 **HMI203 Electrical Installation Methods I – Course Plan**

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| Week | Outcomes | Format | Hours | Topic/Content | Readings | Assignments | Assessment | Resources |
| 1-4 | 1, 2 | Lecture | 8 | **Review** Canadian Electrical Code  Review Intro. to Residential Electrical installations code (**HMI111**) | Units 3,4  (services Code sec. 6) | Handout / teacher’s resources (**for review**) | Review quiz  Assign. to be handed in | Canadian Electrical Code Book (CEC), Residential Electrical Wiring |
|  |  |  |  | Describe |  |  |  |  |
|  |  |  |  | Objective, scope and general arrangement of the Canadian electrical code. |  |  |  |  |
|  |  |  |  | Identify |  |  |  |  |
|  |  |  |  | Determine service entrance sizes, conductors and service disconnecting means. |  |  |  |  |
|  | 1,2,3 | Lab | 8 | Apply |  |  |  |  |
|  |  |  |  | Prepare a layout drawing for a service mast and indicate the procedure for installation, including underground and stack installations | Code sec. 6 | **Lab Assignmt #1 and 2** | Assign. to be handed in |  |
| 5-8 | 1,2 | Lecture | 8 | Explain Canadian electrical code for residential installation. | Unit 10-11  Pg. 185-211  Section 6 | Pg. 194  Ques. 1-9 | To be handed in  **Week 5 review / test** | CEC, Residential Electrical Wiring |
|  |  |  |  | Complete and electrical system design from the point of utility supply, emergency supply and transfers to a panel board. | Sect. 26-400  Sect. 6, 8 |  |  |  |
|  |  |  |  | Explain |  |  |  |  |
|  |  |  |  | Grounding and bonding. |  |  |  |  |
|  |  |  |  | Circuits operating at 750 volts or less (section 10). |  |  |  |  |
|  |  |  |  | Branch circuits (review) |  |  |  |  |
|  |  |  |  | Identify |  |  |  |  |
|  |  |  |  | Determine the maximum number of outlets allowed per circuit. |  |  |  |  |
|  |  |  |  | Explain |  |  |  |  |
|  |  |  |  | CEC regulations regarding grounding and bonding (Sect. 10) of electrical systems and circuits operating at 750 volts or less. | Sect. 8-304 |  |  |  |
|  |  |  |  | Ground faults circuit interrupters, arc fault circuit interrupters, surge suppressors and isolated ground receptacles. | Sect. 26  Unit 9  Pg. 165-180 | Ques. 1-23  Pg. 181 | Assign. to be handed in |  |
|  |  |  |  | Explain |  |  |  |  |
|  |  |  |  | Operation and connection of GFCIs. |  |  |  |  |
|  |  |  |  | Why GFCIs are required. |  |  |  |  |
|  |  |  |  | Installation of GFCIs and AFCIs |  |  |  |  |
|  |  |  |  | Identify |  |  |  |  |
|  |  |  |  | Locations of GFCIs and AFCIs. |  |  |  |  |
|  |  |  |  | The theory of ground fault. |  |  |  |  |
|  | 1,2,3 | Lab | 4 | Apply |  |  |  |  |
|  |  |  |  | Continue the layout and installation procedure for mast installations | Code sec. 6 | **Lab Assignmt #3** | Assign. to be handed in |  |
|  |  |  |  | Calculate conduit fill for same size conduit and insulation type. |  |  |  |  |
|  |  |  |  | Calculate conduit fill for different sizes and insulation type. |  |  |  |  |
|  |  |  |  | Calculate raceway fill types (section 12) | Ref. Unit 12  Pg. 220-233 | Pg. 257  Ques. 1-24 | To be handed in | Residential Electrical Wiring |
|  |  |  |  | Calculate raceway fill for different sizes and insulation type (section 12). |  |  |  |  |
|  |  |  |  | Calculate number of conductors size 14 to 6 that are permitted in a box. |  |  |  |  |
