

APED 221.3 Course Outline as of Fall 2019**CATALOG INFORMATION**

Dept and Nbr: APED 221.3 Title: RESIDENTIAL WIRING 3
 Full Title: Electrician Apprentice Residential Wiring, 3rd Semester
 Last Reviewed: 2/25/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.50	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.50	Lab Scheduled	1.50	6	Lab Scheduled	26.25
		Contact DHR	0		Contact DHR	0
		Contact Total	4.50		Contact Total	78.75
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 183.75

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 272

Catalog Description:

This course continues the instruction for residential wiring for electrician indentured apprentices. This is the third semester of a six semester program.

Prerequisites/Corequisites:

Course Completion of APED 221.2 (or APED 271)

Recommended Preparation:**Limits on Enrollment:****Schedule of Classes Information:**

Description: This course continues the instruction for residential wiring for electrician indentured apprentices. This is the third semester of a six semester program. (Grade Only)

Prerequisites/Corequisites: Course Completion of APED 221.2 (or APED 271)

Recommended:

Limits on Enrollment:

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:

Not Certificate/Major Applicable

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. Describe and draw structured wiring systems.
2. Diagram branch circuits.
3. Explain the difference between single and three-phase transformers.
4. Explain regulations related to sexual harassment.

Objectives:

At the conclusion of this course, the student should be able to:

1. Evaluate job costs.
2. Create a job takeoff analysis.
3. Explain regulations related to sexual harassment.
4. Describe and draw structured wiring systems.
5. Calculate resistance in AC circuits.
6. Diagram branch circuits.
7. Evaluate conductor voltage drop.
8. Explain and utilize DC theory.
9. Utilize the National Electrical Code book.
10. Describe and demonstrate electromagnetism.
11. Differentiate and use the principles of single and three-phase transformers.

Topics and Scope:

- I. Job Costs
 - A. Blueprint symbols
 - B. Read and analyze residential blueprints
- II. Takeoff Analysis
 - A. Costs categories
 - B. Estimation of cost projects
- III. Sexual Harassment
 - A. Communication skills
 - B. Labor management relations

- C. Regulations regarding sexual harassment
- IV. Structured Wiring Systems
 - A. Symbols
 - B. Drawing skills
- V. AC Circuits
 - A. Resistance
 - B. Inductance
 - C. Capacitance
- VI. Branch Circuits
 - A. Symbols
 - B. Drawing techniques
 - C. Load calculations
 - D. Building wiring sizing
 - E. Outside branches and feeders
 - F. Over-current protection devices
- VII. Conductor Voltage Drop
 - A. Calculate conductor capacity
 - B. Voltage, power, and polarity across a load
 - C. Principles of conductor voltage drop (line loss)
- VIII. DC Theory
 - A. Principles of DC current
 - B. Compare DC and AC currents
- IX. National Electrical Code
 - A. Overview of NEC and book
 - B. Key words and phrases
 - C. Numbering and outline systems
 - D. Specialized chapters
- X. Electromagnetism
 - A. Theory
 - B. Principles of generation
- XI. Transformers
 - A. Principles, single-phase
 - B. Principles, three-phase
 - C. Comparing and using single and three-phase transformers

All topics covered in both the lecture and lab portions of the course.

Assignment:

Field assignments include:

1. Field work

Classroom and homework assignments include:

1. Homework assignments
2. Analysis of instructor-led demonstrations
3. Quizzes and examinations (2 - 20)
4. Reading and homework assignments to be completed between class meetings

Laboratory performance assignments include:

1. Practice to develop skills in basic electricity
2. Implement safety procedures
3. Practice use of proper equipment and material handling

4. Employ proper techniques in wiring of circuits and control devices utilizing testing and measuring equipment
5. Lab reports

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 problems, Lab reports, Quizzes

Problem solving
25 - 40%

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

Class performances, Performance exams, Field work

Skill Demonstrations
30 - 45%

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

Quizzes and examinations

Exams
15 - 30%

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

None

Other Category
0 - 0%

Representative Textbooks and Materials:

Residential Syllabus - 2nd year. NJATC. NJAT. Item number J208R2.O or most current
 AC Theory SW. NJATC. NJAT. Item number J203SW.I or most current
 Codeology SW. NJATC. NJAT. Item number J207SW.J or most current
 Conduit Fabrication SW. NJATC. NJAT. Item number J204SW.G or most current
 Residential Motors & Transformers SW. NJATC. NJAT. Item number J291SW or most current
 Residential Wiring Practices SW. NJATC. NJAT. Item number J292SW.K or most current
 Residential Code-2 SW. NJATC. NJAT. Item number J293SW.K or most current
 Residential Job Information-2 SW. NJATC. NJAT. Item number J255SW or most current
 Residential 2nd Year SW Kit. NJATC. NJAT. R2SWK17 or most current
 AC Theory IG. NJATC. NJAT. Item number J203IG.I or most current
 Codeology IG. NJATC. NJAT. Item number J207IG.J or most current
 Conduit Fabrication IG. NJATC. NJAT. Item number J204IG.G or most current
 Residential Motors & Transformers IG. NJATC. NJAT. Item number J291IG or most current

Residential Wiring Practices IG. NJATC. NJAT. Item number J292IG.K or most current
Residential Code-2 IG. NJATC. NJAT. Item number J293IG.K or most current
Residential Job Information-2 IG. NJATC. NJAT. Item number J255IG or most current
Blueprints IG. NJATC. NJAT. Item number J244IG.I or most current
DC Theory IG. NJATC. NJAT. Item number J202IG.I or most current
Inside Job Information-1 IG. NJATC. NJAT. Item number J221IG.I or most current
Orientation IG. NJATC. NJAT. Item number J200IG.I or most current
Residential 2nd Year IG Kit. NJATC. NJAT. Item number R2IGK17 or most current

AC Theory. NJATC. NJAT. Item number S641 or most current
Applied Codeology. NJATC. NJAT. Item number S01717 or most current
Conduit Bending and Fabrication. NJAT. NJATC. Item number S495 or most current
Commercial Blueprint Set. NJATC. NJAT. Item number S136.H or most current
Electrical Wiring Residential. NJATC. NJAT. Item number S03917 or most current
Transformers & Motors. NJATC. NJAT. Item number S018 or most current
Blueprint Reading for Electricians. NJATC. NJAT. Item number S648 or most current
Building a Foundation in Mathematics. NJATC. NJAT. Item number S665 or most current
DC Theory. NJATC. NJAT. Item number S640 or most current
Electrical Systems 2017 NEC. NJATC. NJAT. Item number S970 or most current
Residential 2nd Yr SW Kit Complete. NJATC. NJAT. Item number R2SWKC17 or most current
Residential 2nd Yr IG Kit Complete. NJATC. NJAT. Item number R2IGKC17 or most current
Residential Course Presentation. NJATC. NJAT. Item number RCP2K15 or most current