APED 220.1 Course Outline as of Fall 2022

CATALOG INFORMATION

Dept and Nbr: APED 220.1 Title: APP ELECTRICIANS 1ST SEM
Full Title: Apprentice Electricians, First 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 260A

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

Prerequisites/Corequisites:

Recommended Preparation:

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 first semester of a ten-semester program. (Grade Only)
Prerequisites/Corequisites:
Recommended:
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 apprenticeship goals and responsibilities, future job opportunities, economics of employment and workplace safety.
2. Summarize attributes, history, structure, and heritage of an International Brotherhood of Electrical Workers/National Electrical Contractors Association (IBEW/NECA) Apprenticeship.
3. Identify basic tools of the trade, connectors, fasteners, proper alignment, and measurement.
4. Summarize understanding and principles of electrical safety, electrical shock, ground-fault interrupters.
5. Summarize and demonstrate knowledge of building wire construction, sizing, aluminum conductors, commonly used electrical materials and insulation, conduits, and fabrication.
6. Apply mathematical operations and formulae to solve basic problems.
7. Describe and demonstrate firestopping methods, applications, and wire-pulling techniques.
8. Understand and apply factors of the National Electrical Code (NEC) to work in the trade.
9. Describe and demonstrate wiring devices and installation requirements.

Topics and Scope:

I. Orientation, Level I
   A. How to study this course and achieve personal goals
   B. The attributes of an IBEW/NECA Apprenticeship
   C. Knowing your apprenticeship and your responsibilities
   D. The IBEW and its history
   E. NECA's structure and heritage
   F. Your job and the future it holds for you

G. Sexual harassment policies
H. The economics of employment
I. Safety never takes a break

II. Job Information 1, Level I, Based on the Current NEC
A. Identifying some basic tools of the trade
B. The workplace of an electrical worker
C. The proper care and use of ladders
D. Choosing and installing the correct masonry fastener
E. Alignment and measurement
F. The reality of electrical shock
G. Electrical safety
H. Understanding the function and design of ground-fault interrupters
I. CAUTION: Overhead Work in Progress
J. Using and installing twist-on wire connectors

III. Job Information 1, Level II, Based on the Current NEC
A. Building wire construction and insulation properties
B. How building wire is sized
C. Working properly with aluminum conductors
D. Identifying commonly used electrical materials
E. Working with prefixes and powers of 10
F. Using the metric system and metrication changes
G. How to solve basic algebraic equations
H. Introduction to firestopping
I. Fire-resistant wall and floor assembly penetrations
J. Firestop applications
K. Wire-pulling techniques

IV. Conduit Fabrication, Level I
A. How to work with fractions
B. Using basic trigonometric functions
C. Introduction to conduit bending
D. Conduit types
E. Hand fabrication of 90° stubs
F. Hand fabrication of back-to-back bends
G. Hand bending offsets and kicks
H. Hand bending– three and four-bend saddles

V. Code, Standards, and Practices 1, Based on the Current NEC
A. An introduction to the NEC
B. Interpreting the language of the NEC - Article 100
C. Understanding and applying Article 110 of the NEC
D. Understanding and applying Article 110 of the NEC II
E. General building wire properties and the NEC
F. Understanding conductor insulation and NEC specifications
G. Introduction to wiring devices
H. General requirements related to installing wiring devices
I. General requirements related to installing industrial wiring devices
J. Specific receptacle installation requirements
K. Specific switch installation requirements

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:
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
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
DC Theory Textbook Catalog Order No: S640 in the Electrical Training Alliance 2020 Training Essentials Catalog. Delmar Cengage Learning. 2009 (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
Building a Foundation in Mathematics Textbook Catalog Order No: S665 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training

Committee for the Electrical Industry. 2010 (classic)
TI-30X IIS Solar Calculator Catalog Order No: S159 in the Electrical Training Alliance. 2020 Training Essentials Catalog.
Conduit Bending and Fabrication Textbook (S495) Catalog Order No: S495 in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2007 (classic)
Conduit Bending and Fabrication Lab Manual Catalog Order No: J204L in the Electrical Training Alliance 2020 Training Essentials Catalog. National Joint Apprenticeship and Training Committee for the Electrical Industry. 2007 (classic)
Ugly's Electrical References, 2020 Edition Catalog Order No: S1054 in the Electrical Training Alliance 2020 Training Essentials Catalog. Jones & Bartlett Learning. 2019