

**Angelina College
Technology and Workforce Development Division
HART 1445 Gas and Electric Heating
General Syllabus**

I. BASIC COURSE INFORMATION:

- A. Course Description: Four hours credit. A study of the procedures and principles used in servicing heating systems including gas fired furnaces and electric heating systems. The student will identify different types of gas and electric furnaces; identify and discuss component operation of gas and electric furnaces; service and troubleshoot gas and electric furnaces; perform safety inspections on gas and electric furnaces; and identify unsafe operation of gas and electric furnaces. Prerequisite: HART 1401. Three hours lecture and three lab hours each week. Lab fee.
- B. Intended Audience:
Freshmen
- C. Instructor: Stephen Hammonds
Office Location: TW 109
Office Hours: M/W 2-4 PM, T/H 2/4PM, F 8AM-12PM
Phone: (936) 633-5230
E-mail Address: shammonds@angelina.edu

II. INTENDED STUDENT OUTCOMES:**A. Core Objectives Required for this Course**

1. **Critical Thinking:** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. **Communication:** to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. **Empirical and Quantitative Skills:** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

B. Course Learning Outcomes for all Sections

1. Identify different types of gas furnaces;
2. Identify and describe component operation of gas furnaces;
3. Service and troubleshoot gas furnaces;
4. Perform safety inspections on gas and electric heating systems;
5. Identify unsafe operation of gas furnaces;
6. Identify and discuss component operation of electric heating systems;
7. Service and troubleshoot electric heating systems.

III. ASSESSMENT MEASURES**A. Assessments for the Core Objectives:**

1. **Critical Thinking:** Students will demonstrate the application of critical thinking skills by utilizing creative and appropriate evaluation methods in the identification and description of various gas furnaces and component operation, identification of gas furnace safety practices and electric system heating systems and component operation. A standard rubric is used to assess this objective.
2. **Communication:** Students will communicate the procedures and principles used in servicing heating systems by using complete and correct notation and written and visual communication skills. A standard rubric is used to assess this objective.
3. **Empirical and Quantitative Skills:** Students will use empirical and quantitative skills to answer homework, laboratory and test questions. A standard rubric is used to assess this objective.

B. Assessments for Course Learning Outcomes

1. The student's ability to identify different types of gas furnaces will be assessed through homework, laboratory exercises and embedded test questions.
2. The student's ability to identify and describe component operation of gas furnaces will be assessed through laboratory exercises, homework and embedded test questions.
3. The student's ability to service and troubleshoot gas furnaces will be assessed through laboratory exercises, homework and embedded test questions.

4. The student's ability to perform safety inspections on gas and electric heating systems will be assessed through homework, laboratory exercises, and embedded test questions.
5. The student's ability to identify unsafe operation of gas furnaces will be assessed through homework, laboratory exercises, and embedded test questions.
6. The student's ability to identify and discuss component operation of electric heating systems will be assessed through homework, laboratory exercises, and embedded test questions.
7. The student's ability to service and troubleshoot electric heating systems will be assessed through homework, laboratory exercises, and embedded test questions.

IV. INSTRUCTIONAL PROCEDURES:

Methodologies that may be utilized in presenting course content will include a combination of lectures, small group exercises, written and oral presentations, videos, reading assignments and tests. Internet research may be required for this course at various times

V. COURSE REQUIREMENTS AND POLICIES:

A. Required Textbooks and Recommended Readings, Materials and Equipment

Equipment – ANSI Z87.1 Clear Safety Glasses
Scientific calculator
Three ring notebook (1" or 1 ½")
8.5 x 11-inch paper, pencils, pens, 6" ruler

Text(s) – Refrigeration and Air Conditioning Technology, 8th Edition, Cengage
Refrigeration and Air Conditioning Technology Lab Manual, 8th Edition, Cengage

B. Course Policies – This course conforms to the policies of Angelina College as stated in the Angelina College Handbook.

1. **Educational Accommodations** – If you have a disability (as cited in Section 504 of the Rehabilitation Act of 1973 or Title II of the Americans with Disabilities Act of 1990) that may affect your participation in this class, you may fill out the Educational Accommodations application within your AC Portal, under the "Student Services" tab. A Student Success team member will contact you once the application is received. At a post-secondary institution, you must self-identify as a person with a disability in order to receive services; for questions regarding the application process you can visit the Office of Student Success and Inclusion in the Student Center (205A); text 936.463.8078; or email access@angelina.edu. To report any complaints of discrimination related to a disability, you should contact Mr. Steve Hudman, Dean of Student Affairs, in Room 101 of the Student Center. You may also contact Dean Hudman by calling (936) 633-5292 or by emailing shudman@angelina.edu.
2. **Attendance** – Attendance is required as per Angelina College Policy and will be recorded every day. Any student with three (3) consecutive absences or four (4) cumulative absences may be dropped from the class. Records will be turned in to the academic dean at the end of the semester. Do not assume that non-attendance in class will always result in an instructor drop. **You must officially drop a class or risk receiving an F.** This is official Angelina College Policy.
3. **Additional Policies Established by the Instructor**
 - Safety glasses must be worn in the lab and when working with hand tools
 - Safe work practices must be observed at all times
 - Food is not allowed in class or lab. Drinks with a lid are allowed in the classroom but not in the lab areas. Liquids create a slip and shock hazard. Spills must be cleaned by the person responsible for the drink.
 - Cell phones must be set to silent or vibrate. Step out of class if you need to take a call. Studies indicate that checking messages and visiting social websites is distracting and interferes with learning, so you should avoid it unless it is an emergency.
 - Attendance is counted as a test grade.
 - Assignments must be submitted to receive credit. Late work may be submitted up to one (1) week after the due date. After one (1) week, a score of zero (0) will be entered. If a group project is assigned, each student must submit their own results. I will adjust due dates if technical problems or equipment problems develop, or if the assignment requires additional time due to unexpected situations or complexity.

VI. COURSE OUTLINE: Description of the Course Activities including due dates, schedules, and deadlines.

At a minimum, there will be a midterm, final exam and various homework and laboratory assignments throughout the course of the semester.

VII. EVALUATION AND GRADING:

Each test and assignment is assigned a 100-point value. Your final grade for the class is the sum of the weighted averages. Attendance is counted as a test grade.

Weighted averages:

Labs: 30%
Homework: 30%
Tests: 40%

Determination of grade:

Above 90	A
80 to 90	B
70 to 80	C
60 to 70	D
Below 60	F

- A. The instructor may modify the provisions of the syllabus to meet individual class needs by informing the class in advance as to the changes being made.
- B. As a student enrolled in a Technology & Workforce Division program, you will encounter certain risks while you are in a classroom, laboratory experience, or in a clinical or practicum setting. In the event that you sustain an injury and/or require any medical testing or care, all resulting medical expenses (hospital, ambulance, or physician fees), are your financial responsibility and not the responsibility of Angelina College or the clinical/practicum site.
- C. Effective August 27, 2012, Angelina College prohibits the use of tobacco products on campus, except in your personal vehicle. This measure was approved by the College Board of Trustees, and includes smoking and smokeless tobacco products.