HCT1501: Introduction to Electricity

A. COURSE DESCRIPTION

Credits: 4
Lecture Hours/Week: 3
Lab Hours/Week: 2
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: HCT 1515
MnTC Goals: None

Introduction to electricity covers basic electricity and the circuits, wiring diagrams, schematic diagrams and electrical symbols that a service technician will encounter when servicing heating, air-conditioning and refrigeration equipment. Apply Ohm’s law to solve problems in series, parallel and series/parallel circuits. Describe basic safety rules to measure electrical circuits.

COURSE EFFECTIVE DATES: 08/26/2013 - Present

B. OUTLINE OF MAJOR CONTENT AREAS

1. Electrical theory
   A. Electrical Safety
   B. Electron Theory
   C. Ohm's Law

2. Circuits
   A. Series
   B. Parallel
   C. Series/Parallel

3. Meters
   A. Analog
   B. Digital

4. Wiring Diagrams

C. LEARNING OUTCOMES (General)

1. Students will demonstrate safety rules and procedures while working in the lab and determine when to call an electrician.

2. Students will define ohm’s law, and discuss the relationship between volts, amperage and resistance using mathematics.

3. Students will describe the characteristics of voltage, amperage and resistance as it relates to a series, parallel and series/parallel circuits while proving the concepts learned using mathematics.

4. Students will differentiate between the internal workings of an ohm, amp and voltmeter.
5. Students will distinguish between the terms continuity and resistance as it applies to using the ohm meter.
6. Students will perform voltage and resistance measurement using a digital multi-meter.
7. Students will list the three types of wiring diagrams.
8. Students will describe the difference of a pictorial, ladder and factual diagram.
9. Students will convert a ladder diagram to pictorial diagram and orally explain the sequence of operation.

D. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None

E. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

F. SPECIAL INFORMATION
   HCC COMPETENCIES MET:
   Working Productively and Cooperatively
   Thinking Creatively and Critically

   STUDENT CONTRIBUTIONS:
   Students are expected to attend all lectures and working sessions, participate in activities and discussion, listen to and follow direction, complete assignments on time and request assistance when needed. Each student is expected to spend the necessary time to become adept at the procedures and their applications. At all times the student is expected to demonstrate and exercise safety skills and procedures.

   STUDENT ASSESSMENT SHALL TAKE PLACE USING INSTRUMENTS SELECTED/DEVELOPED BY THE COURSE INSTRUCTOR.

Curriculum Committee Approval Date: March 13, 2018

AASC APPROVAL DATE: March 21, 2018
REVIEW DATE: March 2023