

APSC 112: CODES & PRACTICES, CONNECTORS & RACEWAYS, BLUEPRINT READING, DC THEORY

Foothill College Course Outline of Record

| Heading | Value |
|-------------------------|---|
| Effective Term: | Summer 2021 |
| Units: | 4 |
| Hours: | 40 lecture, 40 laboratory per quarter (80 total per quarter) |
| Prerequisite: | Per California Code of Regulations, this course is limited to students admitted to the Northern CA Sound & Communication JATC Apprenticeship Program. |
| Advisory: | Not open to students with credit in APRT 131. |
| 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

- A successful student will be able to interpret and demonstrate Ohm's Law and power/voltage theory through hands-on projects.
- A successful student will be able to recall and explain industry electrical and low voltage codes.

Description

This course covers the National Electrical Code (NEC). Students apply codeology to cabling systems, boxes, connectors, and raceways. It covers the fundamentals of blueprints, scales, mechanical and electrical symbols, using industry elevations and schedules. It also covers DC theory, how electricity works, how to calculate and measure voltage, current, resistance and power in a series and/or parallel circuit.

Course Objectives

The student will be able to:

- Recall and explain industry electrical and low voltage codes
- Identify electrical boxes, connectors and raceways related to the electrical industry
- Interpret and demonstrate Ohm's Law and power/voltage theory through hands-on projects
- Interpret blueprints used in the construction trade

Course Content

- Industry low voltage code
 - Electrical industry terminology
 - Code for boxes, fittings, connectors and raceways

- Steel boxes and covers, non-metallic boxes, floor boxes, weatherproof boxes and commercial fittings
 - Boxes, connectors, raceways
 - NEC codes and requirements
 - Occupancy classifications and fire resistance rated construction
 - Ohm's Law
 - Theory of Ohm's Law
 - Power and voltage
 - Blueprint reading
 - Recognizing and understanding blueprints

Lab Content

Students work individually and in teams on basic tools of the trade, test instruments and tool safety. Included will be the installation of sound and/or communication devices such as raceway connectors and electronic components. Equipment safety and safe handling practices are reviewed and applied.

Special Facilities and/or Equipment

- Audio-visual equipment (laptop, video projector with screen)
- Laboratory with test instruments and hands-on projects
- Computers with internet access
- When taught via Foothill Global Access, on-going access to computer with email software and hardware; email address

Method(s) of Evaluation

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

- Results of quizzes and tests
- Classroom and laboratory project participation
- Online discussions

Method(s) of Instruction

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

- Lab assignment
- Group discussion
- Demonstration

Representative Text(s) and Other Materials

National Fire Protection Association, Inc. (NFPA). [NEC 2017 \(NFPA 70\) Electrical Systems based on the 2017 National Electrical Code](#). 2017.

National Joint Apprenticeship and Training Committee (NJATC). [DC Theory, 3rd ed.](#) 2013.

National Joint Apprenticeship and Training Committee (NJATC). [Blueprints Reading, 3rd ed.](#) 2010.

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

- Readings:
 - Read articles 90.4 and 110.3 (B) in the NFPA 70 NEC
 - DC Theory Lab Series Circuits

3. DC Theory Lab Parallel Circuits

B. Writing assignments:

1. Describe, in writing, if the manufacturers instructions or the Authority Having Jurisdiction (AHJ) takes priority when installing listed or labeled equipment
2. CES Trainer Labs #1-6, Series
3. CES Trainer Labs #7-11, Parallel

Discipline(s)

Telecommunication Technology