COLLEGE OF THE DESERT

Course Code ACR-378A

Course Outline of Record

1. Course Code: ACR-378A
2. a. Long Course Title: Introduction to Refrigerants Management
   b. Short Course Title: Intro to Ref Mangmnt
3. a. Catalog Course Description:
   This course is module 1 of 3. This course is designed for both the novice and existing workforce to understand the basic terms as they apply to Environmental Protection Agency (EPA) laws. This course also covers the basic refrigeration process and how to apply these principles to a refrigeration system.
   b. Class Schedule Course Description:
   This course is module 1 of 3. This course is a basic introduction to refrigerants management.
   c. Semester Cycle (*if applicable*): *N/A*
   d. Name of Approved Program(s):
   - NEW CERTIFICATE IN PROGRESS Certificate of Completion
4. Total Units: 0 Total Semester Hrs: 18.00
   Lecture Units: 0 Semester Lecture Hrs: 18.00
   Lab Units: 0 Semester Lab Hrs: 0
   Class Size Maximum: 30 Allow Audit: No
   Repeatability Noncredit - Unlimited
   Justification 0
5. Prerequisite or Corequisite Courses or Advisories:
   Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)
   N/A
6. Textbooks, Required Reading or Software: *(List in APA or MLA format.)*
   a. John Tomczyk; Eugene Silberstein, B.A., M.S., BEAP, CMHE; Bill Whitman; Bill Johnson (2017). *Refrigeration Air Conditioning Technology* (8th/e). Boston, MA 02210 Cengage Learning. ISBN: 978130557829
   College Level: Yes
   Flesch-Kincaid reading level: 11.1
7. Entrance Skills: *Before entering the course students must be able:*

8. Course Content and Scope:

Lecture:

1. Refrigerants and the environment
2. Ozone depletion
3. Global warming
4. CFC refrigerants
5. HCFC refrigerants
6. HFC and blended refrigerants
7. Refrigerant Oil properties
8. Clean Air Act regulations

Lab: *(if the "Lab Hours" is greater than zero this is required)*

1. Safe refrigerant handling
2. Use of refrigerant gauges and thermometers

9. Course Student Learning Outcomes:

1.
Recognize the difference between types of refrigerants and how to identify them and employ the safety practices related to them.

2.
Identify the differences between Recovery, Reclamation, and Recycling.

3.
explain the refrigeration cycle and how to plot the pressure enthalpy diagram.

4.
Apply the skills learned in plotting the pressure enthalpy Diagram to a refrigeration system and how to use this knowledge in evaluating a system.

10. Course Objectives: *Upon completion of this course, students will be able to:*
    a. Describe ozone depletion and global warming
    b. Discuss the effects of CFC's on the ozone layer
    c. Differentiate between CFC's, HCFC's, HC's and HFC's
    d. Discuss replacement refrigerants and retrofitting
    e. Discuss refrigerant blends and glide.

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*
    a. Demonstration, Repetition/Practice
    b. Laboratory
    c. Lecture
    d. Observation
    e. Technology-based instruction

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*
    In Class Hours: 18.00
    Outside Class Hours: 36.00
    a. In-class Assignments
        1. Periodic reading assignments
        3. Computer exercises
    b. Out-of-class Assignments
        1. Periodic reading assignments
        2. Review Questions
        3. EPA study Guide
        4. Computer exercises

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*
    - Laboratory projects
    - True/false/multiple choice examinations
    - Mid-term and final evaluations
    - Student participation/contribution

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*
    PO - Career and Technical Education

Fulfill the requirements for an entry- level position in their field.
Apply critical thinking skills to execute daily duties in their area of employment.
Apply critical thinking skills to research, evaluate, analyze, and synthesize information.
Display the skills and aptitude necessary to pass certification exams in their field.

IO - Critical Thinking and Communication
Apply principles of logic to problem solve and reason with a fair and open mind.
Summarize, analyze, and interpret oral and written texts, with the ability to identify assumptions and differentiate fact from opinion.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year

17. Special Materials and/or Equipment Required of Students:

18. Materials Fees: ☐ Required Material?

Material or Item	Cost Per Unit	Total Cost

19. Provide Reasons for the Substantial Modifications or New Course:

EPA-608 certification mandates have recently changed. This course is necessary for retraining of existing workforce and the introduction to new students in the proper methods of refrigerant handling and identification. This course is a fundamentals course that focuses on the global effects of refrigerants on our environment and how to use and handle refrigerants in a responsible way.

20. a. Cross-Listed Course *(Enter Course Code)*: *N/A*
    b. Replacement Course *(Enter original Course Code)*: *N/A*

21. Grading Method *(choose one)*: Pass/No Pass Only

22. MIS Course Data Elements
    a. Course Control Number [CB00]: *N/A*
    b. T.O.P. Code [CB03]: 94600.00 - Environmental Control Tec
    c. Credit Status [CB04]: N - Noncredit
    d. Course Transfer Status [CB05]: C = Non-Transferable
    e. Basic Skills Status [CB08]: 2N = Not basic skills course
    f. Vocational Status [CB09]: Possibly Occupational
    g. Course Classification [CB11]: J - Workforce Preparation Enhanced Funding
    h. Special Class Status [CB13]: N - Not Special
    i. Course CAN Code [CB14]: *N/A*
    j. Course Prior to College Level [CB21]: Y = Not Applicable
    k. Course Noncredit Category [CB22]: J - Workforce Preparation
    l. Funding Agency Category [CB23]: Y = Not Applicable
    m. Program Status [CB24]: 1 = Program Applicable

    Name of Approved Program *(if program-applicable)*: NEW CERTIFICATE IN PROGRESS
    Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment
    First Year: 18
    Third Year: 30

24. Resources - Faculty - Discipline and Other Qualifications:
    a. Sufficient Faculty Resources: Yes
    b. If No, list number of FTE needed to offer this course: *N/A*
25. Additional Equipment and/or Supplies Needed and Source of Funding.

    N/A
26. Additional Construction or Modification of Existing Classroom Space Needed. *(Explain:)*

    N/A
27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES
    Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes
28. Originator George Brown Origination Date 10/11/16