



## AUTC Advisory Committee Minutes, Fall 2023

**Date:** Wednesday, September 13, 2023

**Number of Attendees:** 31

**Called to order:** 5:05 pm

**Adjourned:** 6:50 pm

**Chairperson:** Curtis Garand

**Recorder:** Jennifer Woods

**Location:** CNM Advanced Tech Center room 108 and Zoom

**Members present from industry:** Stacey Adams, Instructor El Dorado HS; Dustin Brown, Brown's Automotive; Darrel Cubillos, Chalmers Ford; David Edwards, SMPC Architects; Abe Gurule, Instructor Cibola HS; Matthew Keller, AGCO Corp.; George Kerr, APS CTE; Wayne Lamorder, Brown's Automotive; Stanley Martini, Instructor RRPS CTE; Eric Mease, SMPC Architects; Richard Moffett, Rimo's Auto; Armando Montero, Ford; Gary Ricci, Fixed Ops. Dir. Quality Buick GMC; Tim Sloan, Brown's Automotive; Crystal Switzer, Fixed Ops Mgr. Rich Ford; Michael Tatham, DC Instructor RRPS; Michael Terrey, ASE Education Foundation Mgr.; Jerome Trujillo, Service Mgr. Rich Ford; Terry Wayland, Power Ford

**Members present from CNM:** Jennie Davis, Physical Plant, PM; Curtis Garand, AUTC Instructor/Cluster Chair; Sharon Gordon Moffett, Interim Dean; Tracy Hartzler, CNM President; Erin Johnson Kruft, VP WCS; Jennifer McDonald Sr. Dir. Recruiting; Barry Mills, AUTC Instructor; Todd Wilburn, AUTC Instructor; Jennifer Woods, Academic Tech Assistant; Three CNM students: Nathaniel Mowry, Orbelin Araujo Rojas, Joshua Leyba

**Next scheduled meeting:** Tentative - March 13, 2024; 5:00 pm

**I. Welcome/Introductions:** Curtis opened the meeting and everyone introduced themselves.

**II. Minutes:** Minutes from the spring 2023 meeting approved as written.

### **III. Future Programming**

CNM President Tracy Hartzler talked about the ways that CNM can best serve the community. Tracy asked the group for feedback on the Skilled Trades Facility that is being built in Rio Rancho. CNM is in a position where we need to make some hard decisions about how to leverage resources to build the best facility that will serve students, industry and the community. We are also looking to grow our programs, but there is a lot of work to be done. Does this mean that we should structure our courses differently? The college understands that there is a huge workforce need for trained workers and we are asking the advisory for help in understanding this. Can CNM use existing spaces on our campuses more effectively? Do we need to look at scheduling our classes in a way that students can attend when it is more convenient for them and their work/homelife? Should we look at utilizing existing spaces more intensively than we already are, leasing space from other institutions, and bringing more instructors on board. We are also exploring different types of employer partnerships.

A few of the members remarked that it is essential that the curriculum should be the same wherever automotive skills are taught across the whole state of New Mexico.

Jennie Davis gave a presentation about the design of the new Skilled Trades facility on main campus. (slide show attached). Rio Rancho Public Schools is also renovating an existing building for skilled trades, in addition to the new facility for CNM skilled trades. The presentation shows the current location of the TC trades



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buildings on the CNM Main Campus where the trades are currently being taught. The options slide shows three different scenarios for the types of facilities we are looking at. The scenarios are arranged according to cost, number one being the most expensive. Jennie asked the group what they thought of these options.

The EV technology program will have its own certifications. So, option two makes sense, and the diesel program can be separated.

The location is a big question. Which campus should house which programs? The students said that they would be willing to drive wherever they need to in order to stay in their program. Abe said that he thinks facilities should be located near mass transportation so students can get to school easier, which would make the greater Albuquerque area more advisable, and not Rio Rancho. There is also the possibility of using more employer/dealership partnerships.

We need to get more creative with space usage. Jennie asked the dealers if they had spaces in their facilities that are not being used in the evenings or weekends, would they be willing to let CNM come in to teach classes. The members seemed to think this is a great idea. Jerome said that Rich Ford has space available right now, and could accommodate classes. Power Ford also has classrooms.

**IV. Reports: College Updates** – Convocation is this Friday. The college is creating its new strategic plan for 2024-2026 and is gathering input from the community. The new trades building on Main campus broke ground in June. Opening date is in 2025. In July, we hosted a catalytic converter etching event, and the three students present at this meeting participated. They accommodated 102 cars in the auto lab.

