

**APED 363 Course Outline as of Fall 2013****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	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		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 Non-Applicable

Grading: Grade Only

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

Also Listed As:

Formerly:

**Catalog Description:**

Related supplemental instruction of heating, ventilation, air conditioning, and refrigeration for apprentice plumbers and pipefitters.

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

Indentured apprentice.

**Schedule of Classes Information:**

Description: Related supplemental instruction of heating, ventilation, air conditioning, and refrigeration for apprentice plumbers and pipefitters. (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:**

<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**

**Outcomes and Objectives:**

Upon completion of this course, the students will be able to:

1. Explain, discuss, define the process of certification in 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. Chlorofluorocarbons (CFC) Universal Certification

- A. History of Environmental Protection Agency CFC regulations
- B. Study Environmental Protection Agency 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 degree to 60 degree triangle
- C. Scale rule
- D. Simple rectangle drawing
- E. Cube drawing
- F. Elevations
- G. Piping drawing

**Assignment:**

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

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 to include multiple choice, true/false, matching items, and completion

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:**

Advanced Plan Reading & Related Drawing, International Pipe Trades Joint Training Committee. 2009

Air Conditioning, International Pipe Trades Joint Training Committee. 2008

Drawing Interpretation & Plan Reading, International Pipe Trades Joint Training Committee. 2010

Electric Controls for Mechanical Equipment Service, International Pipe Trades Joint Training Committee. 2009