

## **AIR CONDITIONING/REFRIGERATION MECHANIC**

**COURSE PREFIX/NO: MET 226**

**COURSE TITLE: Applied Heat Principles**

**CREDIT HOURS: 4.0**

**LECTURE HOURS: 4.0**

**LAB HOURS: 0.0**

[DL Attendance/VA Statement](#)

[Textbook Information](#)

### **COURSE DESCRIPTION:**

This course covers energy transfer principles involved in heating, cooling and power cycles. Emphasis is placed on the optimization of thermal efficiency through the study of various thermodynamic cycles.

### **COURSE COMPETENCIES:**

Upon successful completion of this course, the student should be competent to perform the following tasks:

- Calculate the heat gain/loss of both residential and commercial structures.
- Select the proper equipment from manufacturer specifications to meet heat load requirements.
- Using manufacturer specifications, calculate air requirements and design a duct system to meet these requirements.

### **PERFORMANCE OBJECTIVES:**

Given a set of blueprints and lectures on industry standard load calculation procedures, the student will calculate manually the heat gain/loss of the structure whether residential or commercial. The student will then produce a computerized load calculation on the structure. Comparison between manual and computerized load calculations will vary by no more than plus or minus 5%.

Given manufacturer specifications, the student will select the proper equipment to meet the load calculation requirements to the structure.

Given a set of blueprints and load calculation, the student will manually design and lay-out a duct system. The student will then produce a computerized duct lay-out. Comparison between manual and computerized duct lay-out will vary by no more than plus or minus 5%.

Given guidelines of acceptable work behavior by the instructor, the student will exhibit proper work attitudes at all times. See Evaluation Strategies/Grading of this outline for additional details.

### **COURSE REQUIREMENTS:**

Students are responsible for attaining competencies through completion of the following course requirements:

## ATTENDANCE

Students will be bound by the policies stated in the York Technical College Student Handbook. Students must attend 80% of the hours assigned the class for a semester to receive credit for the course.

In case a student does miss a class, the student is responsible for obtaining the material that was covered during the absence.

If a student is aware that a class will be missed, then the student should notify the instructor at the earliest possible date.

If a student misses a test because of illness or urgent emergency, it is the responsibility of the student:

Notify the instructor prior to the class period, or at the earliest possible date. At that time a new date for a make up test can be scheduled.

Students with unexcused absences during tests will be allowed to take a make up test at the discretion of the instructor.

The student has the burden to be sure that some arrangement was made with the instructor for taking a make up test.

## PARTICIPATION IN CLASS DISCUSSIONS

## COMPLETING ASSIGNED HOMEWORK, LAB EXPERIMENTS, AND TESTS.

### LABORATORY REQUIREMENTS:

The student will complete all lab assignments issued by the instructor.

### ACADEMIC HONESTY:

"York Technical College adheres to the South Carolina TECH Student Code, approved by the State Board for Technical and Comprehensive Education on March 13, 1974 (revised last April 25, 1984). Copies of this code are available in the Library and from Student Services. ...Any student caught cheating or involved in any other academic dishonesty will be given a grade of zero and will be subject to further disciplinary action."

### EVALUATION STRATEGIES/GRADING:

The grading scale follow:

Grade	Points
A	900 - 1000
B	800 - 899
C	700 - 790
D	600 - 690
F	000 - 599

<u>Evaluation Method</u>	<u>Total Points</u>
Tests (minimum of 3)	300
Homework	150
Assigned Projects	450
Work Attitude	100
1. Participation	
2. Cooperation	
3. Appearance	
4. Effort	
5. Safety	
6. Responsibility	
7. Professionalism	
8. Attendance	
9. Self Motivation	
10. Works Independently	
	1000

**ENTRY LEVEL SKILLS:**

The student must demonstrate proficiency in reading both residential and commercial blueprints and be able to read and extract information from manufacturers' literature and tables.

**PREREQUISITES:**

ACR 120 or MET 222

**CO-REQUISITES:**

None

**TOPIC/CONTENT OUTLINE:**

Thermodynamic and Compressible Fluid

- a. sizing
- b. selection of heating
- c. selection of cooling systems
- d. distribution of conditioned air

**LABORATORY EXPERIMENTS:**

A. Given a set of prints, use requirements, and design conditions, the student will perform a load calculation to determine the equipment necessary to maintain the necessary conditions.

B. Given a set of prints and the heat gain/loss of a structure, the student will design and layout a duct system.

**METHODS OF INSTRUCTION:**

This course consists of 2.0 hours of class periods and 3.0 hours of laboratory. The class instruction includes lectures, demonstrations, discussions, and tests. The lectures are given while drawing on the blackboard, using overhead projections, computer simulations or videotapes.

The assigned projects consist of heat load calculations and duct designs using blueprints provided by the instructor or from blueprints brought by the student. The load calculations and duct designs will be both manual and computerized.

**MET 226  
Addendum**

October 18	Reading Assignment	Manual J, Section VII Basic Principles
October 25	Reading Assignment	All of Manual J
	House Plans due for approval by instructor. May be blueprints for a home or plans drawn to scale on squared paper.	
November 1	Manual Load Calculation Project due	
November 13	Computerized Load Calculation due	
November 15	Manual J certification test Equipment selection	
November 22	Reading Assignment	All of Manual D
December 11	Manual Duct Design assignment due	
December 13	Manual D and Equipment Selection certification test	