Sharon shared enrollment stats. The service Fundamentals certificate is up 16% with 50 students. The Automotive Technology certification is up 13% with 156 students. The Transportation degree is up 23% with 80 students. Success rate was 86%. Withdrawal rate was 3.2%. Retention rate is 97%. We awarded 67 Auto Service Fundamental certificates, 30 Auto tech certificates and eleven degrees.

Curtis talked about dual credit. We have 98 DC students in Rio Rancho, at Bernalillo HS and at CEC. We do class visits. And we make sure the same curriculum is taught at every location. The classes are all ASE accredited. Mike Terrey stressed that all the students should be receiving ASE approved classes, with standardized task sheets and processes.

Curtis presented a Powerpoint about the EV program at CNM. Please see attached addendum. For questions concerning the EV program, please contact Curtis Garand at [cgarand@cnm.edu](mailto:cgarand@cnm.edu). Curtis would like to see some of these courses as DC offerings. Mike Terrey [michael@aada.com](mailto:michael@aada.com) said that there are new accreditations and certifications for EV vehicles through ASE, with two levels of achievement and a third on the way. <https://www.ase.com/>

Snap On has some new certifications. One is for hand tool certification. Curtis wants to see a lot of our curriculum on line and available for anyone across the US, with students coming to campus for their hands-on work. CNM Ingenuity already has lab classes for students, as well as classes for existing techs who want to upgrade their skills.

**V. Old Business:** none at this time.

**VI. New Business:** Erin Johnson Krufft discussed the department of Workforce and Community Success (WCS). Erin can be reached at [ejohnsonkrufft@cnm.edu](mailto:ejohnsonkrufft@cnm.edu). Ashley Prelo is the team member who works with skilled trades. For posting a job on the CNM website, contact Ashley at [aprelo@cnm.edu](mailto:aprelo@cnm.edu). The WCS also can organize info sessions, set up tables for employers outside of classrooms, organize large hiring events. The WCS also works to support work-based learning opportunities, such as internships, job shadowing and apprenticeships. The goal is to create a worry-free path for employers to hire new workers, and also take the organizing load off of the faculty. [employersupport@cnm.edu](mailto:employersupport@cnm.edu).

**Equipment purchases:** Curtis said that we are able to purchase two new cars a year. We just received a 2022 Jeep Wrangler and Jeep Gladiator. We are also working with CNM Fleet services to receive used fleet vehicles for the students to work on. We are open to advisory member suggestions for new equipment.

The Learning Outcomes information for the AUTC program are attached to these minutes.



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**VI. Reports from Industry Members:** George Kerr gave an update on APS. The apprenticeship program has grown to 60 students this fall. He has a partnership with Peterbilt. He is introducing students to the total dealership experience.

Mike Terrey said that David Johnson will be the new president of ASE. There has been a major overhaul of collision protocols. This is designed for high schools.

Richard Moffett said that there are no automotive classes in Los Lunas or Valencia county. CNM can offer dual credit classes in Valencia county, but there needs to be prior discussions to make sure there is need and interest. He needs techs who can do large, major repairs. The discussion again came around to the fact that we need to engage young students when they are 12 years old, and not wait until they are older.

The shop owners in the meeting are concerned about insurance and legalities. Mike T. said that as long as a student is enrolled in an ASE accredited program, insurance will cover any student working at a shop or dealership. CNM also has insurance for students.

Todd Wilburn said that he has twenty students who are about to graduate, and he would like to invite the industry members to come and talk to the students.

**VII. Adjournment:** 6:50 pm

**VII. Addenda: Attached to these Minutes:** Jennie Davis report on Rio Rancho Automotive facility; CNM Hybrid EV2; Learning Outcomes



# **Applied Technology Programs at Rio Rancho**

## **Automotive / EV / Diesel Technologies Facility**

## Locations of Trades Education at CNM

The table to the right was generated through extensive data analysis and numerous focus groups with industry partners, CNM staff, and various community leaders through the CNM Visioning the Future of Trades Education process in 2021.

