

**APED 366 Course Outline as of Spring 2020****CATALOG INFORMATION**

Dept and Nbr: APED 366 Title: APP PLUMBERS, HVAC, 7TH  
 Full Title: Apprentice Plumbers, HVAC/Refrigeration, Seventh Semester  
 Last Reviewed: 5/14/2018

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:**

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>	<b>Effective:</b>	<b>Inactive:</b>
<b>CSU GE:</b>	<b>Transfer Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>IGETC:</b>	<b>Transfer Area</b>	<b>Effective:</b>	<b>Inactive:</b>
<b>CSU Transfer:</b>		<b>Effective:</b>	<b>Inactive:</b>
<b>UC Transfer:</b>		<b>Effective:</b>	<b>Inactive:</b>

**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/ plumbing principles and regulations related to heating, ventilation, air conditioning, and refrigeration trade.
2. Apply best practices in 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, demonstrate, and analyze chillers and compressors.
2. Define, demonstrate, measure, and assess loads.

### **Topics and Scope:**

#### **I. Chillers and Compressors**

- A. Introduction to screw, centrifugal, and absorption systems
- B. Construction and components of reciprocating chillers
- C. Construction and components of centri-fugal compressors
- D. Compressor lubricating systems.
- E. Testing and troubleshooting compressor problems
- F. Compressor capacity control
- G. Compressor maintenance

#### **II. Load Calculations**

- A. Formulas and terminology related to load calculations
- B. Theory and demonstration of cooling systems relationships
- C. Theory of load calculations
- D. Practice of load calculations

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

### **Assignment:**

Lecture-Related Assignments:

1. Homework assignments (1 to 2 sets per week)
2. Quizzes and examinations (4 to 6 per semester)

Lab-Related Assignment:

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

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:

Hydraulic Heating & Cooling. International Pipe Trades Joint Training Committee. 2009 (classic)