



CEC120 Heating System Fundamentals

Course Information

Credits	3
Campus	Washburn Institute of Technology
Address	5724 SW Huntoon
City/State/Zip	Topeka, Kansas 66604
Office Fax	785-273-7080

Description

This course will give students a firm understanding of combustion and how it is applied in the HVAC trade. Residential gas furnaces will be studied in detail in order to gain understanding in how they are installed and serviced. A thorough understanding of Standard, Midrange and High Efficiency furnace service and installation will be earned as a result of this course. This class must be passed with a minimum of a C or 78% for the student to continue to 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. Recognize the different fuel types used in various furnaces.
- 2. Identify different efficiency of furnaces.
- 3. Evaluate combustion
- 4. Check gas pressures.
- 5. Inspect and perform standard season maintenance and tune-up.
- 6. List sequence of operation.
- 7. List the effects of changing air flow.
- 8. Check and adjust thermostat heat anticipators.
- 9. Perform start up procedures.

10. Apply trade math to daily applications.
11. Interpret drawings, symbols, and their applications.
12. Identify residential codes related to the installation of HVAC equipment
13. Explain furnace design and functions.
14. Introduce commercial airside and hydronic systems including various types of boilers, piping, chilled-water systems, and their components.
15. Demonstrate an understanding of psychrometrics.
16. Maintenance and repairs of various HVAC systems.

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