SYLLABUS

DATE OF LAST REVIEW: 4/23/2020

CIP CODE: 47.0613

SEMESTER: Departmental Syllabus

COURSE TITLE: Auxiliary Power Units/Refrigeration

COURSE NUMBER: DEVT 0230

CREDIT HOURS: 2

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

EMAIL: Departmental Syllabus
KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES:

REQUIRED TEXT AND MATERIALS: Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text for your particular class.

COURSE DESCRIPTION: The function and purpose of Auxiliary Power Units (APUs) that power systems when the primary engine is not in use, such as refrigeration units on tractor-trailers, are covered. This course includes basic air conditioning service, diagnostic, and repair on applications used in the diesel field and Section 509 Refrigeration certification by the Mobile Air Condition Society (MACS).

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. Heating, Ventilation, and Air Conditioning (HVAC)
- A. Research vehicle service information.
- B. Identify HVAC components and configuration.
- C. Use appropriate electronic service tool(s) and procedures to diagnose problems.

D. Diagnose heating and air conditioning problems.
E. Identify refrigerant type, test for contamination, select and connect proper gauge set/test equipment, and record temperature and pressure readings.
F. Perform A/C system performance and leak test.
G. Inspect condition of refrigerant oil removed from A/C system
H. Determine oil and oil capacity for system application and/or component replacement.

II. Refrigeration System Components
A. Inspect, remove, and replace A/C compressor drive belts, pulleys and tensioners.
B. Check A/C system operation.
C. Inspect A/C condenser for airflow restrictions.
D. Inspect, test, service, and/or replace A/C compressor and clutch assembly.
E. Inspect, service, and/or replace A/C system hoses and related components.
F. Inspect, remove, and/or replace receiver/drier or accumulator/drier.
G. Inspect, remove, and/or replace expansion valve or orifice
H. Inspect evaporator housing water drain.
I. Diagnose A/C system conditions that cause protection devices to interrupt system operation.
J. Determine procedure to remove or reinstall evaporator.
K. Determine procedure to inspect and/or replace condenser.

III. Heating, Ventilation, and Engine Cooling Systems
A. Inspect engine cooling system and heater system hoses and pipes.
B. Inspect HVAC system heater ducts, doors, hoses, cabin filters, and outlets.
C. Identify the source A/C system odors.
D. Diagnose temperature control problems in the HVAC system.
E. Determine procedure to remove, inspect, reinstall, and/or replace engine coolant and heater system components.

IV. Operating Systems and Related Controls
A. Verify HVAC system blower motor operation.
B. Inspect and test HVAC system blower motors and related components.
C. Diagnose A/C compressor clutch control systems.
D. Diagnose malfunctions in the vacuum, mechanical and electrical components.

V. Refrigerant Recovery, Recycling and Handling
A. Understand correct use and maintenance of refrigerant handling equipment.
B. Understand how to identify A/C system refrigerant, test for sealants, recover, evacuate, and charge A/C system.
C. Understand how to recycle, label, and store refrigerant.

VI. CAB
A. Understand operation of auxiliary power unit (APU) and electric power unit (EPU).
B. Pressurized cabs.
C. Purpose and function of pressurized cab systems.
D. Demonstrate knowledge of how to correctly remove, inspect and replace cab air filters.

EXPECTED LEARNER OUTCOMES:

A. The student will be able to identify HVAC configurations and components.
B. The student will be able to identify refrigeration system components.
C. The student will be able to inspect heating, ventilation, and cooling systems.
D. The student will be able to inspect operating systems and related controls.
E. The student will be able to understand refrigerant recovery, recycling, and handling.
F. The student will be able to understand the purpose of cab systems.

COURSE COMPETENCIES:

ASSESSMENT OF LEARNER OUTCOMES: Student progress is evaluated by means that include, but are not limited to, exams, written assignments, and class participation.

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.

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