



Automotive Tech Canino School of Engineering Technology 2019 Assessment Report

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Where were AUTO outcomes assessed?

For 2019 “ISLO #5: Industry, Professional, Discipline Specific Knowledge and Skills” is what is to be assessed.

In the Automotive Program, this objective applies to every course. This rule was written for those of us in the hands-on trades. Our objective is to meet this all the time. Therefore, we will focus on three courses.



The 3 courses and why

- AUTO 122: Automotive Electricity 1 lab. The Advisory Board gave approval to introduce entry level scan tool operation of scripted tests.
- AUTO 213: Engine Performance II. We have had a few vehicles donated in 2019 with more current technology, specifically VVT, that we lacked in 2018.
- AUTO 282: Suspension and Steering lab. We purchased a new Alignment Computer in 2019. The old computer quit in 2018 during the semester used.



How was the assessment accomplished?

- Student work assessed:
 - Quizzes
 - Midterm and final exams
 - Lab Practicals
 - Lab Performance
 - Direct Student Artifact (Training Certificates)
- Measurement strategy:
 - Applicable rubrics used for reports
 - 70 % of questions answered correctly on quizzes, lab practicals, and midterm/final exams.
 - Observed degree of mastery for lab performance.
- Sample size:
 - All students who take the designated assessed courses.



Actual Assessment Data

AUTO 122 Automotive Electrical lab

- A122.1 Demonstrate knowledge basic electrical and electronic theories: 100% of students earned 70% or higher.
- A122.2 Read and interpret electrical schematic charts: only 64% of students earned 70% or higher.
- A122.3 Diagnose & service the charging, starting, and accessory systems: only 50% of students earned 70% or higher.



Reflection on the Findings for AUTO 122

- The findings DO NOT reflect the whole story. Compared to 2018, the changes made to close the loop were successful if you see the increase of grades at the top of the bell curve.
- For 2019, the bottom of the bell curve is *much* lower than 2018. In fact, in 13 years, I don't remember the lower end being this low.
- As the lower end did not make it to 2020, the improvement should be apparent for the 2020 Symposium looking at AUTO 114 Engine Performance, the course after AUTO 122.



Actual Assessment Data

for AUTO 213 Engine Performance II

- A213.1 Utilize generic and global OBD II data, and its operational modes to diagnose and repair vehicles: 87% of students earned 70% or higher.
- A213.2 Interpret scanner data to evaluate engine condition and to diagnose and repair vehicles: 73% of students earned 70% or higher.
- A213.3 Utilize Diagnostic Trouble Codes to assist in the diagnosis and repair of vehicles using the associated DTC trouble charts: 86.5% of students earned 70% or higher.
- A213.4 Utilize theory and practical application to diagnose and repair all types of emissions systems: 88.25% of students earned 70% or higher.



Reflection on Findings for AUTO 213

- Each ASLO finding was approximately 4% higher in 2019 than 2018.
- This suggests that the newer vehicle donations (and different data driven teaching techniques in lab) were successful.



Actual Assessment Data

for AUTO 282 Suspension & Steering lab

- A282.1 Shop and Personal Safety: 80% of students earned 70% or higher
- A282.2 General Suspension and Steering Systems, diagnostic tools: 77.5% of students earned 70% or higher.
- A282.2 General Suspension and Steering Systems, suspension and tires: 73.3% of students earned 70% or higher.
- A282.4 Steering System: 70% of students earned 70% or higher.
- A282.5 Suspension System, ID: 70% of students earned 70% or higher.



Reflection on Findings for AUTO 282

- Each ASLO finding was approximately 20% higher in 2019 than in 2018.
- In 2018, the alignment rack had broken, therefore, the students did not have the tools needed for success on the objectives.
- Yet, this will be improved with more experience on the new alignment computer.



Data-driven decisions: How the program has or plans to “close the loop” based on these results.

- Continue to revise the course curriculum to better align with the program’s objectives according to the SLO outcomes
- Continue to revise the related courses to better align with the student learning outcomes
- Continue to advise students in the program to seek for additional instructional support when needed, e.g. tutoring.



Data-driven decisions: How the department has or plans to “close the loop” based on these results.

- Given these findings, what will the department do differently?
 - Change teaching methods
 - **Lab Capacity:** Need to expand the capacity for all students to clearly view and hear lab demos when lab group size exceeds 6 students. Use lapel microphones and video monitors to improve audio and visual access to instruction.
 - **Tutoring and Review:** Still need to create *more* task videos to review specific methods, techniques, and diagnostic processes that are frequently difficult to grasp.
 - **Skill Building Practice Sessions:** Provide students an opportunity to practice and gain confidence when using tools, equipment and service information.



Data-driven decisions: How the department has or plans to “close the loop” based on these results.

- Increase instructional support

- **Practice Time:** Continue to give students time to practice on their personal car when the task relates to the automotive program i.e. Auto Club.
- **Student Recruiting:** Request more help identifying motivated students for the program when recruiting students.

- Change assessment methods and/or measures

- **Outcome Targets:** Automotive faculty will review, revise and evaluate learning outcome targets each semester.



What resources are currently used to close the loop?

- Faculty and Instructional Support time:
 - Different auto courses are taught each semester. Resetting visual aids/props, moving equipment in and out of storage, and maintaining program NATEF standards all require substantial time and effort.
 - Student advising, tutoring, administrative duties and advising Auto Club all preformed by two faculty and one instructional support associate.



What resources are being requested to close the loop?

- Potential resources that you might identify:
 - *Adjust curriculum to align with NATEF standards in Communications and Critical Thinking.*
 - Perhaps add course materials to BlackBoard and create online course.
 - Produce video instruction for students, ***and put it on Blackboard.***
- Increase program budget to provide field trips to dealerships or shops with newer equipment than ours. ADAS is one such as example that is mandatory in any 2019 or newer vehicle.



Example, ADAS.

ADAS: THE CIRCLE OF SAFETY

■ **Long-Range Radar**
- Adaptive Cruise Control

■ **Short/Medium-Range Radar**
- Cross Traffic Alert
- Rear Collision Warning

■ **LIDAR**
- Emergency Braking
- Pedestrian Detection
- Collision Avoidance

■ **Ultrasound**
- Park Assist

■ **Cameras**
- Traffic Sign Recognition
- Lane Departure Warning
- Park Assist
- Surround View

