

## Eastern West Virginia Community and Technical College

### COURSE ASSESSMENT REPORT

<b>Course Title and Number:</b> ATT 128 Heating and Air Conditioning (4 credits)	<b>Academic Term and Year of Assessment Activity (Ex: Fall, 2010)</b> Spring 2015
<b>Report Submitted By:</b> Doug Swick	<b>Number of Students Assessed:</b> 5 students completed assessment
<b>Date Reported Submitted:</b> November 16, 2015	<b>Number of Sections Included:</b> 1
<b>Course Delivery Format (list all modalities used in sections assessed. Ex: web based, VDL, traditional section, hybrid course, etc.):</b> lecture/lab course, traditional course delivery	

<b>Course Role in Curriculum</b>
<b>Provide a description of the role the course serves in the curriculum (i.e. general education requirement, program technical core, restricted elective, etc.) Note all as appropriate.</b>
ATT 128 is a technical core requirement (4 credits) for automotive students in both the certificate and associate degree programs. This course introduces students to the fundamentals and technology necessary for diagnosis and repair of automotive heating and air conditioning systems. Course includes diagnosis of mechanical and electronic malfunctions that impact on climate control.

<b>Assessment Methods</b>
<b>Provide a description of the assessment process used. Include description of instrument and performance standards in description. Note all methods.</b>
<p>The ATT 128 course assessment report focuses specifically on heating, ventilation and air conditioning (HVAC) mechanical principles, and diagnostic and service skills. Lab based task sheets were used as the basic data collection instruments for this assessment. Ten learning outcomes were assessed by analyzing results of classroom/lab observation based task sheets. The task sheets were completed for each student by directly observing the student performing each designated task. All task sheets are NATEF based for adherence to national automotive repair standards. The 10 learning outcomes were assessed through the application of 10 task sheets. In total, 73 scoring items were incorporated into this assessment report. Each item was weighted equally with a score of one point. Students could attain a total composite score of 73, a minimum composite score of 58 was necessary to meet the established performance standard of 80%. Scores were further analyzed in two broad categories:</p> <ol style="list-style-type: none"> <li>1) HVAC mechanical principles-minimum score 20 out of 25; and</li> <li>2) HVAC diagnosis and service skills- minimum score 38 out of 48.</li> </ol> <p>The outcomes assessed are grouped into the 2 categories and are listed below:</p> <p><b>HVAC mechanical principles</b></p> <ol style="list-style-type: none"> <li>5. Locate and interpret vehicle and major component identification numbers.</li> <li>11. Identify proper gauge set for refrigerant type.</li> <li>12. Record temperature and pressure readings.</li> <li>62. Perform correct use of refrigerant handling equipment according to equipment manufacturer's standards.</li> </ol> <p><b>HVAC diagnosis and service</b></p> <ol style="list-style-type: none"> <li>10. Identify abnormal operation noises in the A/C system.</li> <li>51. Determine removal procedures of heater core based on application.</li> <li>52. Install heater core.</li> <li>53. Diagnose malfunction in the electrical controls of HVAC system.</li> <li>54. Test AC-heater blower, motors, resistors, switches, relays, wiring, and protection devices.</li> <li>56. Diagnose malfunctions in the vacuum, mechanical, and electrical components of the HVAC system.</li> </ol>

**Assessment Results**

**Provide a summary of results including tables/charts. Incorporate information from previous assessments as appropriate. Append additional pages if necessary. If appending, include notation in box to "See Attached."**

See Attachment for Task Sheets

**HVAC Mechanical Principles: 100% of the students completed 25 tasks correctly, exceeding the minimum standard of 20 (i.e. 80% of the tasks).**

**HVAC Diagnosis and Service: 100% of the students completed 38-48 of the 48 tasks correctly, meeting or exceeding the minimum standard of 38 (i.e. 80% of the tasks).**

Distribution of Scores for Outcomes and Composite Score per Task Sheet Analysis N=5			
Student ID #	Principle Score (Standard: 20 out of 25)	Diagnosis Score (Standard 38 out of 48)	Composite Score (Standard 58 out of 73)
1	25	38	63
2	25	48	73
3	25	48	73
4	25	48	73
5	25	48	73
Total Sample for Points	125	220	355
% at Minimum Standard	100%	100%	100%

<b>Course Level Assessment Summary of Outcomes, Indicators and Results</b> <b>Course Title and Number ATT 128 Automotive Heating and Air Conditioning</b> <b>Number of students in assessment sample = 5</b> <b>Number of Sections in Assessment = 1</b> <b>Add additional rows to table if necessary</b>				
Learning Outcomes (Insert learning outcomes assessed during this cycle)	Indicator (Insert indicators used for each outcome: exam question, scoring rubric, etc. Be specific)	Percent of Correct Responses	Percent of Incorrect Responses	Performance Standard Met (80%)* (yes or no)
Composite Score	Total composite score: minimum of 58 out of 73 points for completed task sheets (Total points for sample=365, 355 answered correctly)	97%	3%	Yes
Outcome 1:HVAC Mechanical Principles	Task Sheets for: Locate and interpret vehicle and major equipment identification numbers Identify proper gauge set for refrigerant type Record temperature and pressure readings Perform correct use of refrigerant handling equipment according to equipment manufacturer's standards Performance Standard: minimum of 20 out of 25 points Total points for sample=125; 125 answered correctly.	100%	0%	Yes
Outcome 2: HVAC Diagnosis and Service	Task Sheets for: Identify abnormal operation noises in AC system Determine removal procedures of heater core based on application Install heater core Diagnose malfunction in the electrical controls of HVAC system Test AC-heater blower, resistors, switches, relays, wiring and protection devices Diagnose malfunction in the vacuum, mechanical and electrical components of the	96%	4%	Yes

	HVAC system Performance Standard: minimum of 38 out of 48 points. (Total points for sample=240; 230 answered correctly).			
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\*Please note if using a different minimum performance standard.

<b>Conclusions and Action Plan</b> <b>Provide a brief summary of conclusions derived based on analysis of data. Identify action plan for improvement or maintaining current performance levels. Append additional pages if necessary. If appending, include notation in box to "See Attached."</b>
<p>Based on an analysis of the completed task sheets for the designated learning outcomes, the results indicate that the learning outcomes have been met successfully by those students completing the assessment activities. Basic principles for HVAC system operations and service remain constant. Textbook changes and some additional live work addressed the changes in the CAN system successfully. New protocols and equipment will be required as the industry and regulatory requirements continue to change.</p>

<b>Assessment Committee Recommendation/Approval</b> <b>(To be posted by Assessment Committee Chair)</b>
<p> <input checked="" type="checkbox"/> Approved as presented  <input type="checkbox"/> Approved with recommendations for future reports (Explanation Required)  <input type="checkbox"/> Resubmission Required. Reason for Resubmission:   <b>Date: 11/18/15</b> </p>

<b>LOT Recommendation/Approval</b> <b>(To be posted by Assessment Committee Chair)</b>
<p> <input checked="" type="checkbox"/> Approved as presented  <input type="checkbox"/> Approved with recommendations for future reports (Explanation Required)  <input type="checkbox"/> Resubmission Required (Revision must be submitted to Assessment Committee before resubmitting to LOT). Reason for Resubmission:   <b>Date: 12/21/15</b> </p>