

**Western Dakota Technical Institute
800 Mickelson Drive
Rapid City, SD 57703-4018**

Master Syllabus

Course Number: IEL 132
Course Name: Electrical Fundamentals
Credits: 5
Contact Hours: 5 Lecture

Course Description: This course introduces the fundamental concepts of basic electricity—AC, DC, and solid state. It includes basic circuit analysis of series circuits, parallel circuits, series-parallel circuits, and Ohms Law. A study of electrical quantities and measuring basic quantities using a VOM and the oscilloscope are included. This course covers the physical make-up and characteristics of electrical components and how to analyze and troubleshoot circuits.

Prerequisites: None

Textbooks: <http://bookstore.wdt.edu>

Materials: None

Student Learning Outcomes:

- Summarize current, resistance, and voltage and the units of measure for each.
- Apply Ohms Law to measurements of voltage, current, resistance, and power and total resistance, capacitance, inductance, impedance of branch currents, and voltage drops in a series-parallel circuit through the use of technological tools.
- Calculate effective-, peak-, and peak-to-peak voltage and frequency of an AC sine wave while illustrating phase relationship between voltage and current.
- Explain the operation of solid state circuits including diode, rectifier, transistors, DIACS, TRIACS, and SCRs.
- Discuss the key parts and functions of a VOM, DMM, and the oscilloscope.

Assessment: Life skills, analytical skills, technology skills, teamwork techniques, and employability will be assessed throughout this course.

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