AUTOMOTIVE SPECIALIZATION (Air Conditioning and Heating)

STUDENT GRADE RECORD

Career & Technical Education

WINDHAM SCHOOL DISTRICT

Student Name _____

TDCJ # _____

Instructor Name _____

Unit _____

WSD Certificate Y / N
If I were hiring for this position, I would: (check one) [____] 0-No recommendation at this time. (Cannot be used for Completers.) [____] 1-Hire this person and look no further. [____] 2-Interview this person along with other applicants [____] 3-Not hire this person.

Complete only if student attempted industry certification.

Name of Industry Certificate	Code	P/F
ASE – Heating and Air Conditioning	217	
EPA approved Mobile Refrigerant Recovery	241	

I attest that all of the information reported on this form is true.

_____ _____

Instructor Signature Date

Course Outline Modules	Windham Module Test	Module Competency Rating
1. CTE Orientation		
2. Introduction to Automotive Heating, Air Conditioning, and Ventilation		
3. Shop Safety and Environmental Protection		
4. HVAC Tools, Equipment, and Service Information		
5. HVAC Electrical and Electronic Fundamentals		
6. Principles of Refrigeration		
7. Refrigerants, Refrigerant Oils, and Related Chemicals		
8. Hoses, Lines, Fittings, and Seals		
9. Compressors, Clutches, and Drives		
10. Evaporators, Condensers, Accumulators, and Receiver-Driers		
11. Control Valves and Switches		
12. Engine Cooling Systems and Vehicle Heaters		
13. Air Delivery Systems		
14. Manual HVAC Controls		
15. Automatic Temperature Control Systems		
16. Refrigeration System Diagnosis and Leak Detection		
17. Refrigerant Recovery, Recycling, and Handling		
18. Hose, Line, Fitting, and O-ring Service		
19. Compressor and Clutch Service		
20. Valve, Evaporator, Condenser, and Related Parts Service		
21. Heater and Engine Cooling System Service		
22. Air Delivery and Manual HVAC Control Service		
23. Automatic Temperature Control System Service		
24. Air Conditioning System Installation and Retrofitting		
25. ASE Certification		
26. Career Preparation		

Windham Module Test Average		x . 75		a	Completer
Windham End of Course Exam		x . 25		b	
Windham Module Score (a + b=)				70+	
% Competencies Completed				70+	
Module Competency Rating				2.7+	

AUTOMOTIVE SPECIALIZATION (Air Conditioning and Heating)

STUDENT PROGRESS RECORD

RECORDING DIRECTIONS
SKILL RATING: Post the student's competency rating for each skill performed.
MODULE TEST SCORE: Enter the student's test score for the module.
MODULE RATING: Use the following scale to determine module rating:
[4] Skilled- Can perform competencies independently with no supervision.
[3] Moderately Skilled- Can perform competencies with limited supervision.
[2] Limited Skill- Requires instruction and close supervision to perform competencies.
[1] Unskilled- Exposed to concept, but no hands-on experience.
Note: When evaluating a student's module rating, skill performance should be given priority.

1. CTE Orientation

Teacher Initial | Student Initial

____ | _____ 1. Identify employment opportunities related to the course.

____ | _____ 2. Identify the number of classroom hours a student must attend to be considered as a completer.

____ | _____ 3. Identify the industry-recognized certification.

____ | _____ 4. Identify course expectations including:
- Working conditions
- Attendance expectations
- Instructor's expectations

2. Introduction to Automotive Heating, Air Conditioning, and Ventilation

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify the components of a vehicle air conditioning system and state their purpose.

_____ 2 Name the two major types of refrigerant used in automotive air conditioning.

_____ 3. Identify the components of a vehicle heating system and state their purpose.

_____ 4. Identify the components of a vehicle ventilating system and state their purpose.

3. Shop Safety and Environmental Protection

Module Test Score _____
Minimum 100% Required

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. List ways to maintain a safe workplace.

_____ 2. List safe work procedures.

_____ 3. List refrigerant safety precautions.

_____ 4. Identify and explain refrigerant first aid procedures.

_____ 5. Identify types of environmental damage caused by improper shop practices.

_____ 6. Identify ways to prevent environmental damage.

4. HVAC Tools, Equipment, and Service Information

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify HVAC system diagnostic and test equipment.

_____ 2. Identify types of refrigeration system service equipment.

_____ 3. Identify engine cooling system test and service tools and equipment.

_____ 4. Identify HVAC control system service tools.

_____ 5. Identify HVAC and cooling system service information.

5. HVAC Electrical and Electronic Fundamentals

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify basic vehicle electrical circuits.

_____ 2. Identify basic electrical measurements.

_____ 3. Identify and explain the purpose of common vehicle electrical devices.

_____ 4. Identify the major parts of vehicle computers.

Student Name:_____

TDCJ Number: _____

CTE-843
October 2011

AUTOMOTIVE SPECIALIZATION (Air Conditioning and Heating)

6. Principles of Refrigeration

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify common refrigeration system components and the purpose of each.

7. Refrigerants, Refrigerant Oils, and Related Chemicals

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify current refrigerants and identify systems where they are used.

_____ 2. Identify modern refrigerant oils and the refrigerants they are used with.

_____ 3. Identify refrigeration system flushing compounds and explain why some are no longer used..

8. Hoses, Lines, Fittings, and Seals

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify types of refrigeration system fittings.

_____ 2. Identify types of refrigeration system seals.

9. Compressors, Clutches, and Drives

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify the major parts of radial and axial piston compressors.

