



CEC205 HVAC Fundamentals Syllabus

Course Information

Credits	4
Campus	Washburn Institute of Technology
Address	5724 SW Huntoon
City/State/Zip	Topeka, Kansas 66604
Office Fax	785-273-7080

Description

This course is designed to introduce students to the broader picture that is HVAC. Students will become familiar with trade related organizations, job requirements, gain skills in soldering and brazing, and demonstrate learned skills to service and repair air conditioning systems. Students must earn a C grade or better in this course in order to advance to the next course.

Textbooks

Carter Stanfield & David Skaves, *AHRI Fundamentals of HVACR*, Edition: 3rd, ISBN: 978-0-13-401616-0

Student Learning Outcomes:

- A. Communicate effectively
- B. Integrate technology
- C. Learn effectively
- D. Demonstrate cooperative teamwork skills
- E. Apply safety in the workplace
- F. Think critically and creatively
- G. Demonstrate responsible work ethics

Competencies

1. Identify career and apprentice opportunities in the HVAC trade.
2. Describe the types of regulatory codes encountered in the HVAC trade.
3. Identify the types of schedules/drawings used in the HVAC trade.
4. State the precautions that must be taken when installing refrigerant piping.
5. Select the right tubing for a job.

6. Cut and bend copper tubing.
7. Safely join tubing by using flare and compression fittings.
8. Determine the kinds of hangers and supports needed for refrigerant piping.
9. State the basic safety requirements for pressure-testing a system.
10. Identify types of plastic pipe and state their uses.
11. Cut and join lengths of plastic pipe.
12. Demonstrate soldering and brazing techniques.
13. Explain how heat transfer principles occur in a cooling system, demonstrating an understanding of the terms and concepts used in the refrigeration cycle.
14. Calculate the temperature and pressure relationships at key points in the refrigeration cycle.
15. Demonstrate the use of temperature- and pressure-measuring instruments to make readings at key points in the refrigeration cycle.
16. Identify commonly used refrigerants and demonstrate the proper procedures for handling these refrigerants.
17. Identify the major components of a cooling system and explain how each type works.
18. Identify the major accessories available for cooling systems and explain how each works.
19. Identify the control devices used in cooling systems and explain how each works.
20. Install one or more the following HVAC systems and their components: (1) residential, (2) commercial, and/or (3) industrial.
21. Demonstrate refrigerant leak detection procedures.
22. Demonstrate refrigerant evacuation procedures.
23. Demonstrate refrigerant recovery procedures.
24. Demonstrate refrigerant charging procedures.
25. Apply trade math principles.

Guidelines for Success

Assessment Plan

Assessment is an integral part of the educational process at Washburn Tech and accurate feedback is an important tool in continuously improving the institution's technical programs. Students can expect to participate in assessment activities prior to entry into programs, within specific courses and following program completion for specific fields of study.

Grading Scale

92 - 100%	= A
85 – 91%	= B
78 - 84%	= C
70 - 77%	= D
<70%	= F

Attendance

Classroom attendance is required. Material missed must be made up with the instructor.

Disability

The Americans with Disabilities Act (ADA) Office is responsible for assisting in arranging accommodations and for identifying resources at Washburn Institute of Technology for persons with disabilities. Qualified students with disabilities **MUST** self-identify by completing an application. In addition students must provide appropriate medical documentation to the ADA coordinator to be eligible for accommodations. New requests for accommodations should be submitted at least two months or more prior to the date the accommodations are needed. However, please contact the ADA office as soon as a need may arise. Depending on the accommodation request, four to eight weeks lead time may be needed for timely and effective provision of accommodations.

The ADA Office coordinates and assists in arranging accommodations it deems appropriate for eligible students on a case-by-case basis. If you are a student with a disability that may substantially limit your ability to participate in any of our classes and you believe that you will need accommodations, it is your responsibility to contact: ADA Coordinator, 785.670.3365 or Gloria.christian@washburn.edu.

Washburn University prohibits discrimination on the basis of race, color, religion, age, national origin, ancestry, disability, sex, sexual orientation, gender identity, genetic information, veteran status, or marital or parental status. The following person has been designated to handle inquiries regarding the non-discrimination policies: Dr. Pamela Foster, Equal Opportunity Director/Title IX Coordinator, Washburn University, 1700 SW College Ave, Topeka, Kansas 66621, 785.670.1509, eodirector@washburn.edu