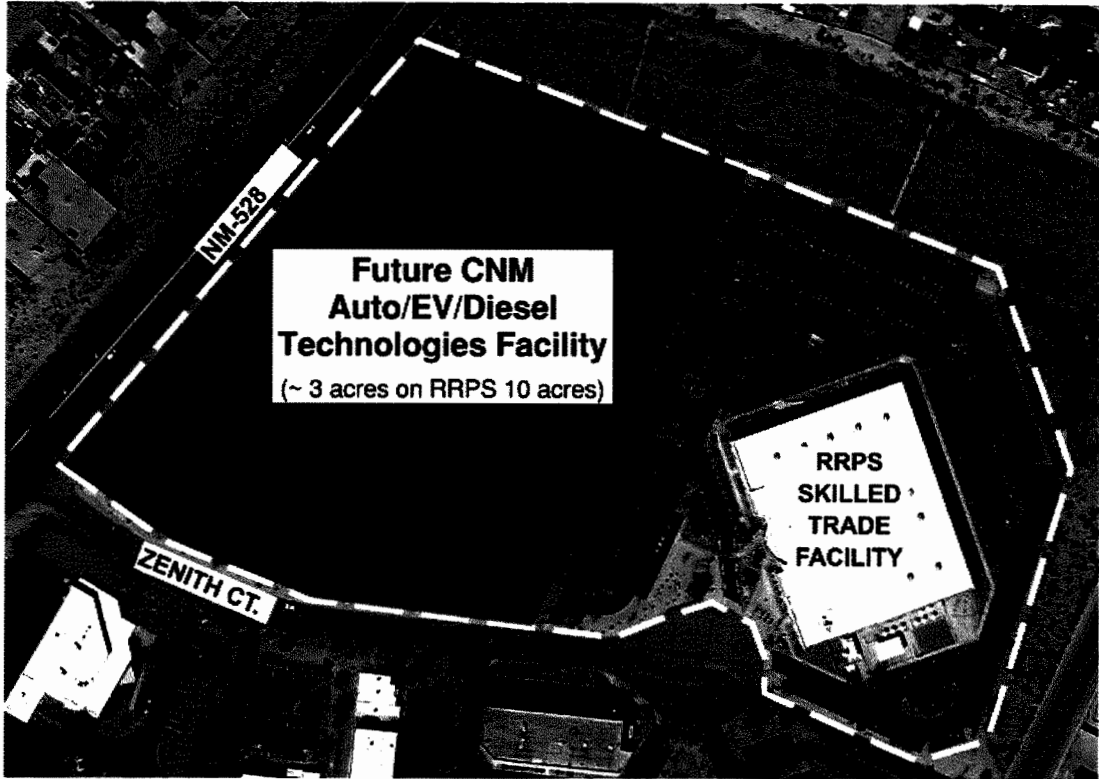
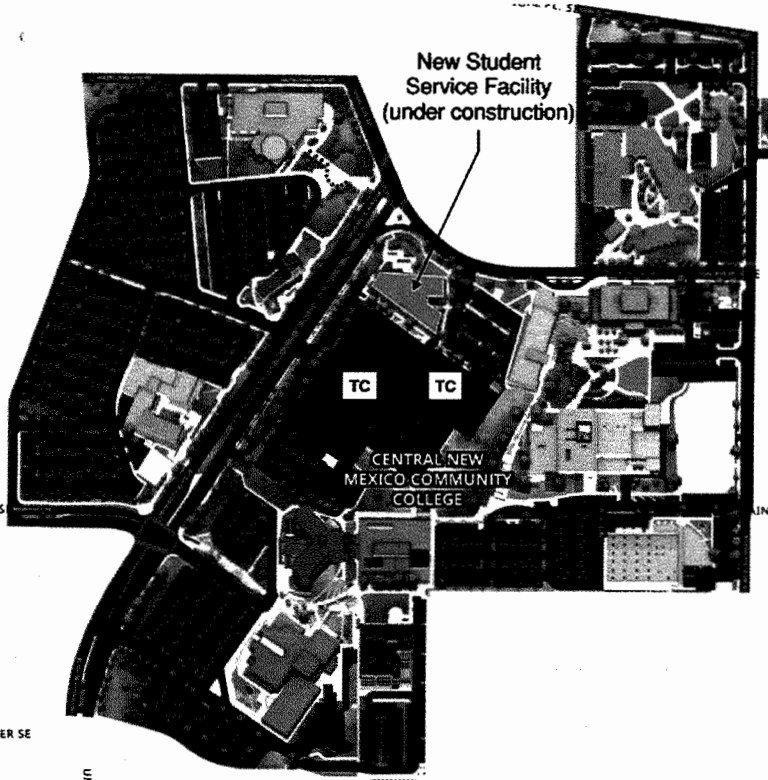


