

**Angelina College  
Technology and Workforce Development Division  
HART 2334 Advanced Air Conditioning Controls  
General Syllabus**

**I. BASIC COURSE INFORMATION:**

- A. Course Description: Theory and application of electrical control devices, electromechanical controls, and/or pneumatic controls. M/W 10 AM to 12:50 in TW160.
- B. Intended Audience:  
Sophomores
- C. Instructor: Stephen Hammonds  
Office Location: TW 109  
Office Hours: M/W 2-4 PM, T/H 2/4PM, F 8AM-11PM  
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. Demonstrate proficiency with installation and troubleshooting complex electrical control devices and control circuits;
- 2. Demonstrate proficiency with HVACR control theory and operation;
- 3. Demonstrate proficiency in the analysis of the effects of smart energy networks and how they interface with HVACR control 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 installing and troubleshooting complex controls and circuits. A standard rubric will be used to assess this objective.
- 2. **Communication:** Students will communicate HVAC and control information using complete and correct notation and written and visual communication skills. A standard rubric will be 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 will be used to assess this objective.

## **B. Assessments for Course Learning Outcomes**

1. The student's ability to demonstrate installation and troubleshooting of complex electrical controls and circuits will be assessed through homework, laboratory exercises and embedded test questions.
2. The student's ability to explain A/C control concepts will be assessed through laboratory exercises, homework and embedded test questions.
3. The student's ability to analyze the effects of smart energy networks and how they interface with HVACR control systems will be assessed through laboratory exercises, homework 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

Fieldpiece SC240 Meter or equivalent

Basic function calculator, cell phone not allowed

Three ring notebook (1" or 1 ½")

8.5 x 11-inch paper, pencils, pens, 6" ruler

Text(s) – Refrigeration and Air Conditioning Technology, 8<sup>th</sup> Edition, Cengage

Refrigeration and Air Conditioning Technology Lab Manual, 8<sup>th</sup> 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](mailto: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](mailto:shudman@angelina.edu).
2. **Attendance** – Attendance is required as per Angelina College Policy and will be recorded every day. This policy does not recognize a difference between excused or unexcused absences. Any student with three (3) consecutive absences or four (4) cumulative absences may be dropped from the class. Attendance 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.
- Continued:
- 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. You start with a 100 on the first day of class. 10 points will be subtracted from this grade for each absence.
- 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 and final assessment 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:

|                |   |
|----------------|---|
| 90.0 and above | A |
| 80.0 to 89.9   | B |
| 70.0 to 79.9   | C |
| 60.0 to 69.9   | D |
| 59.9 and below | F |

- 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.
- As a student enrolled in a Technology & Workforce Division program, you could encounter certain risks to your health while you are in a classroom, laboratory environment, 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.
- 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.