# Mobile HVAC Course No. 40228 Credit: 0.5

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| **Student name:**  |  | **Graduation Date:** |  |

Pathways and CIP Codes: **Vehicle Maintenance & Repair (47.0600)**

Course Description: A comprehensive **technical level** course designed to provide students with the basic and advanced theory of operation, service and repair of the air conditioning, heating, and vehicle cooling system as it relates to the mobile climate control system.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Safety Prcatices

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Comply with personal and environmental safety practices associated with clothing, eye protection, hand tools, power tools, proper ventilation. |  |
| 1.2 | Demonstrate proper handling and storage and disposal of chemicals/materials in accordance with local, state and safety organizations. |  |

## Benchmark 2: Refrigerant recovers, recycling and handling

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Identify and recover A/C system refrigerant including recycling, labeling, and storing of refrigerant. |  |
| 2.2 | Evacuate and charge A/C system and add refrigerant oil as needed. |  |

## Benchmark 3: A/C System Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause & correction, and identify and interpret heating and air conditioning concern. |  |
| 3.2 | Performance test A/C system including abnormal noises and leak test. |  |
| 3.3 | Identify refrigerant type; select and connect proper gauge set and record temperature and pressure readings. |  |
| 3.4 | Using scan tool, observe and record HVAC data and trouble codes and determine the necessary action. |  |
| 3.5 | Evacuate and Charge HVAC system |  |

## Benchmark 4: Refrigeration System Component Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Remove, inspect, and reinstall A/C compressor; determine oil quantity. |  |
| 4.2 | Inspect and replace A/C compressor drive belts, pulleys, and tensioners. |  |
| 4.3 | Diagnose A/C system conditions that cause the protection devices (pressure, thermal, and PCM) to interrupt system operation; determine necessary action. |  |
| 4.4 | Inspect A/C condenser for airflow restrictions; remove and replace condenser; determine oil quantity. |  |
| 4.5 | Remove, Inspect and replace evaporator. |  |
| 4.6 | Remove, inspect and replace receiver/drier or accumulator/drier; determine oil quantity. |  |

## Benchmark 5: Heating, Ventilation, and Engine Cooling Systems Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Diagnose temperature control problems in the heater/ventilation system. |  |
| 5.2 | Inspect engine cooling including hoses and belts. |  |
| 5.3 | Inspect, test, and replace thermostat and gasket/seal. |  |
| 5.4 | Determine coolant condition and coolant type for vehicle application; drain and recover coolant, Flush system; refill system with recommended coolant; bleed system. |  |
| 5.5 | Inspect and test electric/mechanical cooling fan, fan control system and circuits. |  |
| 5.6 | Inspect and test heater control valve(s). |  |
| 5.7 | Remove, inspect, and replace heater core. |  |

## Benchmark 6: Operating Systems and Related Controls Diagnosis and Repair

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Diagnose malfunctions in the electrical controls of heating, ventilation, and A/C (HVAC) systems. |  |
| 6.2 | Diagnose malfunctions in the vacuum and mechanical components and controls of the HVAC system.  |  |
| 6.3 | Describe the proper operation of the thermostat. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

CTE Pathways Help Desk

(785) 296-4908

pathwayshelpdesk@ksde.org



900 S.W. Jackson Street, Suite 102

Topeka, Kansas 66612-1212

[https://www.ksde.org](https://www.ksde.org/)

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