COURSE CON2090: CLIMATE CONTROL SYSTEMS

Level: Intermediate

Theme: Building Systems (Processes and Applications)

Prerequisite: CON1010 Basic Tools & Materials

Description: Students investigate common heating, ventilating and air conditioning (HVAC) systems and principles, and participate in the installation or maintenance of one of these systems.

Parameters: Access to a building site and/or construction facility and to instruction from an individual with specialized training in sheet metal and climate control installation/service.

Supporting Course: CON1070 Building Construction

Curriculum and Assessment Standards

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• list and describe the major components of a typical heating, ventilating and air conditioning system	• the accurate identification and description of the components given a representation of a typical residential HVAC system. *Assessment Tool* *Response Assessment: Heating, Ventilating and Cooling Systems, CON2090–1* *Standard* *Response rating of 2*	10
• prepare a preventive maintenance schedule for a heating, ventilating and/or air conditioning system	• a comprehensive preventive maintenance schedule for a given component within a HVAC system. *Assessment Tool* *Activity Assessment: Maintaining/Installing a HVAC System, CON2090–2* *Standard* *The schedule should take into account the frequency and amount of use, condition of use and manufacturer's recommendations* *Performance rating of 2 for each applicable task*	20

COURSE CON2090: CLIMATE CONTROL SYSTEMS (continued)

General Outcomes	Assessment Criteria and Conditions	Suggested Emphasis
The student will:	*Assessment of student achievement should be based on:*	
• service or install a heating, ventilating and/or air conditioning system	• demonstration of skills related to the installation and/or servicing of a typical residential HVAC component. *Assessment Tool* *Activity Assessment: Maintaining/Installing a HVAC System, CON2090–2* *Standard* *Installation and servicing procedure are performed according to the manufacturer's recommendations* *Performance rating of 2 for each applicable task*	60
• profile a trade or occupation within the heating and air conditioning fields	• presentation of an occupation/trade profile that outlines: – description of the occupation and working conditions – present and future employment opportunities – training centres and requirements. *Assessment Tool* *Research Process: Career Opportunities in Heating & Air Conditioning, CON2090–3* *Standard* *Performance rating of 2 for each applicable task*	10
• demonstrate basic competencies.	• observations of individual effort and interpersonal interaction during the learning process. *Assessment Tool* *Basic Competencies Reference Guide and any assessment tools noted above*	Integrated throughout

MODULE CON2090: CLIMATE CONTROL SYSTEMS (continued)

Concept	Specific Learner Expectations	Notes
Orientation	*The student should:*	
• Heat Transfer	• research the methods heat is transferred; e.g.: – convection – radiation – gravity	This module can be effectively combined with the sheet metal modules found in Fabrication Studies.
	• identify the parts of a typical HVAC system	
	• compare hot water and forced air heating	
	• identify and describe the types of warm/cold air distribution systems; e.g.: – perimeter loop – radial – trunk and branch	Stress the importance of having a well-designed HVAC system to achieve greater comfort and efficiency.
• Design	• explain how heating systems are sized, number of outlets calculated and locations determined	Discuss the effects of window and tree locations on room temperature.
	• examine a typical heating system and determine how room temperatures are regulated	
	• explain the effects on air quality when there is a lack of ventilation	
	• identify the service routines that should be followed for a heating and cooling system.	
Planning and Management	• describe the cost-effectiveness of heating with various fuels	Discuss the use of computer controls in regulating air temperature.
	• prepare a layout for a part of a HVAC system OR • prepare a service schedule for HVAC component.	
Implementation	• assist in the installation of a HVAC system OR • service a component of a HVAC system.	

MODULE CON2090: CLIMATE CONTROL SYSTEMS (continued)

Concept	Specific Learner Expectations	Notes
Assessment • Career Information • Career Preparation	*The student should:* • identify employment and further training opportunities related to heating and air conditioning • analyze personal interests and abilities related to making realistic career choices • maintain a record of completed activities within a portfolio.	