



**I. COURSE DESCRIPTION:**

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

**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 requirements pertaining to industrial installations.*****Potential Elements of the Performance:**

- Use architectural, electrical, and mechanical drawings and specifications to determine installation requirements for a construction project.
- Read and develop complex single line, schematic and wiring diagrams.
- Identify the standards for IEC, NEMA, and EEMAC rated starters and contactors as per manufacturer's specifications.
- Use plans to design branch circuit layouts for single phase and three phase systems from panels to the points of utilization, employing load balancing techniques.
- Complete a cable pulling calculation to determine the stresses on the conductor/cable during installation.
- Prepare branch circuit, feeder, and bus duct electrical estimates, using the drawings, for construction installations, and transfer the information to material order sheets.
- Complete an electrical system design from the point of utility supply, emergency supplies and transfers, to a panel board and associated loads including transformers, feeders, bus duct, splitters, disconnects, capacitors and motors, applying Code rules.
- Complete the grounding and bonding requirements for a high voltage substation installation including indoor and outdoor substations and electrical vaults.

- State the precautions necessary for the installation of a stress cone.
- Describe the preparation and termination of shielded high voltage cables.
- Describe the preparation and termination of concentric neutral high voltage cables.
- Describe the testing methods for high voltage cables and identify all applicable safety requirements.
- Select overcurrent devices to ensure proper overcurrent coordination as per manufacturer's specifications, CEC and customer's requirements.

**III. TOPICS:**

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

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

- Canadian Electrical Code Part 1 (Current Edition)
- Electrical Wiring Industrial (Current Canadian Edition published by Delmar)

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

Tests worth 80%

Homework Questions 20%

Unannounced quizzes 5% each of the above 100%

There will likely be 2 tests during the intake and dates will be identified in class.

The professor reserves the right to adjust the number of tests as warranted. Any modification will be discussed in class.

Tests will not be returned but will be available for review.

\*see special notes.

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<i>Grade Point Equivalent</i>
A+	90 – 100%	
A	80 – 89%	4.00
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:**

### 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.

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.

Any material covered during any absence legitimate or not is the responsibility of the student.

Deadlines will be specified for submission of assignments for grading. Late assignments will not be accepted and a grade of 0 will be assigned.

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. 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 or lab time is strictly prohibited. Cell phones/PDAs must be silenced during regular class and lab times 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 lab activities or test sittings. This does not include hearing aids required for the hearing impaired.

#### **VII. COURSE OUTLINE ADDENDUM:**

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