|  |  |  |  | Calculate the minimum size of pull boxes, straight, angled and u-pulls larger than a number 6. |  |  |  |  |
|  |  |  |  | Calculate ampacity, factors for single conductors in free air, including conductors in parallel. |  |  |  |  |
|  |  |  | 4 | Demonstrate wiring of ground fault receptacles, ground fault breakers and arc fault breakers. |  | **Lab Assignmt #4** | To be handed in |  |
| 8-9-10 | 1, 2 | Lecture | 6 | Explain  Specifications and drawings | Unit 13  Pg. 237-246.  Section 8 | Pg. 246  Ques. 1-3, 1-11, 1-8. | To be handed in  **Week 10 review / test** | CEC and Residential Electrical Wiring |
|  |  |  |  | State procedures for inspecting an installation by appropriate authority. |  |  |  |  |
|  |  |  |  | Specifications, building and electrical codes (CEC) |  |  |  |  |
|  |  |  |  | Identify |  |  |  |  |
|  |  |  |  | Alpha-numerical lines. |  |  |  |  |
|  | 1,2,3 | Lab | 6 | Apply |  |  |  |  |
|  |  |  |  | Layout and install receptacles including split receptacles and split switched receptacles |  | **Lab Assignmt #5** | To be handed in |  |
|  |  |  |  | Competency with metric and Imperial scales. |  |  |  |  |
|  |  |  |  | Convert between the two. |  |  |  |  |
|  |  |  |  | Residential specifications. |  |  |  |  |
|  |  |  |  | Using a set of drawings of a single dwelling, apply information from the architectural, structural and mechanical drawings. |  |  |  |  |
|  |  |  |  | Draw and label a panel schematic. |  |  |  |  |
|  |  |  |  | Prepare an electrical material take-off. |  |  |  |  |
| 11-12 | 1,2,3 | Lecture | 4 | Explain Special purpose outlets | Unit 15  Pg. 262-271 | Pg. 271  Ques. 1-10, 1-8, 1-8, 1-10 | To be handed in | CEC, Residential Electrical Wiring |
|  |  |  |  | Identify |  |  |  |  |
|  |  |  |  | Electrical plans and special installations. |  |  |  |  |
|  |  |  |  | Infinite heat temperature controls. |  |  |  |  |
|  |  |  |  | How to install a feeder and divide a feeder into individual circuits. |  |  |  |  |
|  | 1,2,3 | Lab | 4 | Apply  Demonstrate installation methods for non-metallic sheath cable and armoured cable (BX) |  | **Lab Assignmt #6** | To be handed in |  |
|  |  |  |  | Compute demand factors for ranges, wall mounted ovens, etc. |  |  |  |  |
|  |  |  |  | Select proper conductor sizes. |  |  |  |  |
|  |  |  |  | Ground all appliances properly. |  |  |  |  |
|  |  |  |  | Install circuits for dishwashers and waste disposals in compliance with CEC. |  |  |  |  |
| 13-14-15 |  | Lecture | 6 | Describe  Branch circuits for laundry, washroom and attic | Unit 16  Pg. 276-287  Section 10 | Pg. 387  Ques. 1-14, 1-12 | To be handed in  **Week 15 Review / test # 3** | CEC, Residential Electrical Wiring |
|  |  |  |  | CEC requirements for receptacle outlets. |  |  |  |  |
|  |  |  |  | Discuss the CEC rules pertaining to attics. |  |  |  |  |
|  |  | Lab | 6 | Apply |  |  |  |  |
|  |  |  |  | Demonstrate installation of EMT and PVC conduit |  | **Lab Assignmt #7** | To be handed in |  |
|  |  |  |  | Proper wiring and grounding connections for large appliances. |  |  |  |  |
|  |  |  |  | Various wiring methods. |  |  |  |  |
|  |  |  |  | Proper way to connect pilot lights and pilot light switches. |  |  |  |  |
| 16 |  |  |  | Review. |  |  |  |  |