**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

# **GENERAL COURSE INFORMATION**

Course Number: AUTO 1118

Course Title: Automotive Air Conditioning

Credit Hours: 4

Prerequisite: None

Division/Discipline: Workforce Training and Economic Development/Automotive Technology

Course Description: In this course students explore theory and perform analysis/service to the automotive heating and air conditioning systems of the automobile.

# **INSTRUCTOR INFORMATION**

# **COLLEGE POLICIES**

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The college reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at [disabilityservices@bartonccc.edu](mailto:disabilityservices@bartonccc.edu).

# **COURSE AS VIEWED IN THE TOTAL CURRICULUM**

Automotive Air Conditioning is a Kansas flex course that is one section of eight of the NATEF (National Automotive Technicians Education Foundation) automotive curriculum.

# **ASSESSMENT OF STUDENT LEARNING**

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:

1. Explore, identify and evaluate the fundamentals of automotive HVAC operations and environmental concerns.
2. Using instructor provided and guided research materials and instructional text and presentations.
3. Identify correct chemicals to be used during HVAC repairs in the classroom setting.
4. Identify, select and employ the appropriate refrigerant recovery and recycling guidelines.

Linked External Standards: NATEF 7.E.2, 7.E.3, 7.E.4,

1. Test and Identify refrigerant present in system.
2. Appraise; identify required action in relation to the system contents and EPA guidelines.

1. Analyze service and repair refrigerant, recycling and handling systems.

Linked External Standards: NATEF 7.E.1, 7.E.2, 7.E.3, 7.E.4

1. Inspect, analyze and repair recovery/recycling and charging systems per EPA and equipment manufactures guidelines.
2. Arrange and verify correct storage of refrigerant and equipment.
3. Perform routine maintenance of AC equipment per manufactures guidelines.
4. Document, analyze and verify fundamental heating and air conditioning system concerns.

Linked External Standards: NATEF 7.A.1, thru 7.A.7,7.A.11,7.C.3, 7.C.7,D.8, 7.D.9

1. Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause and correction
2. Identify and interpret heating and air conditioning concern, determine necessary action.
3. Performance test AC system; identify AC system malfunctions.
4. Identify abnormal operating noises in the AC system; determine necessary action.
5. Using scan tool, observe and record related HVAC data and trouble codes.
6. Check operation of automatic or semi-automatic heating, ventilation, and air-conditioning (HVAC) control systems; determine necessary action.

1. Perform fundamental diagnostics of AC systems.

Linked External Standards: NATEF 7.A.5, 7.A.6, 7.A.7, 7.A.8, 7.A.9, 7.A.10, 7.A.11,

1. Test, inspect and formulate diagnosis of AC malfunction.
2. Using scan tool observe and compare data and identify any trouble codes.
3. Perform fundamental diagnostics of refrigerant system components.

Linked External Standards: NATEF 7.A.8, 7.A.9, 7.A.107.B.1, 7.B.5, 7.B.8, 7.B.11, 7.D.2, 7.D.4, 7.D.5,7.D.6, 7.D.7, 7.D.8, 7.D.9

1. Inspect, analyze and repair refrigerant leak source.
2. Inspect, analyze and repair refrigerant pressure and protection devices and switches.
3. Inspect, analyze and repair evaporator housing and condenser systems.
4. Inspect analyze and repair control panel functions and vacuum, mechanical and electronic components of the HVAC system.
5. Analyze, service and repair refrigeration systems components.

Linked External Standards: NATEF 7.B.2, 7.B.3, 7.B.4, 7.B.6, 7.B.7, 7.B.9, 7.B.10, 7.b.11, 7.B.12, 7.B.13, 7.D.1, 7.ED.2, 7.D.3, 7.D. 4, 7.D.5, 7.D.6, 7.D.7, 7.D.8, 7.D.9

1. Inspect analyze repair and leak test refrigerant components.
2. Identify refrigerant and oil used in AC refrigeration system.
3. Inspect remove and install refrigerant components.
4. Inspect and determine need for additional refrigerant filter during repair of system.
5. Inspect analyze and repair the individual components that are serviceable in the refrigerant and control system.
6. Analyze service and repair heating ventilation and engine cooling systems.

Linked External Standards: NATEF 7.C.1, thru 7.C.10,

1. Inspect, analyze and repair temperature control problems in the heater/ventilation system.
2. Perform cooling system pressure tests; check coolant condition, inspect and test radiator, cap (pressure/vacuum), coolant recovery tank, and hoses; perform necessary action.
3. Inspect, test, and replace thermostat and gasket/seal.
4. Test, and remove and replace heater core.
5. Inspect; test and repair heater control valves; perform necessary action.
6. **INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS**

# **TEXTBOOKS AND OTHER REQUIRED MATERIALS**

# **REFERENCES**

# **METHODS OF INSTRUCTION AND EVALUATION**

# **ATTENDANCE REQUIREMENTS**

# **COURSE OUTLINE**