

Course discipline/number/title: FST 2500: Refrigeration Theory

A. CATALOG DESCRIPTION

1. Credits: 3
2. Hours/Week: 3
3. Prerequisites (Course discipline/number): FST 1651
4. Other requirements: None
5. MnTC Goals (if any): NA

B. COURSE DESCRIPTION: This course covers fundamentals of refrigeration, tools and materials, basic refrigeration systems, compression systems, refrigerant controls, refrigerants, and small domestic applications. The course also includes the principles of installing and servicing small hermetic systems.

C. DATE LAST REVISED (Month, year): December, 2022

D. OUTLINE OF MAJOR CONTENT AREAS:

1. Refrigerant Safety and Handling procedures
2. Basic Refrigerant components and circuits
3. Domestic Appliances Refrigeration System Knowledge
4. Types of refrigerants and their common use

E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Identify refrigerant safety problems.
2. Differentiate sensible heat, latent heat, and specific heat.
3. Explain heat transfer principles.
4. Explain gas laws and absolute measurements.
5. Define basic refrigeration terms.
6. Describe refrigeration principles.
7. List refrigerant properties.
8. Explain the differences between Azeotropic, near-azeotropic, and zeotropic refrigerants.
9. Describe refrigeration fittings, tubing, prepping, soldering and brazing techniques.
10. Explain the workings of refrigeration gauges.
11. Describe refrigeration service values as to type and purpose.
12. Differentiate refrigeration systems as to purpose and conditions.
13. Describe refrigeration compression cycle.
14. Identify condenser and evaporator types.
15. Identify compressor and metering devices.
16. Describe evacuation process.
17. Describe Recovering, Recycling, and Reclaiming refrigerants.
18. Identify refrigeration and air conditioning circuits.
19. Differentiate freezer and refrigerator types.
20. Differentiate servicing tools and instruments.
21. Explain thermostat testing, adjusting and servicing.
22. Identify internal compressor parts.
23. Explain gauge maintenance and calibration.
24. Explain refrigeration system components operation.
25. Draw a basic refrigeration diagram.
26. Describe leak repair with epoxy.

F. LEARNING OUTCOMES (MNTC): NA

G. METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:

1. Weekly assignments
2. Quizzes and tests



H. RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Course Outcome(s):
Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

Personal and Professional Accountability. Students will take responsibility as active learners for achieving their educational and personal goals.

I. SPECIAL INFORMATION (if any): None