SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: Installation Methods III

CODE NO. : ELR 233 **SEMESTER:** 3

PROGRAM: Electrical Engineering Technician/Technologist

AUTHOR: R. McTaggart

DATE: 05/2006 **PREVIOUS OUTLINE DATED:** 05/2005

APPROVED:

_____ _____

DEAN **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S): ELR113, ELR123

HOURS/WEEK: 4

I. COURSE DESCRIPTION:

This course introduces the student to electrical installation methods for commercial applications. The Canadian Electrical Code is covered (utilizing the Ontario Electrical Safety Code) in conjunction with interpretation of construction drawings and specifications for a small commercial installation. ELR233 is a continuation of Installation Methods I and II which dealt primarily with 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. Interpret the Canadian Electrical Code (CEC) requirements pertaining to commercial installations.
   Potential Elements of the Performance:

   - Calculate the minimum ampacity of conductors and overcurrent devices for:
     - Apartment and Similar Buildings
     - Schools
     - Hospitals
     - Hotels, motels, dormitories, and buildings of similar occupancies
     - Other types of occupancies

   - Interpret the CEC regulations for protection including fuses, circuit breakers and ground fault protection and control devices including switches, panelboards and solid state devices (Section 14).

   - List and explain the requirements for different classifications of hazardous locations.

   - Interpret the CEC regulations pertaining to hospitals (Section 24).

   - Interpret the CEC regulations pertaining to Storage Batteries.

   - Explain the CEC installation requirements as applicable to branch circuits, overload, and overcurrent protection for individual continuous and non-continuous duty service motors

(Section 28).

- Interpret the CEC regulations as applicable to interior and exterior lighting equipment (Section 30).

- Interpret CEC regulations governing the installation of optical fibre cables including non-conductive optical fibre, conductive optical fibre and hybrid cables (Section 56); coaxial cables including protection, grounding, indoor, outdoor, overhead and underground installations (Section 54); and communication cables including protection, grounding, indoor, outdoor, overhead and underground installations (Section 60).

2. Interpret and revise specifications and drawings for a small commercial construction project.
<u>Potential Elements of the Performance:</u>

- Determine utility location and site features that affect electrical installations through the use of site drawings.

- Use architectural and structural drawings to determine methods of construction as they affect electrical installation.

- Use architectural and structural drawings to determine dimensions and elevations as they affect electrical installation.

- Use mechanical drawings to determine the electrical characteristics of mechanical equipment and systems.

- Use mechanical drawings to determine the layout of mechanical equipment and systems as they affect electrical installation.

- Select the correct wiring methods and electrical equipment for a commercial installation.

- Use a complete set of drawings and specifications to lay out commercial distribution and service equipment and wiring.

- Describe common lighting systems and their applications.

- Lay out commercial branch circuit wiring, lighting, and equipment using drawings and specifications.

- Use a complete set of drawings, specifications, manufacturers drawings, ULC Standards, the National Building Code and the CEC to lay out a fire alarm system.

- Lay out a control system or a communication system as per drawings and specifications.

- Use a complete set of drawings, specifications, manufacturers drawings, and the CEC to prepare a material take off.

- Prepare sketches to solve and document construction problems and solutions.

- Prepare as-built drawings to document electrical construction.

- Read and develop basic single line, schematic, and wiring diagrams.

III. TOPICS:

1. Canadian Electrical Code.
2. Interpretation of commercial plans and specifications.

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- Ontario Electrical Safety Code (current edition) or Canadian Electrical Code Part 1 (Current Edition)
- Electrical Wiring Commercial (Current Canadian Edition published by Delmar)

V. EVALUATION PROCESS/GRADING SYSTEM:

Quizzes (may be unannounced) 1% each to A maximum of 20%	0 to 20%
4 Tests*	80 to 100%

* 1 test (the test with the lowest mark) will have ½ the weighting of the other 3. This test will be determined on an individual basis.

The following semester grades will be assigned to students in postsecondary 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:

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.

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/lab with no make-up option.

Although attendance of the lectures is not mandatory it is strongly encouraged. Quizzes may be used as an incentive to attend classes and as an indicator of class participation and attendance. As such there will be no makeup of missed quizzes.
Code books are to be brought to class. Quizzes and 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 and quizzes will be ‘open book’ as far as the code book is concerned and may be ‘open book’ for the prints text as well. 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 and quizzes. Sharing books during a test or quiz is not permitted.
Students are expected to maintain an active Sault College email account. They are further required to check this email account daily. The instructor may announce details of lab and test requirements and scheduling through the Sault College email system (as well as sharing other important information).

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.