**APED 223.1 Course Outline as of Summer 2025**

# CATALOG INFORMATION

Dept and Nbr: APED 223.1 Title: APP ELECTRICIANS 10THSEM
Full Title: Apprentice Electricians, Tenth Semester
Last Reviewed: 3/28/2022

| Units | | Course Hours per Week | | Nbr of Weeks | Course Hours Total | |
|---|---|---|---|---|---|---|
| Maximum | 4.00 | Lecture Scheduled | 3.00 | 17.5 | Lecture Scheduled | 52.50 |
| Minimum | 4.00 | Lab Scheduled | 0 | 4 | Lab Scheduled | 0 |
| | | Contact DHR | 3.00 | | Contact DHR | 52.50 |
| | | Contact Total | 6.00 | | Contact Total | 105.00 |
| | | Non-contact DHR | 0 | | Non-contact DHR | 0 |

Total Out of Class Hours: 105.00 Total Student Learning Hours: 210.00

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| Title 5 Category: | AA Degree Applicable |
| Grading: | Grade Only |
| Repeatability: | 00 - Two Repeats if Grade was D, F, NC, or NP |
| Also Listed As: | |
| Formerly: | APED 220.10 |

**Catalog Description:**
Students will be introduced to training related to electrician indentured apprenticeship. This is the tenth semester of a ten-semester program.

**Prerequisites/Corequisites:**

**Recommended Preparation:**
Course Completion of APED 220.9

**Limits on Enrollment:**
Indentured apprentice - apply and be accepted by the Redwood Empire Joint Apprenticeship & Training Committee (REJATC)

**Schedule of Classes Information:**
Description: Students will be introduced to training related to electrician indentured apprenticeship. This is the tenth semester of a ten-semester program. (Grade Only)
Prerequisites/Corequisites:
Recommended: Course Completion of APED 220.9
Limits on Enrollment: Indentured apprentice - apply and be accepted by the Redwood Empire Joint Apprenticeship & Training Committee (REJATC)

Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

## ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

| | | | |
|---|---|---|---|
| **AS Degree:** | **Area** | Effective: | Inactive: |
| **CSU GE:** | **Transfer Area** | Effective: | Inactive: |
| **IGETC:** | **Transfer Area** | Effective: | Inactive: |

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| **CSU Transfer:** | Effective: | Inactive: |
| **UC Transfer:** | Effective: | Inactive: |

**CID:**

**Certificate/Major Applicable:**
Certificate Applicable Course

## COURSE CONTENT

**Student Learning Outcomes:**
At the conclusion of this course, the student should be able to:
1. Describe and demonstrate electrical principles and regulations related to electricians' trade.
2. Apply best practices in practical environment related to electricians' trade.

**Objectives:**
At the conclusion of this course, the student should be able to:
1. Demonstrate knowledge of instrumentation principles of measurements, systems, and applications.
2. Explain and demonstrate structured cabling applications, standards, components, and configurations.
3. Explain and demonstrate structured cabling in telecommunications.
4. Calculate voltage in circuits and the parameters of loads in building construction and appliances.

**Topics and Scope:**

I. Instrumentation Introduction - Module 2: Basics
   A. Review of Module 1
   B. Introduction to instrumentation
   C. Fundamentals of process and control systems
   D. Instrumentation symbols and diagrams
   E. Calibration procedure and documentation
   F. Principles of pressure, level, flow, and temperature
   G. Principles of smart instrumentation and communication
   H. Control valves, actuators, and accessories
II. Structured Cabling
   A. The need for structured cabling systems
   B. Introduction to structured cabling standards, codes, and system performance
   C. Cables and connectors

D. Unshielded twisted pair connecting hardware
E. Telecommunications pathways, spaces, grounding, and bonding
F. Telecommunications cabling administration
G. Configuring structured cabling systems
H. Residential cabling systems
I. Certifying the Unshielded Twisted Pair (UTP) cabling system

III. Electrical Code Calculations, Level II, Based on the Current National Electrical Code (NEC)
A. Calculating voltage drop in feeders and branch circuits
B. Introduction to electrical load calculations
C. Range and appliance calculations
D. Calculating the parameters of residential, multifamily dwelling, and commercial loads

**Assignment:**

1. Homework assignments (1-2 sets per week)
2. Quizzes and examinations (4-6 per semester)
3. Hands-on Craft Certification skills exam (students must pass in order to complete the course)
4. Written final exam (students must pass in order to complete the course)
5. Class performances and field work (on-the-job demonstrations) of skill development, safety practices, equipment, and material handling

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

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| None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course. | Writing<br>0 - 0% |

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

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| Homework assignments; field work | Problem solving<br>5 - 10% |

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

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| Class performances; field work | Skill Demonstrations<br>40 - 45% |

**Exams:** All forms of formal testing, other than skill performance exams.

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| Quizzes and examinations, Craft Certification skills exam, final exam | Exams<br>40 - 45% |

**Other:** Includes any assessment tools that do not logically fit into the above categories.

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| Attendance and participation | Other Category<br>5 - 10% |

**Representative Textbooks and Materials:**
Applied Science of Instrumentation Textbook Catalog Order No: S600 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2017
Configuring and Installing Structured Cabling Systems Catalog Order No: S581 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2018
National Fire Protection Association 70 National Electrical Code - 2020 Handbook Catalog Order No: S1050 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2020
Code Calculations Textbook Catalog Order No: S00820 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2020