APSC 121: AC THEORY, MASTER CLOCK, NURSE CALL, COMPUTER LITERACY

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2021
Units:	4
Hours:	40 lecture, 40 laboratory per quarter (80 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Northern CA Sound & Communication JATC Apprenticeship Program.
Advisory:	Not open to students with credit in APRT 132.
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 successful student will be able to analyze an AC circuit and apply Ohm's Law.
- A successful student will be able to demonstrate proper wiring of a fire alarm system in hands on training.

Description

Study of AC theory. The student will become familiar with sine waves, inductance, inductive reactance, capacitive reactance, frequency and AC impedance. Calculate voltage, current, impedance and power in both a series and a parallel AC circuit. Introduction to nurse call systems, including system components, ancillary systems, system design, installation and troubleshooting techniques. Instruction on personal computing software, such as Microsoft Word and Excel. Students create Word documents and practical spreadsheets.

Course Objectives

The student will be able to:
A. Analyze an AC circuit and apply Ohm's Law.
B. Demonstrate knowledge of inductance and inductive reactance in an AC circuit.
C. Identify requirements and components for nurse call.
D. Navigate Microsoft Word and Excel 2016 and create basic documents.

E. Apply knowledge in hands-on laboratory.

Course Content

A. AC circuits
1. Calculate voltage and current
2. Calculate impedance and power
B. Inductance
1. Compare DC and AC circuits
2. Apply inductance and reactance in series and parallel circuits
C. Nurse call requirements
1. Nurse call components (patient stations, dome lights, nurse stations)
2. Nurse call systems as they relate to UL 1069
D. Microsoft applications
1. Creating basic spreadsheets containing commonly used Excel formulas
2. Creating basic Word documents containing inserts and various formatting
E. Laboratory exercises
1. Demonstrate AC and DC theory using layouts, devices and components
2. Build a small scale nurse call system (wiring, connecting, testing, and troubleshooting)
3. Use computer to create spreadsheets and written documents

Lab Content

Work individually and in teams using lab equipment to learn sine waves, inductance, inductive reactance, capacitive reactance, frequency and AC impedance. Students will also build a small scale nurse call system and work with computers to create documents and spreadsheets. Equipment safety and safe handling practices are reviewed and applied.

Special Facilities and/or Equipment

A. Audio-visual equipment (laptop, video projector with screen)
B. Laboratory with test instruments and hands-on projects
C. Computers with internet access
D. When taught via Foothill Global Access, on-going access to computer with email software and hardware; email address

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Results of quizzes and tests
Classroom and laboratory participation
Online discussion participation

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture
Lab assignment
Group discussion
Demonstration

Representative Text(s) and Other Materials

National Joint Apprenticeship and Training Committee (NJATC). AC Theory, 3rd ed.. 2011.

This is the standard Sound & Communications textbook/workbook used for this course. Although it may not be within 5 years of the required published date, it is the most current book used when teaching this course. We will adopt the next edition of the text, as it is published.

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

A. Readings from assigned textbooks, for example:
1. Read Chapter 1 of the AC Theory textbook, section: Permanent Magnets and Magnetism, Conductors, and Movement
2. Read Chapter 2 of the AC Theory textbook, section: Instantaneous Value of a Sine Wave
B. Writing assignments given in the laboratory, for example:
1. AC Lab, Sine Waves - Definitions
2. AC Lab, Sine Waves - Voltages
C. Other:
1. Online videos: videos (created by the JATC) accessed on CMS (Canvas) which include the theory of AC, circuit calculations, nurse call system components and how they work

Discipline(s)

Telecommunication Technology