

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: INSTALLATION METHODS III
CODE NO. : ELR233 **SEMESTER:** Three
PROGRAM: Electrical Engineering Technician/Technology
AUTHOR: Ron Chartrand
DATE: September 2012 **PREVIOUS OUTLINE DATED:** September 2011
APPROVED:

"Corey Meunier"
CHAIR DATE

TOTAL CREDITS: 5
PREREQUISITE(S): ELR113, ELR123
HOURS/WEEK: 3

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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, panel boards 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, feeders, 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, in door, outdoor, overhead and underground installations (Section 60).

2. *Interpret and revise specifications and drawings for a small commercial construction project.*

Potential Elements of the Performance:

- 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, manufacturer's 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, manufacturer's 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:

| | |
|---|-----|
| Code Tests | 50% |
| Prints tests (based on Electrical Wiring Commercial text) | 50% |

The following semester grades will be assigned to students:

| Grade | <u>Definition</u> | <i>Grade Point Equivalent</i> |
|--------------|--|-----------------------------------|
| A+ | 90 – 100% | 4.00 |
| A | 80 – 89% | 3.00 |
| B | 70 - 79% | 2.00 |
| C | 60 - 69% | 1.00 |
| D | 50 – 59% | 0.00 |
| F (Fail) | 49% and below | |
| 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 arrivals 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.

If a student misses class time due to sickness, family emergency or other reason beyond his/her control the student must at his/her first opportunity meet with the course faculty to discuss if the missed time has placed the student at an increased risk of failing. The student must follow up the meeting by emailing the faculty with a summary of the meeting's discussions. Documentation validating the missed time may be required.

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.