary focus will be on code sections relating 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. State the purpose of the Canadian Electrical Code and identify which sections apply to a given electrical installation.
   Potential Elements of the Performance
   - State the objective, scope, and general arrangement of the Canadian Electrical Code (CEC).
   - Identify the method used to indicate code regulation changes in new editions of the CEC. Identify installation requirements for electrical equipment (other than heating) installed in residential occupancies as specified in the Installation of Electrical Equipment section of the CEC.
   - Explain terms as listed in the "Object, Scope and Definitions" section and the Special Terminologies located in the general rules of other sections of the CEC.
   - Interpret general rules (Section 2) of the CEC.
   - Explain the CEC regulations regarding grounding and bonding (Section 10) of electrical systems and circuits operating at 750 volts or less.
   - Interpret the regulations of the CEC regarding wiring methods (Section 12) for installations operating at 750 volts or less.
   - Explain the general regulations regarding Class 1 and Class 2 signal and remote control Circuits (Section 16) of the CEC.
   - Interpret the CEC regulations for Pools, Tubs, Spas (Section 68).
   - Identify temporary wiring installation requirements for buildings or projects under construction or demolition (Section 76) of the CEC.

- Calculate conduit fill where all conductors are the same size and have the same insulation type.

- Calculate conduit fill where the conductors have different sizes and/or different insulation types.

- Calculate raceway fill for the raceway types listed in Section 12 where all conductors are the same size and have the same insulation type.

- Calculate raceway fill for the raceway types listed in Section 12 where the conductors have different sizes and/or different insulation types.

- Calculate the maximum number of conductors sized #14 to #6 that are permitted in a box.

- Calculate the minimum size of pull boxes for straight, angle and u-pulls for conductors larger than #6.

- Calculate ampacity and apply correction factors for single conductors in free air, including conductors in parallel.

- Calculate ampacity and apply correction factors for conductors in a raceway or multi-conductor cable, including conductors in parallel.

- Calculate ampacity and apply correction factors for flexible cords and equipment wires.

- Calculate ampacity and apply correction factors for underground conductor installations using IEEE Standard 835.

2. Interpret rules of the Canadian Electrical Code which apply to residential installations.
   Potential Elements of the Performance:
   - Calculate the size of service equipment for single dwelling units.

   - Identify installation requirements for electrical equipment (other than electric heating) including: lighting, receptacles, heating, and appliances installed in single dwelling occupancies as specified in the Installation of Electrical

Equipment Section 26 and 30 of the CEC.

- Interpret the CEC regulations regarding the installation of fire alarms located in dwelling units.

- Explain requirements for the installation and wiring of Fixed Electric Surface and Space Heating Systems located in residential occupancies.

III. TOPICS:

1. Canadian Electrical Code, Layout and General Rules
2. Canadian Electrical Code, Residential Rules

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Ontario Electrical safety Code, 23rd Edition/2002
ISBN # 1-55324-570-9

V. EVALUATION PROCESS/GRADING SYSTEM:

Course grade will be based on three or four equally weighted tests. See special notes.

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.

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 instructor and/or the Special Needs office. Visit Room E1204 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.

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.

Code books are to be brought to class. Tests will require the use of a code book and students are responsible for bringing a copy 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 code book is concerned. 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 test. Sharing books during a test is not permitted.

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.