COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	HVAC Cooling and Maintenance
COURSE NUMBER	BEMT 0200
DIVISION	Career and Technical Education
DEPARTMENT	BEMT
CIP CODE	46.0401
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 1 Lab: 4
PREREQUISITES	None

COURSE DESCRIPTION

This is a basic course which requires the student to be heavily involved in all instructional methods. This course requires the student to disconnect and install a new unit, remove all refrigerant and liquids, completely dismantle an existing unit, determine proper amperage and ohm readings, test for existing amperage and ohm readings, install proper electrical disconnect and wiring, size the wire and electrical fixtures properly, and have the ability to apply basic fundamental code requirements.

PROGRAM LEARNING OUTCOMES

Students will demonstrate an adherence to safety standards and proficiency in the installation or repair of residential electrical, plumbing, HVAC, exterior building materials, roofing, irrigation systems, landscape/hardscape, concrete placement and finish, masonry install and repair.

TEXTBOOKS

http://kckccbookstore.com/

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Proper sizing of HVAC Unit
   A. Calculate cubic feet/Electrical requirement
   B. Calculate air volume needed for return

C. Code requirement for Condensing unit
D. Calculate size of unit required

II. Installing a New Air Conditioner
A. Selecting correct size, and line sizes
B. Charging using correct refrigerant, with gauges
C. Placing unit according to code, and performing install
D. Testing unit after install
E. Identify parts and function of condensing unit

III. Removing old unit, vacuum down, pump unit down,

IV. Reclaim, recycle, recover refrigerant methods

V. Tear down old unit to recycle metals

VI. Maintenance/Troubleshooting
A. Remove covers and test Amperage/Ohms.
B. Inspect Capacitor and contactor tips.
C. Flush and clean internal and external coils.
D. Test the internal and external pressures, and temperatures of the unit.
E. Detect any refrigerant leaks, testing for leaks
F. Complete test for Amperage draw, and hi/low side pressures
G. Replace capacitor, condensate or refrigerant line, fan motor

VII. Customer Service
A. Properly complete the work order
B. Conduct service presentation and work order to customer

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Demonstrate the ability to calculate size of unit required
1. Demonstrate how to calculate the size requirement of the air conditioner.
2. Demonstrate how to calculate the electrical load requirement of the new air conditioner.
3. Demonstrate what refrigerant is required of the unit.

B. Demonstrate the ability to install a new air conditioner.
4. Demonstrate how to properly place the new unit.
5. Demonstrate code requirement of placing the unit disconnect.
6. Demonstrate code requirement of the disconnect line.
7. Demonstrate how to properly install a new unit.
8. Demonstrate how to properly test a new unit after install.

C. Demonstrate the ability to disconnect old unit, reclaim, recycle, or reuse refrigerant
9. Demonstrate how to properly discharge refrigerant from old unit.
10. Demonstrate how to properly disconnect an old unit.
11. Demonstrate how to properly dismantle and recycle old unit.

D. Demonstrate the ability to maintenance existing unit.
   12. Demonstrate how to remove protective covers and pull amperage readings, and volts readings.
   13. Demonstrate how to inspect the capacitor, and contactor
   14. Demonstrate how to clean the external coils of the unit
   15. Demonstrate how to test the internal and external pressures, and temperatures of the unit.
   16. Demonstrate how to detect any refrigerant leaks.
   17. Demonstrate how to replace fan motor.
   18. Demonstrate how to inspect fan operation.
   19. Demonstrate how to replace a capacitor.
   20. Demonstrate how to test fan motor and compressor.
   21. Demonstrate how to replace the condensate or refrigerant lines
   22. Demonstrate how to fill out a work order for any of the work completed.
   23. Demonstrate how to conduct a presentation of the work order to the customer.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES
Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES
Student Handbook
https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf

College Catalog
https://www.kckcc.edu/academics/catalog/index.html

College Policies and Statements
https://www.kckcc.edu/about/policies-statements/index.html

Accessibility and Accommodations
https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html.