DATE OF LAST REVIEW: 02/2013
CIP CODE: 47.0106
SEMESTER: Departmental Syllabus
COURSE TITLE: Fundamentals of Refrigeration
COURSE NUMBER: MAPR0112
CREDIT HOURS: 2
INSTRUCTOR: Departmental Syllabus
OFFICE LOCATION: Departmental Syllabus
OFFICE HOURS: Departmental Syllabus
TELEPHONE: Departmental Syllabus
EMAIL: KCKCC issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES: None

REQUIRED TEXT AND MATERIALS:
Please see bookstore for current textbook(s) and other required material.

COURSE DESCRIPTION:
List and identify the components of a refrigeration system, explain theory of refrigeration and the operation of all the compressor, evaporator, condenser, and metering device. Explain and understand the scientific principles heat transfer, enthalpy, sensible, and latent heat.

METHOD OF INSTRUCTION:
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:
I. Scientific terms
   A. States of matter
   B. Pressures of matter
   C. Solids
   D. Liquids
   E. Gases
   F. Fluids
   G. Change of State

II. Heat
A. Heat transfer
B. Conduction
C. Convection
D. Radiation
E. Sensible Heat
F. Latent Heat
G. Specific Heat
H. BTU’s

III. Pressure
A. Atmospheric
B. Absolute
C. Gauge
D. Gas Laws
E. Compression
F. Pressure Behaviors

IV. Cooling
A. Evaporation
B. Expansion
C. Subcooling
D. Heat rejection
E. Latent Heat of Fusion

V. Compressor
A. Function
B. Suction/Discharge
C. Voltages
D. Diagnostic

VI. Condenser
A. Function
B. Liquid/Vapor Ratio
C. Heat Rejection
D. Maintenance
E. Subcooling

VII. Metering devices
A. Function
B. Fixed Bore
C. Capillary
D. Expansion Valves

VIII. Evaporator
A. Function
B. Liquid/Vapor Ratio
C. Heat Absorption
D. Maintenance
E. Superheating
EXPECTED LEARNER OUTCOMES:
A. The student will be able to draw the basic refrigerant system, labeling components.
B. The student will be able to explain refrigeration cycle.
C. The student will be able to understand the scientific principals of refrigeration.
D. The student will be able to explain the pressure temperature relationship of refrigerant.
E. The student will be able to explain and interpret enthalpy chart.
F. The student will be able to identify recovery equipment, refrigerant gages, and vacuum pump.

COURSE COMPETENCIES:
The student will be able to draw the basic refrigerant system, labeling components.
1. The student will be able to accurately relate and orient refrigeration components as a drawing.

The student will be able to explain refrigeration cycle.
2. The student will be able to explains the functionality of the four components of a refrigeration cycle.
3. The student will be able to explains heat absorption and heat rejection.

The student will be able to understand the scientific principals of refrigeration.
4. The student will be able to define pressure
5. The student will be able to define solids
6. The student will be able to define liquids
7. The student will be able to define gases
8. The student will be able to define fluids
9. The student will be able to define change of State
10. The student will be able to define heat transfer
11. The student will be able to define conduction
12. The student will be able to define convection
13. The student will be able to define radiation
14. The student will be able to define sensible Heat
15. The student will be able to define latent Heat
16. The student will be able to define specific Heat
17. The student will be able to define BTU’s

The student will be able to explain the pressure temperature relationship of refrigerant.
18. The student will be able to explain the pressure temperature relationship of refrigerant.
19. The student will be able to explain saturation, superheat and subcooling.

The student will be able to explain and interpret enthalpy chart.
20. The student will be able to extract information from an enthalpy chart.
21. The student will be able to chart refrigeration cycle on an enthalpy chart.

The student will be able to identify recovery equipment, refrigerant gages, and vacuum pump.
22. The student will be able to identify recovery equipment, refrigerant gages, and vacuum pump.

ASSESSMENT OF LEARNER OUTCOMES:
Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor’s syllabus.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college’s policy on non-discrimination be administered without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

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