SYLLABUS

DATE OF LAST REVIEW: 02/2013

CIP CODE: 47.0106

SEMESTER: Departmental Syllabus

COURSE TITLE: Principles of Combustion

COURSE NUMBER: MAPR0120

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:
Identify the components of gas combustion; safety measures when working with gas; components of a gas supply system, components of a gas burner system. The student will be able to define: Air to gas ratio, flame speed, characteristics of an ideal flame, principles of venturi entrainment, and obtain an understanding of; burners, pilot and ignition systems, gas pressure, and gas pipe load sizing.

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. Combustion
II. Fuel gases
   A. Natural Gas
   B. Propane
   C. Liquid Petroleum
III. Gas pipe sizing
A. Complete Sizing Worksheet
B. Review worksheet

IV. Fuel Gas regulators
   A. Converting Gas Appliances
   B. Testing manifold Pressures

V. Fuel air Mixing
   A. Venturi Tube
   B. Air Entrainment
   C. Shutter adjustments

VI. Ignition Systems
   A. Standing Pilot
   B. Hot Surface Ignition
   C. Spark Ignition

VII. Diagnostic Techniques
   A. With a Multi-meter
   B. Without a Multi-meter

EXPECTED LEARNER OUTCOMES:
A. The student should be able to draw the basic gas combustion systems, labeling components.
B. The student should be able to identify BTU’s per cubic feet per hour of different fuel types.
C. The student should be able to convert propane and natural gas burning equipment.
D. The student should be able to test and evaluate, pressures of gas burning equipment.
E. The student should be able to size gas pipe layouts for residential and commercial applications.

COURSE COMPETENCIES:
The student should be able to draw the basic gas combustion systems, labeling components.
1. The student should be able to draw a thermocouple combustion system.
2. The student should be able to draw a spark ignition combustion system.
3. The student should be able to draw a hot surface ignition combustion system.
   The student should be able to identify BTU’s per cubic feet per hour of different fuel types.
4. The student should be able to identify BTU’s per cubic feet per hour of different fuel types.
   The student should be able to convert propane and natural gas burning equipment.
5. The student should be able to adjust manifold pressures accordingly.
6. The student should be able to replace orifices accordingly.
7. The student should be able to convert regulator accordingly.
   The student should be able to test and evaluate, pressures of gas burning equipment.
8. The student should be able to measure line and load pressures with a manometer.
   The student should be able to size gas pipe layouts for residential and commercial applications.
9. The student should be able to calculate gas pipe sizes in accordance with “International Mechanical Code”.

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.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center in Rm. 3354 or call (913) 288-7670.