

## Eastern West Virginia Community and Technical College COURSE ASSESSMENT REPORT

<b>Course Title and Number:</b> ATT 107 Suspension and Steering (4 credits)	<b>Academic Term and Year of Assessment Activity (Ex: Fall, 2010)</b> Fall 2009
<b>Report Submitted By:</b> Doug Swick; Sherry Becker-Gorby	<b>Number of Students Assessed:</b> 5 students completed assessment (Note: 7 students began the process, but 2 did not complete due to excessive absences.)
<b>Date Reported Submitted:</b> June 7, 2010	<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 107 is a technical core requirement (4 credits) for automotive students in both the certificate and associate degree programs. This course introduces students to the diagnosis and repair for rack and pinion and other steering systems, front and rear suspension systems including MacPherson struts, wheel alignment (camber, caster, toe and steering axis inclination), and tires and wheels.

<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 107 course assessment report focuses specifically on wheel alignment principles, and the diagnostic and service skills. Lab based task sheets were used as the basic data collection instruments for this assessment. Fourteen 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 were NATEF based for adherence to national automotive repair standard. The 14 learning outcomes were assessed through the application of 15 task sheets. In total, 58 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 58, a minimum composite score of 46 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.) basic alignment principles-minimum score 7 out of 9; and</li> <li>2.) diagnostic and service skills- minimum score 39 out of 49</li> </ol> <p>The outcomes assessed are categorized into the 2 categories and are listed below:</p> <p><b>Wheel alignment principles</b></p> <ol style="list-style-type: none"> <li>47. Check toe-out-on-turns (turning radius); determine necessary action.</li> <li>48. Check SAI (Steering axis inclination) and included angle; determine necessary action.</li> <li>49. Check rear wheel thrust angle; determine necessary action.</li> <li>50. Check front wheel setback; determine necessary action.</li> <li>51. Check front and/or rear cradle (subframe) alignment; determine necessary action.</li> <li>52. Inspect tire condition; identify tire wear patterns; check and adjust air pressure; determine necessary action.</li> <li>54. Rotate tires according to manufacturer's recommendations.</li> <li>55. Measure wheel, tire, axle flange, and hub runout; determine necessary action.</li> </ol> <p><b>Alignment diagnosis and service</b></p> <ol style="list-style-type: none"> <li>44. Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return concerns; determine necessary action.</li> <li>45. Perform prealignment inspection and measure vehicle ride height; perform necessary action.</li> <li>46. Prepare vehicle for wheel alignment on the alignment machine; perform four wheel alignments by checking and adjusting rear and front wheel caster, camber, and toe as required; center steering wheel.</li> </ol>

- 53. Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action.
- 56. Diagnose tire pull problems; determine necessary action.
- 57. Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly (static and dynamic).

**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

**Alignment Principles: 100% of the students completed all 9 tasks correctly as denoted through the Task Sheets.**

**Alignment Diagnosis and Service: 100% of the students completed 43-48 out of the 49 tasks correctly, exceeding the minimum standard of 39 (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: 7 out of 9)	Diagnosis Score (Standard 39 out of 49)	Composite Score (Standard 46 out of 58)
1	9	45	54
2	9	44	53
3	9	48	57
4	9	45	54
5	9	43	52
Total Sample for Points	45	225	270
% at Minimum Standard	100%	100%	100%

**Course Level Assessment Summary of Outcomes, Indicators and Results**

**Course Title and Number**

**Number of students in assessment sample = 5**

**Number of Sections in Assessment = 1**

**Add additional rows to table if necessary**

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 46 out of 58 points for completed task sheets (Total points for sample=290, 270 answered correctly)	93%	7%	Yes
Outcome 1: Alignment Basic Principles	Task Sheets for: Steering and Suspension Concerns Alignment Specifications Performance Standard: minimum of 7 out of 9 points Total points for sample=45; 45 answered correctly.	100%	0%	Yes
Outcome 2: Alignment Diagnosis and Service	Task Sheets for: Alignment Angle Readings Four-Wheel Alignment Vehicle Handling Diagnosis Pre-Alignment Inspection Ride Height Measurement Front and Rear Wheel Camber Check and Adjust Camber Front Wheel Toe Centering Steering Wheel Toe-Out on Turns Steering Axis Inclination	92%	8%	Yes

	Rear Wheel Toe Rear Wheel Thrust Angle Front Wheel Setback Front Cradle Alignment Performance Standard: minimum of 39 out of 49 points. (Total points for sample=245; 245 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>
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. It is important to note the sample size is small; therefore, it is important to continue monitoring results in future classes to determine long term effectiveness of program materials in support of the learning outcomes. During the observation and recording of individual task sheets it was apparent that too many of the students had trouble with determining appropriate action for the rear of the vehicle. For example, when asked how to adjust the camber on the rear of the vehicle some of the students answered with "turn the eccentrics." This was not the appropriate response for the vehicle we were using for the task since it had a solid axle and required shims. Improvements for future classes will include better explanation and hands on demonstration of the differences and the appropriate application for vehicle variances.

<b>Effective Date for Changes or Curriculum Proposal Submission to LOT (if recommended)</b>	<b>Proposed Date for Reassessment</b>

<b>Assessment Committee Approval</b> (To be posted by Assessment Committee Chair)	<b>LOT Review</b> (To be posted by Assessment Committee Chair)
<b>Date: 6-23-10 (SB-G)</b>	<b>Date: 8-2-10 (SB-G)</b>