

Department:

HVAC

Course Description:

This unit covers electric control circuits in ladder diagram and pictorial form. Also covered will be comfort cooling controls, central air-conditioning controls, pressure controls, motor safety controls, defrost controls and humidity controls.

Course Competencies:

Upon completion of the course, the student should be able to:

1. Describe the control sequence for an air conditioning system.
2. Explain the function of the 24-V control voltage.
3. Describe the space thermostat.
4. Describe the compressor contractor.
5. Explain the operation of the high-and low-pressure controls.
6. Discuss the function of the overload devices and motor winding thermostat.
7. Discuss the winding thermostat and the internal relief valve.
8. Identify operating and safety controls.
9. Compare modern and older control concepts.
10. Describe how crankcase heat is applied in some modern equipment.

Course Content:

- A. Electric Motors
 1. Shaded pole
 2. Capacitor start
 3. PCS
 4. Capacitor start capacitor run
 5. Split capacitor
 6. Three phase
- B. Controls and circuits
- C. Troubleshooting

Learning Assessments:

Competencies may be evaluated by multiple measures, including multiple choice, true-false, fill-in-the-blank test questions, as well as lab testing.

Instructional Materials:

Textbook: Tomczyk, J., Silberstein, E., Whitman, B. & Johnson, B. (2016). *Refrigeration and Air Conditioning Technology* (8th ed.). Cengage Learning. ISBN-13: 978-1305578296

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the “Disabilities Self-Identification Form” on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).