



## Automotive Technology Program

# 1. Program or Unit Description

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## Program or Unit Mission or Purpose Statement

### Value of degree

What is the industry/higher ed path value of the certificate versus degree level?  
Provide graduate highlights based on recent graduate placement data.

The purpose of the Automotive Technology program (AMT) is to train students for employment in automotive service and repair. The laboratory phase of courses uses modern tools and equipment while performing actual “live” service and repairs on automobiles. The classroom phase includes lectures and discussions of principles, theory, and their application of them in the operation of automotive systems and components, demonstration of repair techniques by instructors and lecturers through hands-on tasks, simulations, textbook assignments, and quizzes.






The industry/ higher ed path value of the certificate is that it allows the students to be trained in automotive courses and gives students the opportunity to enter the workforce quickly. Students who pursue the automotive degree are awarded one year of work experience of the required two years when they apply for ASE certifications. Students would only need one more year of work experience for gaining industry certification. Another benefit for students to pursue the degree is that if they choose to change careers in the future that they have the general education requirements from the Associate’s degree to build upon for further education.

What is the target student or service population?  
Check all that apply for the program:

- ☐ Articulated Pathways for 4-year or graduate pathways:
- ☒ Articulated Pathways for High school: \_\_\_\_\_
- ☒ Articulated Pathways for Other: \_\_\_\_\_

The target audience for the UHMC Automotive Technology Program is the population of the Island of Maui. This includes high school students, high school graduates, transfer students, technicians currently in the industry attaining updated skills, people transitioning from one industry to automotive, and students, trying to find a pathway in college. Some of the automotive pathways, graduates can achieve are included below represented by the Classification of Instructional Programs Code (CIP 47.0617 but can be expanded to the whole section of 47) This includes the following:

- ☐ [47.00\) Mechanics and Repairers, General.](#)
  - [47.0000\) Mechanics and Repairers, General.](#)
- ☐ [47.01\) Electrical/Electronics Maintenance and Repair Technology.](#)
  - [47.0101\) Electrical/Electronics Equipment Installation and Repair, General.](#)
  - [47.0102\) Business Machine Repair.](#)
  - [47.0103\) Communications Systems Installation and Repair Technology.](#)
  - [47.0104\) Computer Installation and Repair Technology/Technician.](#)
  - [47.0105\) Industrial Electronics Technology/Technician.](#)

	<a href="#">47.0106) Appliance Installation and Repair Technology/Technician.</a> <a href="#">47.0110) Security System Installation, Repair, and Inspection Technology/Technician.</a> <a href="#">47.0199) Electrical/Electronics Maintenance and Repair Technology, Other.</a>
	<a href="#">47.02) Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HAC, HACR, HVAC, HVACR).</a> <a href="#">47.0201) Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HAC, HACR, HVAC, HVACR).</a>
	<a href="#">47.03) Heavy/Industrial Equipment Maintenance Technologies.</a> <a href="#">47.0302) Heavy Equipment Maintenance Technology/Technician.</a> <a href="#">47.0303) Industrial Mechanics and Maintenance Technology.</a> <a href="#">47.0399) Heavy/Industrial Equipment Maintenance Technologies, Other.</a>
	<a href="#">47.04) Precision Systems Maintenance and Repair Technologies.</a> <a href="#">47.0402) Gunsmithing/Gunsmith.</a> <a href="#">47.0403) Locksmithing and Safe Repair.</a> <a href="#">47.0404) Musical Instrument Fabrication and Repair.</a> <a href="#">47.0408) Watchmaking and Jewelrymaking.</a> <a href="#">47.0409) Parts and Warehousing Operations and Maintenance Technology/Technician.</a> <a href="#">47.0499) Precision Systems Maintenance and Repair Technologies, Other.</a>
	<a href="#">47.06) Vehicle Maintenance and Repair Technologies.</a> <a href="#">47.0600) Vehicle Maintenance and Repair Technologies, General.</a> <a href="#">47.0603) Autobody/Collision and Repair Technology/Technician.</a> <a href="#">47.0604) Automobile/Automotive Mechanics Technology/Technician.</a> <a href="#">47.0605) Diesel Mechanics Technology/Technician.</a> <a href="#">47.0606) Small Engine Mechanics and Repair Technology/Technician.</a> <a href="#">47.0607) Airframe Mechanics and Aircraft Maintenance Technology/Technician.</a> <a href="#">47.0608) Aircraft Powerplant Technology/Technician.</a> <a href="#">47.0609) Avionics Maintenance Technology/Technician.</a> <a href="#">47.0610) Bicycle Mechanics and Repair Technology/Technician.</a> <a href="#">47.0611) Motorcycle Maintenance and Repair Technology/Technician.</a> <a href="#">47.0612) Vehicle Emissions Inspection and Maintenance Technology/Technician.</a> <a href="#">47.0613) Medium/Heavy Vehicle and Truck Technology/Technician.</a> <a href="#">47.0614) Alternative Fuel Vehicle Technology/Technician.</a> <a href="#">47.0615) Engine Machinist.</a> <a href="#">47.0616) Marine Maintenance/Fitter and Ship Repair Technology/Technician.</a> <a href="#">47.0617) High Performance and Custom Engine Technician/Mechanic.</a> <a href="#">47.0618) Recreation Vehicle (RV) Service Technician.</a> <a href="#">47.0699) Vehicle Maintenance and Repair Technologies, Other.</a>
	<a href="#">47.99) Mechanic and Repair Technologies/Technicians, Other.</a> <a href="#">47.9999) Mechanic and Repair Technologies/Technicians, Other.</a>

