



MASTER COURSE OUTLINE

Prepared By: Bill Autry/Steve Matern

Date: April 2014

COURSE TITLE

Basic Electricity – DC Circuit Analysis

GENERAL COURSE INFORMATION

Dept.: IST

Course Num: 105

(Formerly:)

CIP Code: 47.0302

Intent Code: 21

Program Code: 784

Credits: 5

Total Contact Hrs Per Qtr.: 77

Lecture Hrs: 33

Lab Hrs:44

Other Hrs:

Distribution Designation:

COURSE DESCRIPTION (as it will appear in the catalog)

Fundamentals of DC electricity as applied to series, parallel, and series-parallel circuits. Use of test equipment and trouble-shooting simple circuits.

PREREQUISITES

MAP 103 or MAP 117 (may be taken concurrently) or Instructor Permission

TEXTBOOK GUIDELINES

Appropriate textbook as determined by faculty (Example: *ELECTRICITY Principles and Applications*, by Fowler).

COURSE LEARNING OUTCOMES

Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills.

1. Safely perform DC electrical circuit tests.
2. Solve basic electrical problems involving voltage, current, resistance, and power.
3. Explain the relationship between electricity and magnetism.
4. Use a multi-meter to measure voltage, current, and resistance.
5. Assemble, analyze, troubleshoot, and solve problems involving series, parallel, and series-parallel DC circuits using multimeters.

INSTITUTIONAL OUTCOMES

COURSE CONTENT OUTLINE

- A. Introduction:
 - a. Atomic theory
 - i. Structure of Matter
 - ii. Electron Theory
 - iii. Electro-static
 - iv. Measurement of Charge
- B. Energy Conversions
- C. Conductors, Semi- Conductors, Resistance
- D. Electrical quantities

- a. Definitions
- b. Units
- c. Notation
- E. Current, Voltage, & Power relationships
- F. Ohm's Law
- G. Physical measurement
- H. series circuits
- I. parallel circuits
- J. Series - parallel circuits
- K. Kirchoff's Voltage Law (Loop analysis)
- L. Kirchoff's Current Law (Nodal analysis)
- M. Circuit Theorems
 - a. Superposition
 - b. Thevenins"
 - c. Nortons
 - d. Maximum Power Transfer
- N. Cells & Batteries
- O. Magnetism & Electro-Magnetism
- P. DC measuring instruments

DEPARTMENTAL GUIDELINES (*optional*)

DIVISION CHAIR APPROVAL

DATE