Course Description: Theory of and practical application in the maintenance of commercial refrigeration; high, medium, and low temperature applications and ice machines. The student will be introduced to various controls and components used in these applications. This course covers piping procedures, wiring, operation, and troubleshooting. The student will also study air cooled, water cooled, and evaporative cooled condensers and their applications. Prerequisites: HART 1401 and HART 1407 or consent of instructor.

Text, References, and Supplies:

1. Modern Refrigeration and Air Conditioning Latest Edition with E Resources from book store

2. Industry Literature

Course Goals/Objectives:

This course covers commercial refrigeration equipment with a heavy emphasis on operation and troubleshooting of ice machines, walk-in coolers, and walk-in freezers. The following list of course goals will be addressed in the course. These goals are directly related to the performance. Upon successful completion of the course the student will:

(* designates a CRUCIAL Goal)

1. Display work habits.
2. Analyze generic cube machine operation.
3. Analyze Ice-O-Matic cube machine operation.
4. Analyze Manitowoc cube machine operation.
5. Analyze Hoshizaki cuber operation.
6. Analyze Scotsman cuber operation.
7. Calculate cuber ice production.
8. Clean cuber water system.
10. Compare cuber evaporators.
11. Compare cuber defrost termination.
12. Analyze generic flake machine operation.
13. Calculate flaker ice production.
14. Clean flaker water system.
15. Compare flaker evaporators.
16. Analyze ice cream freezer operation.
17. Analyze walk-in cooler operation.
19. Trace walk-in freezer wiring diagram.
20. Describe defrost time clock operation.
21. List defrost system methods.
22. Trouble shoot air cooled condenser operation.
23. Troubleshoot water cooled condenser operation.
24. Compare evaporative cooled condenser operation.
25. Explain water regulation valve operation.
27. Adjust water regulating valve.
28. Set TXV superheat.
29. Test oil failure control.
30. Measure TEV superheat setting.
31. Describe oil charging procedures.
32. Explain liquid charging procedures.
33. Explain hot-gas bypass capacity control.
34. List capacity control methods.
35. List common head pressure control methods.
36. List head pressure control advantages.
37. Define effective oil pressure.
38. Explain oil pressure control purpose.
39. Explain oil pressure safety control operation.
40. Explain pump-down cycle components.
41. List pump-down cycle components.
42. Explain oil-refrigeration migration.
43. Describe refrigeration piping functions.
44. Interpret pipe sizing chart information.

Student Contributions and Class Policies:

Each student will spend at least 4 hours per week preparing for class. As a student in this course you are expected to display respect, professional behavior, and cooperative attitude at all times. Punctual attendance is critical in this class due to the extent of the material. The college attendance policy will be strictly adhered to. The student is expected to be prepared to work and to participate in all class activities.
**Evaluation of Students:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Lab</td>
<td>30%</td>
</tr>
<tr>
<td>Quizzes and Homework</td>
<td>25%</td>
</tr>
<tr>
<td>Attitude and Attendance</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Course Schedule:**
The class meets for 6 lecture hours and 6 lab hours per week for 8 weeks

**AMERICANS WITH DISABILITIES ACT (ADA):**

Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact Shep Grinnan as soon as possible. Mr. Grinnan’s office is located in the Scharbauer Student Center Building. These conditions may include documented physical or educational disabilities. Please be aware that services or accommodations are not automatic. Each student must request them and secure the proper authorizations/documentation.

**SCANS Information:**

The following SCANS skills will be taught and/or reinforced in this course.

**WRITING:**
Communicates thoughts, ideas, information, and messages in writing; records information completely, and accurately; creates graphs, reports and charts.

**LISTENING/SPEAKING:**
Receives, attends to, interprets, and responds to verbal messages. Communicates oral messages, participates in discussions, and group activities.

**THINKING SKILLS:**
Recognizes problems and devises and implements plan of action. Uses efficient learning techniques to acquire and apply new knowledge and skills.

**PERSONAL QUALITIES:**
Displays responsibility, self-esteem, sociability, self management, integrity, and honesty. Chooses ethical courses of action.
furnish their own protection. Visitors will be supplied with a pair of glasses to be used during their visit. If you have any questions about this policy, please ask your instructor to clarify them for you.

Instructor Information:
Jaroy Roberts, Professor
Room 187 TC
(432) 685-4687 Office
(432) 349-5913 cell
E-Mail: jroberts@midland.edu

Office Hours: Posted

Curt Pervier, Applied Technology Dean
Lisa Tanner, Applied Technology Secretary
Room 143A TC
(432) 685-4676
Fax: (432) 685-6472

Students are encouraged to contact the instructor at any time; however, making an appointment will guarantee the instructor’s availability at a specific time.