**What effect has this program had on closing equity gaps?**

The program believes that it is successfully closing equity gaps in a positive way by providing training and practice testing methods by applying non-traditional methods. These non-traditional methods include increasing confidence which according to the [EAB](#) is an effective method for retention as well as closing equity gaps which include learning gaps. The method being used by the UHMC Automotive Technology Program is the ASE entry-level certification program. This method allows students to receive practice and confidence in taking complicated tests in real-life situations. This certification is included in part of the A series certification process as well. The ASE education foundation has also worked with ASE(National Certification Process for Licensure) to help students to become certified faster by allowing students who pass at least three of the ten entry-level tests to acquire one year of apprenticeship time toward the two years required by ASE for certification. The shortening of time required for certification is helping to close equity gaps and is helping students

and entry-level technicians increase their pay while attending automotive classes and working part-time to full-time schedules. By providing exit-level students with these skills, students (male or female) will likely increase professional automotive certifications within one year instead of waiting years to pass A series tests.

Current data is not being collected on equity gaps in the program however this data will be collected by survey during this year.

Awareness and knowledge of financial aid and student support services are provided to the Automotive Technology students in the syllabus as well as through talking to each class about applying for financial aid as well as grants and scholarships. The program also invites student support programs such as Kāko‘o Student Support to talk to students during class time as well as the Education Opportunity Center

## 2. Analysis of the Program/Unit

Discuss the Program’s or Unit’s strengths and areas to improve in terms of Demand, Efficiency, and Effectiveness based on an analysis of the program’s Quantitative Indicators or comparable unit-developed measures or program-developed metrics. Include a discussion of relevant historical-trend data on key measures (i.e., last three years).

Discuss significant program or unit actions (new certificate(s), stop outs, gain/loss of position(s), results of prior year’s action plan, etc.). Include external factors affecting the program or unit.

Instructional programs must include ARPD health indicators with benchmarks to provide a quick view on the overall condition of the program; CTE programs must include an analysis of Perkins Core indicators for which the program did not meet the performance level.


### Demand

#	Demand Indicators	2019 - 20	2020 - 21	2021 - 22
1.	New & Replacement Positions (State)	590	589	588
2.*	New & Replacement Positions (County Prorated)	64	65	65
3.	Number of Majors ?	39	42	45
3a.	Number of Majors Native Hawaiian	11	11	12
3b.	Fall Full-Time	68%	61%	37%
3c.	Fall Part-Time	33%	39%	63%
3d.	Fall Part-Time who are Full-Time in System	0%	0%	2%
3e.	Spring Full-Time	39%	38%	22%
3f.	Spring Part-Time	61%	62%	78%
3g.	Spring Part-Time who are Full-Time in System	0%	0%	3%
4.	SSH Program Majors in Program Classes	706	645	541
5.	SSH Non-Majors in Program Classes	23	63	43
6.	SSH in All Program Classes	729	708	584
7.	FTE Enrollment in Program Classes	24	24	19
8.	Total Number of Classes Taught	14	16	16
<b>Demand Health</b>		<b>Healthy</b>		

