MIDLAND COLLEGE
SYLLABUS
HART 2434
ADVANCED AIR CONDITIONING CONTROLS
3-3

Course Description:

Methods for troubleshooting electrical control devices and control circuits including correctly wiring electrical components. This course covers the proper methods for troubleshooting electrical control devices and control circuits. The student will study the correct wiring for components such as lock out relays, oil failure controls, and thermostats. The student will be introduced to solid state controls and their functions. **Prerequisites: HART 1401 or consent of instructor.**

Text, References, and Supplies:

1. **Modern Refrigeration and Air Consitioning**
   Current edition
2. Industry Literature

Course Goals/Objectives:

This course is designed to help apply knowledge gained in the HART 1401 class to more complicated and detailed circuits. This course also gives an introduction to the solid state controls being used more often in the AHRT industry. The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. Upon successful completion of the course the student will:

(* designates a CRUCIAL Goal)

1. Display *work habits*.
2. Draw a *dual transformer* wiring diagram.
3. Identify *thermostat terminal designations*.
4. Describe *cooling anticipator* purpose.
5. Describe *heating anticipator* purpose.
6. Connect *3 wire oil failure* control circuit
7. Connect *4 wire oil failure* control circuit.
8. Connect *combination lock-out relay/oil* failure circuit.
9. Connect *dual transformer* circuit.
10. Connect *lock-out relay* circuit.
11. Connect *time guard* circuit.
12. State *purpose lock-out* relays.
*13. Trace *schematic diagrams*.
14. Define *anode*.
15. Define *cathode*.

16. Define *diode.*
17. Define *rectifier*.
18. Define *thermistor*.
19. Define *conventional current* flow.
20. Define *electron* flow.
21. Define *semiconductor*.
22. Describe benefit of *solid state* over *conventional Devices.*
23. Explain solid state control *disadvantages*.
24. Explain solid state control *advantages*.
25. Explain *rectification*.
26. Explain *diode operation*.
27. Explain *silicon controlled rectifier*.
28. Explain *triac operation*.
29. Identify *diode symbol*.
30. Identify *schematic components*.
31. Identify *SCR symbol*.
32. Identify *transistor symbol*.
33. Calculate full wave bridge rectifier *output voltage.*
34. Trace full wave bridge rectifier *circuit.*

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.

TECHNOLOGY:
Chooses procedures, tools or equipment including computers and related technologies. Prevents, identifies, or solves problems with equipment.

ARITHMETIC/MATHEMATICS:
Performs basic computations; uses tables, graphs, diagrams and charts to obtain or convey quantitative information. Expresses mathematical ideas and concepts orally and in writing.

Instructor Information:

Jaroy Roberts, Instructor
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 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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Spanish

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