



**I. COURSE DESCRIPTION:**

This course introduces the student to electrical installation methods. The Canadian Electrical Code is covered in conjunction with interpretation of construction drawings and specifications for residential installations.

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

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

**1. Interpret rules of the CEC, which apply to residential installation.****Potential Elements of the Performance:**

- Prepare a layout drawing for a service mast and indicate the procedure for installation (Section 6).
- Determine service entrance sizes, conductors and service disconnecting means. Service calculations for a single family dwelling.
- Complete an electrical system design from the point of utility supply, emergency supplies and transfers, to a panel board.
- Determine branch circuit requirements for supplying electric ranges
- Determine the maximum number of outlets allowed per circuit
- Explain the CEC regulations regarding grounding and bonding (section 10) of electrical systems and circuits operating at 750 volts or less.
- Identify installation requirements for ground fault circuit interrupters, arc fault circuit interrupters, transient voltage surge suppressors and isolated ground receptacles.
- Identify required locations of panel boards in single dwellings
- Identify installation requirements for receptacles installed in single dwelling occupancies as specified in the installation of electrical equipment section 26 of the CEC.

**2. Interpret and revise specifications and drawings for a single dwelling construction project.****Potential Elements of the Performance:**

- Use a set of drawings of a single dwelling to apply the information from the architectural, structural and mechanical drawings in relation to an electrical installation.
- Draw and label a panel schematic for a single dwelling.
- Prepare an electrical material take-off for a single dwelling.
- Apply specifications, building and electrical code to single dwellings.
- State procedures for inspecting an installation by the appropriate authority.

**3. Prepare and complete layout and installations as applicable to a single dwelling construction project. (Labs)**

Potential Elements of the Performance:

- Install a 100 amp service (X3) for 1) underground, 2) stack and 3) mast installations.
- Layout and install receptacles including split receptacles and split switched receptacles.
- Demonstrate wiring of ground fault receptacles, ground fault breakers and arc fault breakers.
- Demonstrate installation methods for non-metallic sheath cable and armoured cable (BX).
- Demonstrate installation of EMT and PVC conduit.

**III. TOPICS:**

1. CEC, layout and general rules
2. CEC, residential rules
3. Residential electrical installation methods

**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, hacksaw, claw hammer and tool pouch

**V. EVALUATION PROCESS/GRADING SYSTEM**

**Theory 50%** (Quizzes, unit assignments, tests)

Quizzes (may be unannounced) 1% each to a maximum of 10 %.

Completion of unit questions 20%.

Three tests equally weighted total of 20 to 30 %

**Lab 50%**

Assessment of lab activities, associated reports / assignments 50%

**NOTE!:** Students must maintain a minimum average of 50% in quizzes and tests in order to pass the course

The following semester grades will be assigned to students:

| <b>Grade</b> | <b>Definition</b>  | <b>Grade Point Equivalent</b> |
|--------------|--|-------------------------------|
| 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.

## VII. COURSE OUTLINE ADDENDUM:

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