APPT 174: ADVANCED ELECTRICITY/PNEUMATIC DDC INTRODUCTION

Foothill College Course Outline of Record

Heading	Value
Units:	4.5
Hours:	30 lecture, 72 laboratory per quarter (102 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Refrigeration & Air Conditioning Mechanical Service Apprenticeship Program.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- A student will be able to apply circuitry.
- A student will be able to apply electronics.
- A student will be able to demonstrate variable frequency drives.
- A student will be able to identify, recognize and classify motors and starters.

Description

Second-year course of the Refrigeration & Air Conditioning Apprenticeship program. This course provides students with a working knowledge of Advanced Electricity, Motors, Starter, Circuitry, and Variable Drives.

Course Objectives

The student will be able to:
A. Recognize, classify and explain motors and starters
B. Recognize, classify and explain circuitry
C. Recognize, classify and explain electronics
D. Recognize variable frequency drives

Course Content

A. Motors & Starters
1. Electricity for motors & starters
2. Circuit protection
B. Circuitry
1. Solid state & digital
2. Protection devices
C. Electronics
1. Advanced PDC
2. Electronic test equipment
D. Variable Frequency Drives
1. Frequency controlled circuits
2. Advanced circuitry

Lab Content

Students will work individually and in teams on electrical wiring for refrigeration systems in the lab, which includes:
A. Using a voltmeter, ohmmeter and ammeter
B. Advanced Electronics I: Motors and Starters
C. Troubleshooting circuits

Special Facilities and/or Equipment

A. Laboratory with electrical tools/testers
B. Personal protective equipment

Method(s) of Evaluation

A. Written examination
B. Hands-on demonstration
C. Chapter Quizzes
D. Group and Classroom participation
E. Punctuality

Method(s) of Instruction

A. Lecture
B. Discussion
C. Laboratory
D. Demonstration

Representative Text(s) and Other Materials

United Association of Journeymen and Apprentices. Electric Controls for Mechanical Equipment Service. Washington, D.C.: International Pipe Trades Joint Training Committee, Inc., 2015.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

A. Readings from the textbook

1. Application of Variable Frequency Devices (VFDs) and Direct Digital Control Devices (DDCs)

2. Solar cooling controls and its operating principles

3. Creating advanced schematics

B. Writing assignments are related to the assignments given in the laboratory

1. Students write about the classification of motors, starters, electronic devices in refrigeration equipment and variable frequency drives

2. Students prepare a compete pneumatic/electrical wire diagram for an Air Conditioning circuit

Discipline(s)

Air Conditioning, Refrigeration, Heating