Appendix B

New Course or Course Change Proposal Form

| Date of Proposal: | 11/27/12 |
| Author: | Todd Hurford |
| Proposal Type: | (X) New Course | Modify Course | Delete Course |
| Contact for the Course: | Todd Hurford |
| Course Designator, Number and Title (i.e.: ACCT 1800, Business Law): | HVAC 2215 Coolers/Freezers Refrigeration Diagnostics & Operations |
| Number of Credits: | 3 |
| Prerequisites: | HVAC 2120 |
| Course Description: | See CCD |

| Grading Method: | Grade | Pass/Fail |
| Scheduling: | Fall (X) | Spring | Summer | Alternate Years | Variable | On Demand |
| Instructional Type: | Lecture | Lab | Lecture/Lab (X) | Internship | Seminar |

(*) Class Maximum: (For New Courses Only) / All Unlimited faculty members of a program or discipline must sign.

| Faculty Name | Faculty Signature | Class Max | Date |
| Todd Hurford | Signature | 25 | 11/28/12 |

| Dean's Name | Dean's Signature | Date |

If there is not enough space provided, please use the back of this form for additional signatures or click on a row with the right button of the mouse, select insert and then select insert rows below to add rows to the table.

Is this Course Proposed as a Liberal Arts Course: | Yes | No (X) |

If Yes, Which MnTC Area/Areas Will it Fulfill (http://www.mntransfer.org)?

Is This Course a Requirement/Elective for a Specific Program or Programs? | Yes (X) | No |

If Yes, Which Program(s)? HVAC/EC |

Describe What is Changing/Being Added, and the Rationale: The course title and moving all sealed system info to one course.

What Impact Will This New Course or Change Have on Other Programs or Areas? None

➢ Attach Common Course Outline to this Form.
Coolers/Freezers Refrigeration Diagnostics & Operations
Common Course Outline

Course Information
Organization          South Central College
Developers            Todd Huxford
Development Date      11/16/2012
Course Number         HVAC2215
Potential Hours of
Instruction           80
Total Credits         3

Description
This course will cover both commercial coolers and freezers. We will discuss the operation of the refrigeration sealed system and analyze how to diagnose system failures and their causes. The student will learn the proper way to recover and charge a commercial refrigeration unit. The students will study and follow EPA regulations regarding the handling of refrigerants. Proper safety and troubleshooting techniques will be followed. To be successful in this course, you should have knowledge in electrical circuits, refrigeration theory, and refrigeration controls.

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom Presentation</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>On-Campus Lab</td>
<td>64</td>
<td>2</td>
</tr>
</tbody>
</table>

Prerequisites
HVAC2120

Exit Learning Outcomes

External Standards
Critical and Creative Thinking
Teamwork and Problem-solving
Ethical Reasoning and Action
Written and Oral Communication
Foundation and Skills for Lifelong Learning
Civic Knowledge and Engagement - Local and Global

Competencies
1. Examine safety requirements while working with refrigerants.
   Learning Objectives
   a. Communicate what safety equipment is needed while working with refrigerants.
   b. Demonstrate wearing the proper safety equipment while working with refrigerants.
2. Examine refrigerants used for medium & low temperature applications.
   Learning Objectives
   a. Review the different temperature application zones.
   b. Identify the refrigerants by the color of the tank.
   c. Identify what refrigerant works best for the application.
3. **Examine different defrost methods for commercial units.**
   **Learning Objectives**
   a. List the best methods for defrosting commercial units.
   b. Compare and discuss the different ways of defrosting commercial units.

4. **Examine the access valves and stem positions.**
   **Learning Objectives**
   a. Identify the different service access valves found on commercial units.
   b. Describe what the different positions of the service access valves are and what is their function.
   c. Troubleshoot service access valve problems.

5. **Demonstrate installing and removal of refrigerant gauges correctly.**
   **Learning Objectives**
   a. Connect refrigerant gauges to system using EPA guidelines.
   b. Remove refrigerant gauges using EPA guidelines.
   c. Use proper safety equipment while working with refrigerants.

6. **Explain the pump-down procedure and function.**
   **Learning Objectives**
   a. Describe the purpose for doing a pump-down.
   b. Demonstrate on a working unit the pump-down procedure.
   c. Describe what has to be done when you can't pump-down the system.

7. **Analyze refrigerant components that are only found on commercial units.**
   **Learning Objectives**
   a. Explain the function of EPR and CPR valves.
   b. Discuss pressure controls and how to set them.
   c. Discuss the different types of metering devices used on commercial equipment.
   d. Explain the uses of refrigerant solenoids.

8. **Measure proper refrigerant charge in a walk-in unit.**
   **Learning Objectives**
   a. Describe the procedure for measuring refrigerant in a system.
   b. Demonstrate how to check refrigerant level in a system.

9. **Examine reasons for sealed system failures.**
    **Learning Objectives**
    a. List complaints and then solutions for sealed system failures.
    b. Identify situations that could cause system failures.

10. **Diagnose refrigeration sealed system failures on commercial units.**
    **Learning Objectives**
    a. Follow all safety rules while troubleshooting.
    b. Troubleshoot failures that have been introduced into the lab equipment by your instructor.
    c. Articulate to the customer what they did to the unit.
    d. Use your test equipment properly.