X = Programs to be located in the new Trades Facility currently under construction on CNM's Main Campus

Program Group	Skilled Trades Scenario
Pre-Architecture	At ATC (Phase II)
Automotive Technology	Move to RR
Aviation	At ATC
Carpentry	X
Construction Management Technology	At ATC (Phase II)
Diesel Mechanics	Move to RR
Architecture/Engineering Drafting Technology	At ATC (Phase II)
Electrical Trades	X
Photovoltaics	Move to Westside
Film	Not in Scope
Heating, Ventilation, Air Conditioning, & Refrigeration (HVAC)	X
Machine Tool Technology	At ATC (Phase II)
Plumbing	X
Mechatronics	X
Surveying Technologies	At ATC (Phase II)
Unmanned Aircraft Systems (UAS)	At ATC (Phase II)
Welding	X
Shared	X



# Current and Planned Program Locations



Current Location: TC Buildings on Main Campus

Planned Future Location: Rio Rancho Public Schools CTE Campus



# Options

## Scenario No. 1

**Auto/EV/Diesel Technology Programs** move to new CNM Facility on Rio Rancho Public Schools CTE Campus 49,256 square feet

## Scenario No. 2

**Auto and EV Technology Programs** move to new CNM Facility on Rio Rancho Public Schools CTE Campus 38,360 square feet

Renovate existing Auto/EV Technology spaces in the TC Building or renovate another CNM space for the Diesel Technology Program

## Scenario No. 3

**Diesel Technology Program** moves to new CNM Facility on Rio Rancho Public Schools CTE Campus 23,195 square feet

Renovate existing Auto/EV Technology spaces in the TC Building or renovate another CNM space to address current lab and classroom inadequacies





# **CNM/STA**

Electric Vehicle, EV, Program  
Update

**CNM/STA EV program**

# **HISTORY**



## CNM/STA EV program

- STA started the vision of a Hybrid vehicle program in 2007 with the purchase of a 2006 Honda Civic Hybrid. This vehicle was a mild hybrid utilizing Integrated Motor Assist. (IMA).
- The program was limited for the following reason:
  - Lack of instructor experience of Hybrid and EV vehicles
  - Student liability
  - Lack of available training within the industry.



## CNM/STA EV program

- Since materials and training was scarce, EV training was limited to the students and delivered in the AUTC1140, Automotive electrical and AUTC1240 Automotive Electronics. The instruction focused on Hybrid/EV safety and Identification.
- Students received education on the safety aspects of the EV vehicles, but testing and diagnostic equipment was not available at the student level.
- Exposure was limited to the one vehicle in the training fleet.



## CNM/STA Hybrid/EV program

- **2012** with the increasing demand for EV vehicles, the automotive department started discussions about increased presence within the automotive program. Discussions included:

- Instructor education
- Budgets for equipment and vehicles
- Implementation of a curriculum for the program.



## CNM/STA EV program

- **2014** Chevrolet Volt hybrid was purchased for the hybrid program. Education on a new vehicle was strictly proprietary and dealers would not allow outside training or materials related to training.
- **2015** two,(2), Ford fusion hybrid vehicles were purchased for Hybrid training

## CNM/STA EV program

- **2018** EV training was presented and approved by the automotive advisory council. Council members agreed that EV vehicles should be taught at the college level as entry level technicians would be servicing these vehicles.



## CNM/STA EV program

- **2018** Two, (2), Toyota Prius hybrid drivetrain cutaway trainers purchased for the Hybrid/EV course.
- **2019** the following equipment was purchased for the Hybrid/EV program:
  - 2020 Chevrolet Bolt EV
  - 3 sets Hybrid/EV insulated tools
  - 3 Hybrid/EV EEDM650 Insulation tester meters
  - 3 Hybrid inverter trainer
  - 2 Hybrid battery trainer
  - High voltage power steering trainer
  - 2 High voltage air conditioning compressor trainer
  - 2 High voltage vehicle trainer





## CNM/STA EV program

-2020 The following equipment was purchased for the EV program:

- 2021 Ford F-150 Hybrid

- 2010 Toyota Prius Hybrid engine performance trainer

- 2020 a 2010 Toyota Prius Hybrid was donated by CNM Fleet for training



## CNM/STA EV program

- **2021** the first AUTC1315 Introduction to Hybrid/EV course was run in Fall semester.
- **2022** a 2007 Ford Escape Hybrid was donated by the Bernalillo County Water Authority for training.
- **2022** online access for training was purchased for all full-time instructors through Future-tech. The training was available for a year.

