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MIDLAND COLLEGE
SYLLABUS
HART 2442
COMMERCIAL REFRIGERATION
3-3

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:
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1. **Modern Refrigeration and Air Conditioning** current edition

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*.
9. Compare cuber *defrost initiation*.
10. Compare cuber *evaporators*.
11. Compare cuber *defrost termination*.
13. Analyze *generic* flake machine operation.
14. Calculate flaker *ice production*.
15. Clean flaker *water system*.
16. Compare flaker *evaporators.*
17. Analyze *ice cream freezer* operation.

18. 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*.
26. Adjust multiple *TXV superheat*.
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:

Lab	30%
Quizzes and Homework	25%
Attitude and Attendance	20%
Final Exam	25%
Total	100%

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

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.

Safety Glass Policy: It is required that all persons in the Air Conditioning Program wear eye protection while in the lab. Students are required to 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, Instructor
Room 187 TC
(432) 685-4687 Office
(432) 349-5913 cell
E-Mail: jroberts@midland.edu

Office Hours: Will be posted

Curt Pervier, Applied Technology Dean
Lisa Hays, 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.

Americans with Disabilities Act (ADA) Statement:

Midland College provides services for students with disabilities through Student Services. In order to receive accommodations, students must visit www.midland.edu/accommodation and complete the Application for Accommodation Services located under the Apply for Accommodations tab. Services or accommodations are not automatic, each student must apply and be approved to receive them. All documentation submitted will be reviewed and a "Notice of Accommodations" letter will be sent to instructors outlining any reasonable accommodations.

*Students MUST actively participate by completing an academic assignment required by the instructor by the official census date. Students who so not actively participate in an academically-related activity will be reported as never attended and dropped from course.

Midland College Non-Discriminatory Statement:

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