APED 222.6 Course Outline as of Fall 2025

CATALOG INFORMATION

Dept and Nbr: APED 222.6 Title: APP ELECTRICIANS 6TH SEM
Full Title: Apprentice Electricians, Sixth 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 220.6

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

Prerequisites/Corequisites:

Recommended Preparation:
Course Completion of APED 220.5

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 sixth semester of a ten-semester program. (Grade Only)
Prerequisites/Corequisites:
Recommended: Course Completion of APED 220.5
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:

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. Describe and demonstrate advanced working knowledge of grounding and bonding.
2. Describe and demonstrate knowledge of basic components and functions of semiconductors.
3. Describe and demonstrate basic knowledge of the components, functions of photovoltaics systems and devices.
4. Describe and demonstrate basic components and importance of power quality using practical examples.
5. Explain the key factors of health care facility electrical systems and patient care spaces.
6. Relate the principles, responsibilities, and skills involved with leadership to work site behavior and performance.

Topics and Scope:

I. Grounding and Bonding, Level II, Based on the Current National Electrical Code (NEC)
- A. Grounding at separate buildings or structures
- B. Grounding electrical systems
- C. Grounding requirements for separately derived systems
- D. Special occupancies and conditions
- E. Grounding special equipment
- F. Grounding and bonding for communications systems and equipment
- G. Ground-Fault Circuit Interrupters (GFCI) and Ground-Fault Protection of Equipment (GFPE)
- H. Grounding rules for medium- and high-voltage systems
- I. Grounding systems and Earth ground test instruments

II. Semiconductors, Level I
A. Semiconductors
B. Semiconductor Diodes, Zener Diodes, and other special purpose diodes
C. Understanding the basic functions of diodes and rectifiers
D. Power supplies
E. Filters, chokes, voltage regulators, dividers, and doublers
F. Transistors
G. Light Emitting Diodes (LEDs), lasers, and phototransistors
H. Electronic applications
I. Optoelectronics and fiber optics
III. Photovoltaics, Level I
A. Introduction to photovoltaic systems
B. Fundamentals of solar radiation
C. Solar radiation data and measurements
D. Site surveys and planning
E. Fundamentals of photovoltaic devices, systems, components, modules, and arrays
F. Inverters
G. Electrical integration I
H. Utility interconnection
IV. Power Quality, Level I
A. Why care about power quality?
B. The basics of power quality
C. Safety
D. Using the right tool
E. Monitor setup
F. Data collection and analysis
G. Practical examples
H. “Rules of Thumb”
I. Mitigation equipment
V. Health Care Facility Electrical Systems, Level I, Based on the current National Fire Protection Association (NFPA) publication
A. Introduction
B. Utility power
C. Distribution
D. Patient care spaces
VI. Preparing for Leadership: Personal Qualities, Level I
A. Aspects of the contracting business
B. Personal qualities; professionalism, respect, credibility, character, ethics, integrity, teaching, and learning
C Planning; the importance of planning and planning challenges
D. Communications; effective communication, crew support, morale, disruptive behaviors, and addressing conflict

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.

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 5 - 10%

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

Class performances; field work	Skill Demonstrations 40 - 45%

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

Quizzes and examinations, Craft Certification skills exam, final exam	Exams 40 - 45%

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:
Test Instruments and Applications Textbook, 2nd edition Catalog Order No: S571 in the Electrical Training Alliance 2020 Training Essentials Catalog. American Technical Publishers. 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
Applied Grounding and Bonding Textbook Catalog Order No: S36820 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2020
Semiconductor Principles and Applications Catalog Order No: S542 in the Electrical Training Alliance 2020 Training Essentials Catalog. Cengage Learning. 2008 (classic)
Photovoltaic Systems Textbook, 3rd Edition Catalog Order No: S674 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2012 (classic)
National Fire Protection Association (NFPA) 70 National Electrical Code (NEC) - 2011 Handbook Catalog Order No: S650 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2011 (classic)

OSHA Standards for the Construction Industry Catalog Order No: S125 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Safety Compliance. 2020
Power Quality Analysis Textbook Catalog Order No: S659 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2010 (classic)
Health Care Facility Electrical Systems Textbook Catalog Order No: S898 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2020
Effective Leadership Skills for Construction Field Leaders Textbook Catalog Order No: S097 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2016 (classic)
Electrical Systems Based on the 2020 NEC Textbook Catalog Order No: S1070 in the Electrical Training Alliance 2020 Training Essentials Catalog. American Technical Publishers. 2020