

Department:

Electrical Technology

Course Description:

The focus of this course is to give the student a ground level understanding of direct current (DC) and alternating current (AC) theory. The student will be introduced to electron theory and Ohms' law and see how these apply to direct current circuits. As the students progress, they will be introduced to series circuits and their equations, parallel circuits and their equations, and combination circuits and their equations.

Course Competencies:

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

1. Describe and apply Ohms, Watts, and Kirchhoff laws.
2. Define, demonstrate and apply the characteristics of series, parallel, and combination circuits.
3. Explain DC theory concepts.
4. Explain AC theory concepts.
5. Perform and interpret electrical measurements using industry standard equipment.
6. Calculate and solve DC. and AC circuit problems.
7. Calculate and solve DC parallels circuit problems.
8. Calculate and solve DC series-parallels circuit problems.
9. Interpret and show knowledge of formulas relating to AC circuit problems.
10. Calculate and solve AC problems that contain capacitance.
11. Calculate and solve AC circuit problems that contain impedance.
12. Show knowledge of power factor correction.
13. Apply formulas for voltage drop in AC circuits and calculate proper size conductors.

Course Content:

- A. Matter
 1. Atomic theory
- B. Electron theory
- C. Magnetism
- D. Electricity
 1. Electric current flow
- E. Uses of electromagnetism
- F. Electrical circuits
- G. Math
- H. Electrical formulas
- I. Series circuits
- J. Parallel circuits
- K. Series parallel
- L. Multi-wire 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: Illustrated Guide to Basic Electrical Theory, 3rd Ed., Mike Holt Enterprises, Inc., 2020, ISBN: 978-1-93268-539-8

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](#).