



CEC225 Heat Pumps Syllabus

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

The student will learn the basic functions of various Heat Pump design as well as charging and troubleshooting procedures.

Textbooks

Carter Stanfield & David Skaves, *AHRI Fundamentals of HVACR*, Edition: 3rd, ISBN: 978-0-13-401616-0.
John Tomczyk, *Universal R-410A Safety and Training*, ESCO Press, ISBN 1-930044-12-7.

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. Describe a reversing valve and explain its operations.
2. Identify the major parts in an air-to-air heat pump and explain their operations.
3. List and describe the metering devices that may be used with a heat pump.
4. Demonstrate how to properly evacuate and charge a heat pump system.
5. Describe the special piping accessories needed in a heat pump.
6. Describe the operation of the indoor and outdoor coil.
7. Define a dual fuel system.

8. Explain how the defrost cycle is initiated and terminated.
9. Explain the purpose of auxiliary heat.
10. Demonstrate proficiency with multi-meter while troubleshooting the electrical system of a heat pump.
11. Demonstrate knowledge and explain how a geothermal heat pump functions.
12. Interpret an electrical schematic of an air-to-air heat pump.
13. Explain the operations and concept of variable refrigerant flow

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