Course Number and Title: AUT 122 Automotive Air Conditioning and Heating

Campus Location:
Georgetown, Stanton

Effective Date:
2019-51

Prerequisite:
AUT 114, AUT 116, ENG 101 or concurrent, SSC 100 or concurrent

Co-Requisites:
None

Course Credits and Hours:
3.00 credits
2.00 lecture hours/week
3.00 lab hours/week

Course Description:
This course introduces automotive heating and air-conditioning systems' components, operations, and service procedures. Laboratory experience includes system evaluation, diagnosis, and repair.

Required Text(s):
Obtain current textbook information by viewing the campus bookstore - https://www.dtcc.edu/bookstores online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:
Hand tools, power tools, and safety glasses

Schedule Type:
Classroom Course

Disclaimer:
None

Core Course Performance Objectives (CCPOs):

1. Practice safety with various air conditioning (A/C) and heating system issues. (CCC 2; PGC 4)
2. Identify and describe the components of the various A/C and heating systems. (CCC 1; PGC 2)
3. Properly diagnose and repair various A/C and heating system problems. (CCC 2, 3, 5, 6; PGC 1, 2, 4)
4. Identify and explain the various climate control types. (CCC 1, 5; PGC 2)
5. Explain the proper recovery, recycling, and recharging of various refrigerant systems according to the United States Environmental Protection Agency (EPA) and manufacturer's specifications. (CCC 2, 3, 5, 6; PGC 1, 2, 4)
6. Adhere to simulated shop procedures. (CCC 1, 2, 3, 4, 5, 6; PGC 1, 2, 3, 4, 5)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):
Upon completion of this course, the student will:

1. Practice safety with various air conditioning (A/C) and heating system issues.
    1. Exhibit compliance with personal and environmental safety practices associated with clothing, eye protection, hand tools, and power equipment and with handling, storing, and disposing of chemicals in accordance with local, state, and federal safety and environmental regulations.
    2. Wear proper eye protection.
2. Identify and describe the components of the various A/C and heating systems.
    1. Identify automotive A/C and heating components.
    2. Explain the operation and proper function of related components.
3. Properly diagnose and repair various A/C and heating system problems.
    1. Perform A/C and heating system diagnosis and repair according to EPA and manufacturer's specifications.
    2. Identify and describe the various refrigerant system components and their related functions.
    3. Inspect, diagnose, maintain, and repair the following refrigerant system components on vehicles according to EPA and manufacturers' specifications:
        1. Compressor and clutch
        2. Evaporator
        3. Receiver/drier and accumulators
        4. Condenser
        5. Various refrigerant control devices
4. Identify and explain the various climate control types.
    1. Identify the various components relating to operation of climate control, and explain their operations.
    2. Identify, test, evaluate, diagnose, and service the following systems and controls:
        1. Electrical
        2. Vacuum/mechanical
        3. Automatic and semi-automatic temperature control systems
5. Explain the proper recovery, recycling, and recharging of various refrigerant systems according to the United States Environmental Protection Agency (EPA) and manufacturer's specifications.
    1. Describe the proper procedures for refrigerant recovery, recycling, and handling.
    2. Perform refrigerant recovery and recycling according to EPA and manufacturer's specifications.
6. Adhere to simulated shop procedures.
    1. Follow simulated shop rules for proper attire, including eye protection.
    2. Exhibit punctuality in a simulated shop lab.
    3. Check out, maintain, and return tools to simulate real shop practices.
    4. Perform the strategy-based diagnostic procedure to 100% proficiency.
    5. Work cooperatively in assigned teams as in a real shop atmosphere.
    6. Use time clock to show time management skills as needed in a real shop.
    7. Follow simulated shop rules and procedures for EPA regulations, material safety data sheet (MSDS), and material handling.

Evaluation Criteria/Policies:
Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	**–**	**100**	**=**	**A**
83	**–**	**91**	**=**	**B**
75	**–**	**82**	**=**	**C**
0	**–**	**74**	**=**	**F**

Students should refer to the Student Handbook - https://www.dtcc.edu/handbook for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Final Course Grade:
Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Summative Assessments - (8-10) Exams (equally weighted)	20 %
Summative Assessments - (4 -5) Quizzes (equally weighted)	20 %
Summative Assessment – (Hands On) Laboratory Final Exam	30 %
Formative Assessments – (Minimum 6) Repair Orders, Work Books, Worksheets (equally weighted)	30 %
TOTAL	100%

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Use appropriate automotive diagnostic and service equipment, hand tools, and precision measuring devices to determine and perform the proper repair as necessary.
2. Interpret automotive electronic service information, service manuals, and diagnostic charts.
3. Document service repair procedures that accurately reference the 3Cs:
    1. Customer complaint verification
    2. Correct the problem
    3. Complete the repair
4. Employ proper automotive industry service facility safety practices.
5. Practice professional conduct as required in the automotive industry.

Disabilities Support Statement:
The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the disabilities services - https://www.dtcc.edu/disabilitysupport web page or visit the campus Advising Center.