_____ 2. Identify the major parts and explain the operation of rotary vane compressors.

_____ 3. Identify the major parts and explain the operation of scroll compressors.

_____ 4. Identify the major parts of a compressor clutch.

10. Evaporators, Condensers, Accumulators, and Receiver-Driers

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify the major types of evaporators.

_____ 2. Explain the purpose of the condenser.

_____ 3. Explain the purpose of the accumulator.

_____ 4. Explain the purpose of the receiver-drier.

11. Control Valves and Switches

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify the major types of evaporator pressure control devices.

_____ 2. Identify the major types of compressor clutch control devices.

12. Engine Cooling Systems and Vehicle Heaters

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify the major parts of liquid cooling systems.

_____ 2. Identify the major parts of air cooling systems.

_____ 3. Identify the major parts of heating systems on vehicles with a liquid cooling system.

_____ 4. Identify the major parts of heating systems on vehicles with an air cooling system.

13. Air Delivery Systems

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify the major parts of an HVAC system blower and motor.

_____ 2. Identify the purpose of HVAC system air ducts.

_____ 3. Identify the types and purposes of HVAC system air doors.

_____ 4. Identify and explain HVAC system air door operating devices.

14. Manual HVAC Controls

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. List and describe common HVAC control system modes.

_____ 2. Identify the major parts of a manual HVAC control system.

Student Name:_____

TDCJ Number: _____

AUTOMOTIVE SPECIALIZATION (Air Conditioning and Heating)

15. Automatic Temperature Control Systems

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify the major parts of electronic automatic temperature control systems.

_____ 2. Identify the components of mechanical automatic temperature control systems.

_____ 3. Identify the components of electromechanical automatic temperature control systems.

16. Refrigeration System Diagnosis and Leak Detection

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Make a refrigeration system and HVAC system performance check.

_____ 2. Correctly attach gauges to a refrigeration system.

_____ 3. Determine the type of refrigerant in a refrigeration system.

_____ 4. Locate refrigeration system leaks.

17. Refrigerant Recovery, Recycling, and Handling

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Add refrigerant to an operating refrigeration system.

_____ 2. Discharge a refrigeration system and recover refrigerant,

_____ 3. Evacuate a refrigeration system.

_____ 4. Flush a refrigeration system.

_____ 5. Check oil level and add oil to a refrigeration system.

_____ 6. Vacuum leak test a refrigeration system.

_____ 7. Pressure leak test a refrigeration system.

_____ 8. Recharge a refrigeration system with new or recycled refrigerant.

_____ 9. Purge a refrigeration system.

_____ 10. Install an inline system filter.

18. Hose, Line, Fitting, and O-ring Service

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Remove and replace a compression fitting.

_____ 2. Remove and replace a spring lock coupling.

_____ 3. Remove and replace refrigeration system O-rings and gaskets.

_____ 4. Remove and replace a refrigeration system hose.

_____ 5. Make a new hose from stock hose lengths.

_____ 6. Install a crimp fitting on a hose.

_____ 7. Remove and replace a refrigeration system line.

19. Compressor and Clutch Service

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Remove and replace a compressor clutch.

_____ 2. Remove and replace a compressor clutch electromagnet.

_____ 3. Remove and replace a compressor shaft seal.

_____ 4. Remove and replace compress gaskets and O-rings.

_____ 5. Remove and replace a compressor valve plate and valve assembly.

_____ 6. Remove and replace a compressor capacity control valve.

20. Valve, Evaporator, Condenser, and Related Parts Service

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Remove and replace expansion valves and orifice tubes.

_____ 2. Remove and replace evaporator pressure control valves.

_____ 3. Remove and replace compressor cycling switches.

_____ 4. Remove and replace evaporators and condensers.

_____ 5. Remove and replace accumulators and receiver-driers.

Student Name:_____

TDCJ Number: _____

AUTOMOTIVE SPECIALIZATION (Air Conditioning and Heating)

21. Heater and Engine Cooling System Service

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Check coolant level and freezing point.

_____ 2. Remove and replace heater cores and heater hoses.

_____ 3. Remove and replace heater shutoff valves.

_____ 4. Check and replace cooling system belts and hoses.

_____ 5. Flush cooling system and heater core.

_____ 6. Remove and replace coolant pumps.

_____ 7. Remove and replace cooling system thermostats.

_____ 8. Remove and replace cooling fans, fan clutches, and fan motors.

_____ 9. Remove and replace radiators.

22. Air Delivery and Manual HVAC Control Service

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Remove and replace blower motors and related parts.

_____ 2. Service air control doors and controls.

_____ 3. Remove and replace control system components.

23. Automatic Temperature Control System Service

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Retrieve electronic temperature control system trouble codes.

_____ 2. Remove and replace control system components.

24. Air Conditioning System Installation and Retrofitting

Module Test Score_____

25. ASE Certification

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Explain why technician certification is beneficial to technicians and vehicle owners.

_____ 2. Discuss certification programs for refrigerant recovery and recycling.

26. Career Preparation

Module Test Score _____

_____ ***Module Rating (4, 3, 2, 1)***

_____ 1. Identify three classifications of automotive technicians.

_____ 2. Identify the major sources of employment in the automotive industry.

Module Test Score Number of Skills Completed ÷

98 Number of Skills on SPR =

_____ **% of Skills Completed**

Conference

Date: _____ Hours in class: _____

Comments:

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Teacher initial: _____ Student initial: _____

Student Name:_____

TDCJ Number: _____

CTE-843
October 2011