

Department:

Electrical Technology

Course Description:

This course will provide practical and a real-world systematic approach to troubleshooting. Students will study electrical troubleshooting including evaluating customer complaints, observing system operations, formulating a plan, reading, and interpreting schematics.

Course Competencies:

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

1. Explain lock-out and tag-out.
2. Explain how to megger a motor.
3. Understand the use of continuity and non-contact testers.
4. Understand difference between grounded and bonding.
5. Understand readings on multi-meter and megohmmeter.
6. Determine control circuit problem.
7. Analyze the facts before acting.
8. Determine power problem.
9. Determine control circuit problem.
10. Write a report on corrective action.
11. Analyze sequential plan of action.
12. Test for open switches and broken wires.
13. Test for shorts circuits and ground faults.
14. Test for required voltage of three-phase and single-phase motor applications.
15. Understand ratings and specifications of controls and devices.
16. Read, understand, and interpret schematic, ladder, and pictorial diagrams.
17. Test start/Stop stations.
18. Test forward/reversing start with interlocks.

Course Content:

- A. Concepts of meter operations
- B. Interpret wiring diagrams and schematics
- C. Use multimeters, ammeter, megohmmeter, and other measuring instruments to perform tests on electrical equipment
- D. Demonstrate the proper way to test transformers and motors
- E. Identify a short circuit, open circuit, and a closed circuit
- F. Troubleshoot electric motors and control circuits.

Learning Assessments:

The student will take a test after each chapter and at the end of the course.

TESTS: Tests will cover one to two chapters. Test questions may be multiple choice, essay, or fill in the blank. You will be allowed to make up a test that was missed or failed, with the condition

that it needs to be done in the week it was missed. Failed tests that are retaken will be averaged with the first test for your final score.

QUIZZES: The instructor may give unannounced and announced quizzes during the semester. These quizzes will be over either subject matter assigned or subject matter previously discussed. Students may not make up quizzes.

Instructional Materials:

Textbook: Rockis, G.J., & Mazur, G.A. (2014). *Electrical Motor Controls* (5th ed.). Orland Park, IL: American Technical Publishers. ISBN-13: 978-0826912268

Rockis, G.J., & Mazur, G.A. (2014). *Electrical Motor Controls for Integrated Systems: Workbook* (5th ed.). Orland Park, IL: American Technical Publishers. ISBN-13: 978-0826912275

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](#).