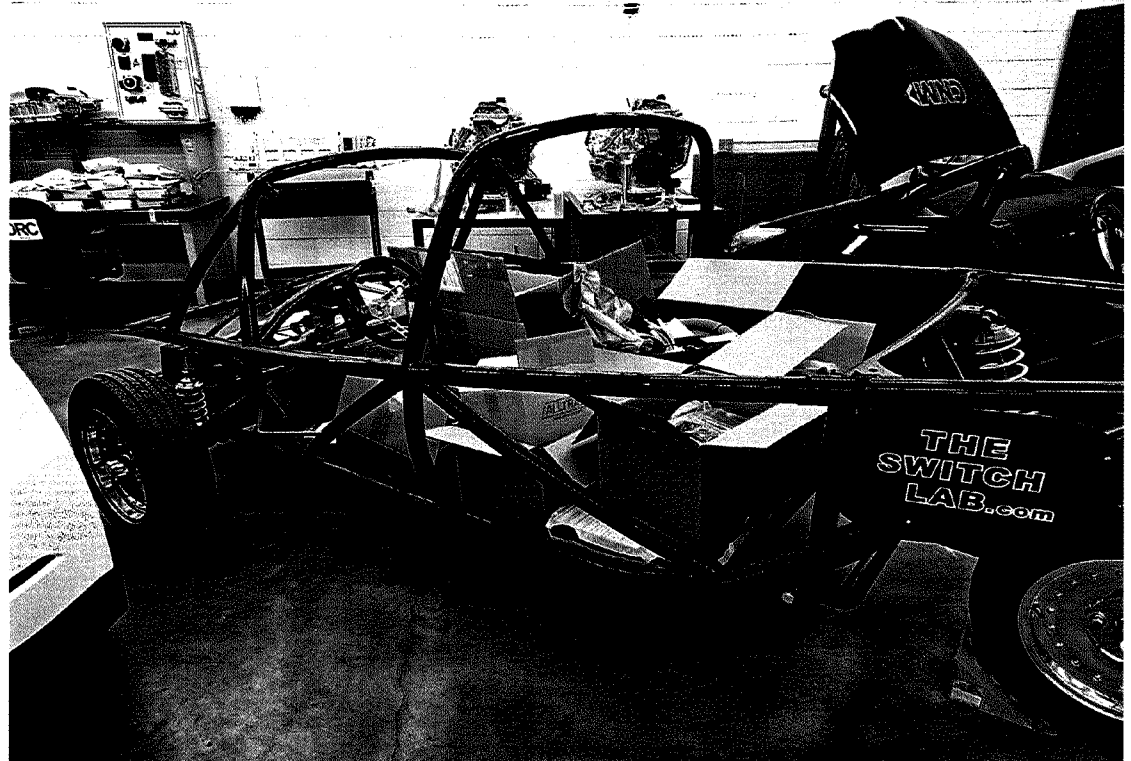
## CNM/STA EV program

- **2022** President Hartzler put in a request through **Collegewide Integrated Program Review (CIPR)** for credit and non-credit EV courses.
- **2023** A relationship between CNM Ingenuity and CNM/STA was established and EV courses are being provided on the non-credit and credit side.
- Several agencies are sending technicians on EV training at CNM.



## CNM/STA EV program

- 2022-23, a buildable electric vehicle was purchased.
- This vehicle can be built, tested, diagnosed and dis-assembled in-class by students.
- Fault codes can be set for diagnosis



**CNM/STA EV program**

**PRESENT**



## CNM/STA EV program

The automotive program has been running AUTC1315, Introduction to Hybrid/Electric vehicles, since 2021.

**Course description:** Introduction to Hybrid and Electric vehicles, (EV's), focuses on the safety related issues involving Hybrid and EV's. Course presents Hybrid/EV's different drive systems, high voltage battery function and design, battery converter systems and high voltage battery accessory components. The course also has relationships with Albuquerque City Transit and PNM.

## CNM/STA EV program

### Current EV training fleet:

2006 Honda civic Hybrid

2010 Ford Escape Hybrid

2010 Toyota Prius Hybrid, (2)

2014 Chevrolet Volt

2015 Ford Fusion Hybrid, (2)

2018 Chevrolet Bolt, EV

2021 Ford F-150 Hybrid

Electric buildable vehicle



**CNM/STA EV program**

**FUTURE**





## **CNM/STA EV program**

- <https://youtu.be/Rj3cTCSCGrw>

For Perkins 2023-24, a purchase of non-invasive student trainers in Hybrid, EV and Battery applications.

