

6. **Student Learning Outcomes** (Identify 1-6 expected learner outcomes using active verbs.)

Upon successful completion of the course, the student will be able to:

Recognize the major attributes of test instruments
Recognize and interpret NEC codes
Recognize the major attributes of Alternating Current (AC) in relationship to Direct Current (DC)
Recognize the major attributes of Commercial Blueprints in relationship to Residential Blueprints
Recognize the fundamental function of Alternating Current (AC) generators and Direct Current (DC) generators

7. **Course Objectives** (Identify specific teaching objectives detailing course content and activities. *For some courses, the course objectives will be the same as the student learning outcomes. If this is the case, please simply indicate this in this section).*

Apply the knowledge and skills necessary to perform the job assignments expected of a second year inside wireman apprentice.

8. **Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, you may attach a sample course syllabus with a timeline.)

See Attached Topical Outline

9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Include examples of out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills.) **If hours by arrangement are required by this course, indicate the additional instructional activity which will be provided during this time.**

Reading Assignments
Workbook Lab Assignments

10. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Completion of lab homework
Examination upon completion of each unit
Demonstrated competency by successful completion of lab assignments

11. **Representative Text Materials** (With few exceptions, texts need to be current. Include publication dates.)

See Attached List

Prepared by: _____
(Signature)

Email address: schneider@smccd.edu

Submission Date: _____

- I. Practical Application of Electrical Test Instruments
 - A. Using and Understanding Digital Multimeters (DMM) and Analog Meters
 - B. Measuring Resistance with the DMM
 - C. Measuring Voltage with the DMM
 - D. Measuring Voltage with an Analog Meter
 - E. Measuring Current with the DMM
 - F. Measuring Current with the Analog Meter

- II. Understanding and Developing NEC Code Book Skills
 - A. Understanding the development of the NEC Code Book
 - B. Understanding the arrangement of the NEC Code Book
 - C. Understanding the language of the NEC Code Book
 - D. Practical Application of the NEC Code Book

- III. Reviewing the Applications of Direct Current (DC)
 - A. Comparative look of DC vs. AC
 - B. Understanding and recognizing DC and AC Sine Waves
 - C. Understanding and applying measurements to DC Voltage
 - D. Understanding and applying measurements to AC Current

- IV. Understanding the Design and Function of Generators
 - A. Recognizing how DC generator work
 - B. Recognizing and understanding the design and function of AC generators
 - C. Introduction to Three-phase systems
 - D. Determining frequency from AC generators

- V. Basic Fundamentals of Drafting and Blueprints
 - A. Review of Residential Blueprints and Circuits
 - B. Interpreting Components of Blueprints
 - C. Understanding and Applying Job Takeoff

- VI. Basic Conduit Bending and Fabrication for Commercial Installation
 - A. Understanding and Using Ratchet Type Benders
 - B. Understanding the Fundamentals to Segment Bending
 - C. Understanding the Fundamentals to Concentric Bending
 - D. Understanding and Installing Wire and Cable Within Conduit

Representative Text Materials – ELEL 733

Callanan, Michael I., and Bill Wusunich. Electrical Systems Based on the 2005 NEC. Nomewood, Illinois: American Technical Publisher, Inc., 2005.

Mazur, Glen A. Test Instruments Applications Manual. Homewood, Illinois: American Technical Publisher, Inc. 2006.

National Fire Protection Associates, Inc. National Electric Code 2005. Quincy, Massachusetts: NFPA, 2004.

National Joint Apprenticeship and Training Committee. AC Theory. Clifton Park, New York: Delmar Learning, 2004.

National Joint Apprenticeship and Training Committee. AC Theory Workbook. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Applied Codeology. Clifton Park, New York: Thomson/Delmar Learning, 2005

National Joint Apprenticeship and Training Committee. Blueprint Workbook. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Codeology Workbook . Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Codes and Practices Workbook 2. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Job Information Workbook 2. Upper Marlboro, Maryland: NJATC Press, 2005.

National Joint Apprenticeship and Training Committee. Test Instruments Workbook. Upper Marlboro, Maryland: NJATC Press, 2005.

Wright, Chuck. Blueprint Reading for Electricians. Clifton Park, New York: Delmar Learning, 2005.