

Course Outline of Record

1. Course Code: ACR-378B
2.
 - a. Long Course Title: Recovery and Evacuation Practices in Refrigerant Management
 - b. Short Course Title: RCVRY & EVAC REF MGT
3.
 - a. Catalog Course Description:
 This course is module 2 of 3. This course is designed for both the novice and existing workforce to understand the proper recovery and evacuation processes necessary to meet EPA 608 standards.
 - b. Class Schedule Course Description:
 This course is module 2 of 3. This course is designed to teach recovery and evacuation practices.
 - 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: 6.00
 Lab Units: 0 Semester Lab Hrs: 12.00
 Class Size Maximum: 25 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 (CCForm I-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. Methods of recovery
2. Methods of recycling
3. Requirements for reclamation
4. Methods of evacuatin

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

1. Refrigerant recovery using push pull, traditional and advanced techniques
2. Refrigerant leak checking
3. Evacuation using proper tools and micron guage
4. Refrigerant containers and storage
5. Schrader core removal, low loss fittings and new hoseless electronic charging devices.

9. Course Student Learning Outcomes:

1. Identify the tools needed in proper evacuation.

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2.
Compare the tools required for refrigerant recovery with the tools required for refrigerant reclamation. Explain the difference.
3.
Identify the tools used in recycling refrigerant.
4.
Use tools to recover refrigerant 3 methods: liquid recovery, push pull, and vapor recovery.
5.
Use tools to evacuate a system.

10. Course Objectives: *Upon completion of this course, students will be able to:*

- a. demonstrate proper use of Recovery equipment.
- b. use proper tools to complete leak check on an HVAC system
- c. Demonstrate use of tools to evacuate an HVAC system and using a micron gauge distinguish the difference between a leaky HVAC system and a contaminated HVAC system.

11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*

- a. Activity
- b. Laboratory
- c. Lecture
- d. Observation
- e. Participation
- f. 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: 12.00

a. In-class Assignments

- | |
|---|
| <ol style="list-style-type: none">1. Periodic reading assignments2. Lab projects3. Computer exercises |
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b. Out-of-class Assignments

- | |
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| <ol style="list-style-type: none">1. Periodic reading assignments2. Review Questions3. EPA study Guide4. Computer exercises |
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13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- Presentations/student demonstration observations
- True/false/multiple choice examinations

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

Apply critical thinking skills to execute daily duties in their area of employment.

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Display the skills and aptitude necessary to pass certification exams in their field.

IO - Personal and Professional Development

Self-evaluate knowledge, skills, and abilities.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year
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17. Special Materials and/or Equipment Required of Students:

18. Materials Fees: Required Material?

Material or Item	Cost Per Unit	Total Cost
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19. Provide Reasons for the Substantial Modifications or New Course:

This course is necessary for retraining of existing workforce and training new employees in the proper methods of system recovery and Evacuation. Recent energy studies have estimated that 80% of all residential Air Conditioning systems are either under or overcharged and often times contaminated and even systems that are currently uncontaminated will become contaminated due to improper maintenance and service procedures.

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: 15
Third Year: 25

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:*)

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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 10/12/16