EV training was requested through Perkins to keep up with the current industry.



**CNM/STA EV program**

# **PROJECTED CURRICULUM**



## **CNM/STA EV program**

### **Introduction to Hybrid vehicles, 3 credits**

Introduction to Hybrid focuses on the safety related issues involving Hybrid vehicles. Course introduces Hybrid different drive systems, high voltage battery function and design, battery converter systems and high voltage battery accessory components.



## **CNM/STA EV program**

### **Introduction to Electric vehicles, (EV's), 3 credits**

Introduction to Electric vehicles, (EV's) focuses on the safety related issues involving EV's. Course introduces EV drive systems, high voltage battery function and design, battery converter systems and high voltage battery accessory components. This course includes the building of an electric vehicle.



## **CNM/STA EV program**

### **Basic automotive Electrical and Electronic systems, 4 credits**

Presents critical skills necessary for identifying and correcting problems found in automotive electrical/electronic systems. Includes DVOM and analog meter use, voltage drop testing, wiring schematic interpretation and electrical troubleshooting procedures. Covers testing and diagnostic procedures in more complex automotive electronics systems. Includes lighting circuits, body computers and sensors, use of lab scopes and scan tools.



## **CNM/STA EV program**

### **Hybrid/EV Batteries and components, 4 credits**

This course will introduce students to Electric vehicle battery components, and their operation. Use of service manuals, proper tools, specific electric vehicle batteries, inverters, chargers utilized in individual vehicles. Students will remove Inspect and reinstall these components with the proper safety and initialization procedures. Specifically designed to provide the student the necessary skill and knowledge to function effectively in a modern automotive service department performing electric vehicle repair.



## **CNM/STA EV program**

### **EV Heating Ventilation and Air conditioning, 3 credits**

Students will focus on electric vehicle heating, air conditioning & ventilation systems as they apply to the automotive electric vehicles. High voltage air conditioning compressor systems and PTC heater systems. Using test equipment, the student will learn to safely diagnose, evacuate, recover and recharge air conditioning systems.



## **CNM/STA EV program**

### **EV Advanced electronic and drivability, 4 credits**

Students will be introduced to EV drivability problems associated with these vehicles. Students will test, diagnose and service components of the internal combustion engine, (ICE) drive motors and transmissions and perform scan-tool diagnostics with a vehicle being driven on a dynamometer.

**Total: 21 Credits for certificate**





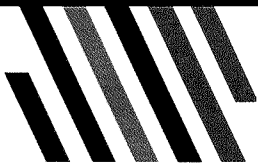
**CNM/STA EV program**

# **FUTURE OF THE EV PROGRAM**



## **CNM/STA EV program**

- Relationships with manufacturers to include training, equipment and internships
- Bring EV to the high schools with possible implementation to Dual-credit
- Certification in EV equipment through Snap-on Industrial
- Online courses offered in the US in EV and labs completed at CNM



### Automotive Service Fundamentals, Certificate of Achievement

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Upon successful completion of this program, the students will be able to:

1. Understand the importance of safety in the Automotive work environment.
  2. Research common popular trade publication websites. Read and understand the material as presented in the trade publication researched. Compose their thoughts about the researched article.
  3. Receive basic level areas of ethics as they pertain to the Automotive industry.
  4. Retention of the information with the service fundamentals course and the areas that may need more attention.
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### Automotive Technology, Certificate of Completion

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Upon successful completion of this program, the students will be able to:

1. Apply critical thinking skills to solve workplace problems.
  2. Diagnose and repair vehicle mechanical, electrical, and computer-managed systems.
  3. Perform basic word processing and computer database searches for repair information.
  4. Show proficiency in the language arts, communications, science, and math skills required in the automotive service industry.
  5. Work safely and in an environmentally responsible manner.
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### Transportation Technology (AAS), Automotive Technology Concentration

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Upon successful completion of this program, the students will be able to:

1. Apply critical thinking skills to solve workplace problems.
  2. Diagnose and repair vehicle mechanical, electrical, and computer-managed systems.
  3. Show proficiency in the language arts, communications, science, and math skills required in the automotive service industry.
  4. Work safely and in an environmentally responsible manner.
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