

**APED 220.3 Course Outline as of Fall 2022****CATALOG INFORMATION**

Dept and Nbr: APED 220.3 Title: APP ELECTRICIANS 3RD SEM

Full Title: Apprentice Electricians, Third 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

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 260C

**Catalog Description:**

Students will be introduced to training related to electrician indentured apprenticeship. This is the third semester of a ten-semester program.

**Prerequisites/Corequisites:****Recommended Preparation:**

Course Completion of APED 220.2

**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 third semester of a ten-semester program. (Grade Only)

Prerequisites/Corequisites:

Recommended: Course Completion of APED 220.2

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:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
---------------	----------------------	------------	-----------

<b>CSU Transfer:</b>	Effective:	Inactive:
----------------------	------------	-----------

<b>UC Transfer:</b>	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 familiarity with the International Brotherhood of Electrical Workers (IBEW) Constitution.
2. Demonstrate a knowledge of union bylaws, procedures, and American labor history.
3. Describe and demonstrate the Codeology Method and key components of the National Electrical Code (NEC).
4. Describe and demonstrate an understanding of effectively analyzing, evaluating, and using blueprints.
5. Demonstrate an understanding of the characteristics and applications of Direct Current (DC) and Alternating Current (AC).
6. Explain the principles and function of code wire sizing, circuits, services for various switches and receptacles.
7. Describe and demonstrate and understanding of key components of AC theory.

**Topics and Scope:**

- I. Orientation, Level II
  - A. Avoiding the hazards of drug abuse
  - B. Becoming familiar with the IBEW constitution
  - C. Understanding your local union bylaws
  - D. Parliamentary Procedure and how it works
  - E. An introduction to the Construction Organizing Membership Education Training (COMET) Program
  - F. American labor history

- G. Pride in your industry
- II. Codeology, Based on the Current NEC
  - A. Overview, organization, and chapter 1 of the NEC
  - B. NEC Chapter 2- 4: Planning, building, and uses of electricity.
  - C. NEC Chapter 5-7: Special occupancies, equipment, and conditions of the NEC
  - D. NEC Chapter 8: Communications
  - E. NEC Chapter 9: Tables and the informative annexes
  - F. The Codeology Method
- III. Blueprints, Level II
  - A. Reviewing the basic fundamentals of blueprints and how they are drawn
  - B. Analyzing and laying-out residential circuits
  - C. Understanding job costs and how to do an actual takeoff to determine the quantities of materials needed
  - D. Understanding, interpreting, and evaluating blueprint specifications
  - E. Interpreting blueprint schedules and locating components on the print
  - F. Becoming familiar with blueprint systems integration
  - G. Learning how to effectively use blueprints
- IV. AC Systems, Level I
  - A. Reviewing the applications of DC theory
  - B. Understanding vectors and how to use them effectively
  - C. Comparing DC to AC
  - D. Making circuit calculations for basic systems
  - E. Becoming familiar with AC resistive circuits and understanding the basic characteristics of AC circuits
- V. Code, Standards, and Practices 2, Level I, Based on the Current NEC
  - A. Understanding the principles involved in the sizing of building wire
  - B. Branch circuits I and II
  - C. Feeders and outside branch circuits
  - D. Services, switches, receptacles, and luminaires
- VI. AC Theory, Level I
  - A. Understanding inductance and how it affects a circuit
  - B. Working with inductors and capacitors that are in series and/or parallel
  - C. Becoming familiar with inductive reactance
  - D. Understanding capacitance and how it affects a circuit
  - E. Understanding and working safely with capacitors
  - F. Becoming familiar with capacitive reactance
- VII. AC Theory, Level II
  - A. Comprehending the parameters of series Resistance - Inductance (RL) and Resistance - Capacitance (RC) Circuits
  - B. Understanding and working with parallel RL and RC Circuits
  - C. Comprehending, analyzing, and comparing series Resistance - Inductance - Capacitance (RLC) and parallel RLC circuits

**Assignment:**

1. Homework assignments (1-2 sets per week)
2. Quizzes and examinations (4- 6 per semester)
3. 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.

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  
0 - 0%

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

Homework assignments; field work

Problem solving  
10 - 25%

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

Class performances; field work

Skill Demonstrations  
50 - 65%

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

Quizzes and examinations

Exams  
10 - 20%

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

Attendance and participation

Other Category  
5 - 10%

## Representative Textbooks and Materials:

Applied Codeology Textbook Catalog Order No: S01720 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2020

National Fire Protection Association (NFPA) 70 National Electrical Code (NEC) - 2017

Handbook Catalog Order No: S950 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2017

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

AC Theory Textbook, 3rd Edition Catalog Order No: S641 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2011 (classic)

DC Theory Textbook Catalog Order No: S640 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2009 (classic)