

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



COURSE OUTLINE

COURSE TITLE: Electrical Installation Methods II

CODE NO. : HMI 212 **SEMESTER:** FOUR

PROGRAM: Home Inspection

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DATE: January 2016 **PREVIOUS OUTLINE DATED:** January 2015

APPROVED: *“Corey Meunier”*
CHAIR

TOTAL CREDITS: FOUR

PREREQUISITE(S): HMI203 – Electrical Installation Methods I

HOURS/WEEK: FOUR

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I. COURSE DESCRIPTION:

This course expands on electrical concepts learned in HMI111 and HMI203.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. *Correctly select and safely install common residential electrical wiring systems within the regulations and standards set out by the Canadian Electrical Code (CEC).*

Potential Elements of the Performance:

- Demonstrate the proper installation procedures required for the following wiring methods while ensuring strict adherence to CEC regulations; non-metallic sheathed cable, armored cable, mineral insulated cable, metallic sheathed cable, rigid metallic tubing and electrical non-metallic tubing (Section 12).
- Demonstrate the ability to install a complete 100 amp residential service including the following circuits: hot water heater, range outlet, dryer outlet, split duplex receptacle, bathroom outlet, outside weather-proof receptacle and general branch circuits (Section 6, 12, 26).
- Demonstrate the ability to correctly select and size overcurrent protection (Section 14).
- Explain the general regulations regarding Class 2 signal and remote control circuits (section 16) of CEC.
- Identify installation requirements for electric heating installed in single dwelling occupancies as specified in the installation of electrical equipment, section 62 of the CEC
- Identify requirements for the installation of pools, tubs and spas (Section 68).
- Interpret the CEC regulations regarding the installation of fire alarms, smoke, heat and carbon monoxide detectors located in dwelling units.
- Identify installation requirements for lighting installed in single dwelling occupancies as specified in the installation of electrical equipment section 30 of the CEC.
- Identify switch control of lighting circuits, receptacle bonding and induction heating resulting from unusual switch connections.
- Demonstrate the correct installation procedures and wiring connections for common residential switching devices and outlets ensuring strict adherence to the CEC and to National Building Code (NBC) regulations.

- Identify requirements for television, phone, data and home automation systems (Sections 54 & 60).
- Identify temporary wiring installations requirements for building or project under construction or demolition (section 76) of the CEC.

III. TOPICS:

1. Residential Wiring Practices including Codes.

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 and 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:

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.

VII. COURSE OUTLINE ADDENDUM:

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

HMI212 Installation Methods II – Course Plan

Week	Outcomes	Format	Hrs	Topic/Content	Readings	Assignments	Assessment	Resources
1, 2	1	Lecture	4	<p><i>Review of HMI 202</i></p> <p><i>Demonstrate the ability to correctly select and size overcurrent protection</i></p> <p><i>Demonstrate installation common to residential electrical wiring systems and equipment in compliance with the CEC.</i></p>	Review codes sect. 6,8,10,26 and HMI 202 Unit 16	Questions from text as assigned by instructor	Hand in and/or take up	CEC, Residential Electrical Wiring for all classes
		Lab (cont. in week 3)	4	<p><u>Apply: Demonstrate</u> the correct installation procedures and wiring connections for common residential switching devices and outlets with strict adherence to the CEC and NBC.</p>	Code Sec. 14	Lab assignment	Evaluation of practical lab assignment	
				<p><u>Demonstrate</u> proper installation procedures required for the following wiring methods while insuring strict adherence to CEC regulations: non-metallic sheathed cable, armoured cable, mineral-insulated cable, metallic sheathed cable, rigid / flexible conduit, rigid metallic tubing, and electrical non-metallic tubing. (Section 12)</p> <p><u>Demonstrate</u> the proper use of common hand tools in the electrical trade.</p>	Ref. unit 17		Evaluation of practical lab assignment	
3	1	Lecture	2	<p><i>General regulations regarding Class 2 signal and remote control circuits (Sect. 16 of CEC).</i></p>	Unit 22 Sect. 16	Questions as assigned by instructor	Hand in and/or take up	
		Lab	2	Continue labs as indicated in weeks 1,2		Lab assignment		

4	1	Lecture	4	Review / Test #1			Test # 1	
5,6, ½ of 7	1	Lecture	5	<i>Identify installation requirements for electric heating installed in single dwelling occupancies as specified in the installation of electrical equipment, section 62 of the CEC</i> <i>Apply</i> <i>Prepare a layout drawing for mast and installation.</i>	Unit 22 Code sec. 62	Questions as assigned by instructor	Hand in and/or take up	
		Lab	5	<i>Demonstrate the ability to install a complete 100 amp residential service including the following circuits: hot water heaters, range outlets, dryer outlet, split duplex receptacle, bathroom outlet, outside weather-proof receptacle and general branch circuits, etc. (Sections 6, 12, 26)</i>	Section 14, 16	Lab assignment	Evaluation of practical lab assignment	
½ of 7 8, 9	1	Lecture	5	<i>Identify requirements for the installation of pools, tubs and spas (Section 68).</i> <i>Describe enclosures and fittings to electrical installations.</i>	Units 13, 23 Unit 20	Questions as assigned by instructor	Hand in and/or take up	
		Lab	5	<i>Apply</i> <i>Demonstrate</i> requirements for the installation of pools, tubs and spas (Section 68) including the proper installation of enclosure and fittings common to the electrical trade.		Lab assignment	Evaluation of practical lab assignment	
10	1	Lecture	4	Review / Test #2			Test #2	

11	1	Lecture	2	<i>Interpret the CEC regulations regarding the installation of fire alarms, smoke, heat and carbon monoxide detectors located in dwelling units. (sec. 32)</i> <i>Describe</i> <i>The CEC regulations for fire alarms.</i>	Unit 21 Unit 24	Questions as assigned by instructor	Hand in and/or take up	
		Lab	2	<i>Demonstrate</i> the CEC regulations regarding the installation of fire alarms, smoke, heat and carbon monoxide detectors located in dwelling units.		Lab assignment	Evaluation of practical lab assignment	
12, 13	1	Lecture	4	<i>Identify installation requirements for lighting installed in single dwelling occupancies as specified in the installation of electrical equipment (section 30 of the CEC)</i> <i>Identify switch control of lighting circuits, receptacle bonding and induction heating resulting from unusual switch connections.</i>	Unit 10 Unit 8	Questions as assigned by instructor	Hand in and/or take up	
		Lab	4	<i>Demonstrate</i> the correct installation procedures and wiring connections for common residential switching devices and outlets ensuring strict adherence to the CEC and to National Building Code (NBC) regulations. <i>Demonstrate</i> switch control of lighting circuits		Lab assignment	Evaluation of practical lab assignment	
14	1	Lecture	2	<i>Identify requirements for television, phone, data and home automation systems (Sections 54 & 60).</i> <i>Identify temporary wiring installations requirements for building or project under construction or demolition</i>	Unit 24 Sect. 54, 60	Questions as assigned by instructor	Hand in and/or take up	

				<i>(section 76) of the CEC.</i>			
		Lab	2	<u>Apply</u> Install / prepare for television outlets, antennas, cable, etc. Install / prepare for CATV installation requirements. Prepare conduit for telephone conductors, boxes and outlets.		Lab assignment	Evaluation of practical lab assignment
15	1	Lecture	4	<i>Review / Test # 3</i>			Test #3
16	1			Take up test #3			