

APED 363 Course Outline as of Fall 2025**CATALOG INFORMATION**

Dept and Nbr: APED 363 Title: APP PLUMBERS, HVAC, 4TH
 Full Title: Apprentice Plumbers, HVAC/Refrigeration, Fourth Semester
 Last Reviewed: 5/13/2024

| Units | | Course Hours per Week | | Nbr of Weeks | Course Hours Total | |
|---------|------|-----------------------|------|--------------|--------------------|--------|
| Maximum | 4.00 | Lecture Scheduled | 3.00 | 18 | Lecture Scheduled | 54.00 |
| Minimum | 4.00 | Lab Scheduled | 3.00 | 8 | Lab Scheduled | 54.00 |
| | | Contact DHR | 0 | | Contact DHR | 0 |
| | | Contact Total | 6.00 | | Contact Total | 108.00 |
| | | Non-contact DHR | 0 | | Non-contact DHR | 0 |

Total Out of Class Hours: 108.00

Total Student Learning Hours: 216.00

Title 5 Category: AA Degree Non-Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

Catalog Description:

Students will be introduced to training related to heating, ventilation, air conditioning (HVAC), and refrigeration for apprentice plumbers and pipefitters. This is the fourth semester of a ten-semester program.

Prerequisites/Corequisites:**Recommended Preparation:****Limits on Enrollment:**

Indentured apprentice

Schedule of Classes Information:

Description: Students will be introduced to training related to heating, ventilation, air conditioning (HVAC), and refrigeration for apprentice plumbers and pipefitters. This is the fourth semester of a ten-semester program. (Grade Only)

Prerequisites/Corequisites:

Recommended:

Limits on Enrollment: Indentured apprentice

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: |
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| 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 and plumbing principles and regulations related to heating, ventilation, air conditioning, and refrigeration trade
2. Apply best practices in the practical environment related to heating, ventilation, air conditioning, and refrigeration trade

Objectives:

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

1. Explain, discuss, and define the process of certification in working with chlorofluorocarbons (CFC)
2. Demonstrate removal and recycling of CFC refrigerants
3. Describe and demonstrate common trade related electrical controls
4. Explain and demonstrate isometric drawing

Topics and Scope:

I. CFC Universal Certification

- A. History of Environmental Protection Agency (EPA) for CFC regulations
- B. Study EPA regulations as they pertain to refrigerant storage and handling
- C. Training in how to read and understand regulations
- D. Preparation for certification exam

II. Trade Related Electric Controls

- A. Introduction to basic electric controls found in refrigeration
- B. Description of operation and functions of various electrical components
- C. Training in proper testing and adjustments of controls

III. Isometric Drawing

- A. Fundamentals
- B. 30/60/90 degree triangle
- C. Scale rule

- D. Simple rectangle drawing
- E. Cube drawing
- F. Elevations
- G. Piping drawing

All topics are covered in the lecture and lab portions of the course

Assignment:

Lecture-Related Assignments:

1. Weekly reading 10-15 pages
2. Written homework assignments (1 to 2 sets per week)
3. Project homework assignments (1 to 2 sets per week)
4. Quizzes and examinations (4 to 6 per semester)

Lab-Related Assignment:

1. 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

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:

Drawing Interpretation & Plan Reading. International Pipe Trades Joint Training Committee.

2021.

Advanced Plan Reading & Related Drawing. International Pipe Trades Joint Training Committee. 2021.

Electric Controls for Mechanical Equipment Service. International Pipe Trades Joint Training Committee. 2019. (classic).

Air Conditioning. International Pipe Trades Joint Training Committee. 2023.