APEL 122A: CODEOLOGY; NEC CODE; TEST EQUIPMENT; PIPE BENDING; BLUEPRINTS

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2023
Units:	5
Hours:	36 lecture, 84 laboratory per quarter (120 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the San Francisco Inside Wireman Electrical Program.
Advisory:	Not open to students with credit in APRT 122.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- To understand the different levels of blue prints associated with the electrical Industry
- To understand the technical aspect of hand bending electrical conduit

Description

Study of the National Electrical Code, applied codeology, and basic fundamentals of using blueprints. Instruction on usage of test equipment and pipe bending tools.

Course Objectives

The student will be able to:

1. Define the National Electrical Code and the use of applied codeology
2. Demonstrate the correct use of test equipment
3. Demonstrate correct usage of pipe bending tools
4. Demonstrate how to effectively use blueprints

Course Content

1. National Electrical Code and applied codeology
   a. Orientation
   b. Language
   c. Exceptions
   d. Utilizing codebook
   e. Mandatory rules
   f. Fine print rules
   g. Locate definitions
2. Test equipment
   a. Digital multimeter
   b. Oscilloscope
3. Pipe bending
   a. Types of benders
   b. Styles of benders
4. Effective use of blueprints
   a. Review
   b. Layout
   c. Actual take-off
   d. Blueprint specifications
   e. Systems integration
   f. Differences between wiring diagrams, line diagrams, schematics, and ladder diagrams
   g. Use of blueprints, plans, and specifications

Lab Content

Students will work individually and in teams on proper wiring and grounding of electrical systems. Safe working practices are reviewed and will include:

1. Equipment safety
2. Fire protection
3. Electrostatic discharge (ESD)
4. Safe handling practices

Special Facilities and/or Equipment

Laboratory with electrical tools and equipment.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Results of written quizzes and average of six tests
Results of hands-on projects and homework
Results of class participation
Maintenance of a student's workbook with questions drawn from text

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture
Lab assignments
Group discussion
Demonstration

Representative Text(s) and Other Materials

NJATC. NJATC Codeology Workbook. 2020.

NJATC. NJATC Code Calculations Workbook. 2020.

American Technical Publishers and NJATC. Conduit Bending and Fabrication. 2009.

NFPA. NEC/NFPA 70: National Electrical Code. 2020.

NJATC. Applied Codeology. 2020.

Callanan, M.I., and B. Wusinich. Electrical Systems. 2020.

Although one or more of these texts is older than the suggested "5 years or newer" standard, it remains a seminal text in this area of study.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Reading assignment from the Electrical Systems based on the 2014 NEC
2. Writing assignment from the Electrical Systems based on the 2005 NEC
   a. Write articles on safety considerations per the National Fire Protection Association, NEC 2014. NFPA 70: National Electrical Code

Discipline(s)

Electricity