Master & Journeyman Electrical Exam Preparation

The course is designed to present a review of electrical principles, the requirements of the National Electric Code for safe, code compliant electrical installations. Topics include: NEC (National Electrical Code) Overview, electrical math as it relates to electrical theory, conductor sizing, conductor box fill, conduit wire fill, electrical services, motor calculations and protection requirements. Service calculations and overcurrent protection, hazardous locations, overcurrent protection, single and multifamily dwelling, and commercial occupancies, single-phase and three-phase transformer calculations.

PREREQUISITES
INTE 142 or instructor approval

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)

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

1. Describe NEC requirements for single and multifamily dwelling, and commercial occupancies
2. Apply formulas to calculate demands on electrical services, box, conduit fill, voltage drops and power factor.
3. Calculate circuit electrical values and demands on electrical services.
4. Demonstrate proficient use of the National Electrical Code tables and guidelines to provide safe installations.
5. Analyze electrical load demands and calculate required equipment sizes based upon National Electrical Code requirements.

GENERAL EDUCATION OUTCOMES (ESO)

Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.
PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Students will think critically and apply problem-solving skills.
2. Students will demonstrate the ability to apply foundational skills in an industrial setting, safely and to industry guidelines.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

Written Test: 1 – 5
Practical Test: 1 – 5
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An asterisk can be used to mark an item as optional.

I. Electrical Theory
   A. Electricians Math
   B. Electrical Circuits
   C. Alternating Current (AC)
   D. Motors and Transformers

II. NEC Calculations
   A. Raceway and Box Calculations
   B. Conductor Sizing and Protection
   C. Motor and Air Conditioning
   D. Voltage Drop
   E. Dwelling Units

III. Advanced NEC Calculations
   A. Multifamily Dwelling Units
   B. Commercial Occupancies
   C. Transformer Calculations

IV. Exam Preparation