## Efficiency

#	Efficiency Indicators	2019 - 20	2020 - 21	2021 - 22
9.	Average Class Size	14	12	10
10.*	Fill Rate	85.1%	73.8%	61.7%
11.	FTE BOR Appointed Faculty	2	2	2
12.*	Majors to FTE BOR Appointed Faculty	20	21	22
13.	Majors to Analytic FTE Faculty	20	21	22
13a.	Analytic FTE Faculty	2	2	2
14.	Overall Program Expenditures	\$243,308	\$238,482	\$230,789
14a.	General Funded Budget Allocation	\$191,918	\$210,375	\$211,511
14b.	Special/Federal Budget Allocation	\$23,119	\$18,283	0
14c.	Tuition and Fees	\$28,271	\$9,824	\$19,278
15.	Cost per SSH	\$334	\$337	\$395
16.	Number of Low-Enrolled (<10) Classes	1	5	7
	<b>Efficiency Health</b>	<b>Healthy</b>		

## Effectiveness

#	Effectiveness Indicators	2019 - 20	2020 - 21	2021 - 22
17.	Successful Completion (Equivalent C or Higher)	73%	84%	76%
18.	Withdrawals (Grade = W)	7	3	3
19.*	Persistence Fall to Spring	80%	85%	64%
19a.	Persistence Fall to Fall	47%	63%	39%
20.*	Unduplicated Degrees/Certificates Awarded 	8	3	7
20a.	Degrees Awarded	7	1	6
20b.	Certificates of Achievement Awarded	7	1	5
20c.	Advanced Professional Certificates Awarded	0	0	0
20d.	Other Certificates Awarded	3	4	4
21.	External Licensing Exams Passed <sup>1</sup>			
22.	Transfers to UH 4-yr	0	0	0
22a.	Transfers with credential from program	0	0	0
22b.	Transfers without credential from program	0	0	0
	<b>Effectiveness Health</b>	<b>Healthy</b>		

The demand, efficiency, and effectiveness of the Automotive Technology Program at UHMC are healthy according to the [2022 ARPD](#). Substantial Perkins awards have given the program a boost in the replacement of tools, equipment, and upgrades that have allowed the creation of an H.E.V. course and have allowed current classes to teach with the updated task sheet list (2022) from the ASE Education Foundation. To upkeep the Health of the program and to apply for accreditation of the automotive program funds will be required to replace and update tools, equipment, and software to maintain the level of training required for the ASE education foundation accreditation. Several students this past year have transferred to other automotive programs on Oahu. When asked why they were transferring it was because the other colleges had more updated training equipment and

opportunities that UHMC did not. This will be addressed in the action plan below as to how the UHMC automotive program will address this loss.

### 3. Program Student Learning Outcomes or Unit/Service Outcomes

#### a) List of the Program Student Learning Outcomes or Unit/Service Outcomes

AMT PLO 1. Demonstrate the ability to communicate with customers and other industry trade professionals.

AMT PLO 2. Demonstrate effective retrieval of instructional and repair information for automotive diagnosis and repair procedures.

AMT PLO 3. Demonstrate the ability to identify characteristics and functions of automotive components.

AMT PLO 4. Demonstrate the ability to diagnose, service, and repair automotive vehicles.

AMT PLO 5. Demonstrate proper pre-employment skills including resume writing, interview preparation, and professionalism related to the automotive repair industry.

#### b) Program or Unit/Service Outcomes that have been assessed in the year of this Annual Review.

AMT 152 Brake Systems			
OUTCOMES	EVIDENCE	DESCRIPTION/EXAMPLE	LEVEL
PLO 1: Demonstrate the ability to communicate with customers and other industry trade professionals.	1) Virtual and lab demonstration. 2) Verbal, written, and virtual assessments.	scaffolding is represented by course preassessment and post assessment, subsection assessments in the form of quizzes, and course final exam in cdx.	This Course Develops this PLO
PLO 2: Demonstrate effective retrieval of instructional and repair information for automotive diagnosis and repair procedures.	1) In class demonstrations 2. NATEF designated task sheets.	All task sheets are required to have copies of instructional and repair information. Students are taught throughout the course to find information required for repair and diagnosis of graded tasks.	This Course Masters this PLO
PLO 3: Demonstrate the ability to identify characteristics and functions of automotive components.	1. Scaffolded chapter assignments including chapter and section prequiz, small section readings and quiz, and chapter test.	scaffolding is represented by course preassessment and post assessment, subsection assessments in the form of quizzes, and course final exam in cdx.	This Course Develops this PLO
PLO 4: Demonstrate the ability to diagnose, service, and repair automotive vehicles.	1. Scaffolded chapter assignments including chapter and section prequiz, small section readings and quiz, chapter test, and simulators. 2. NATEF designated task sheets which are graded on a 100% grading provided in an online platform by CDX.	1. scaffolding is represented by course preassessment and post assessment, subsection assessments in the form of quizzes, and course final exam in cdx. 2. Students are provided with Instructor led instruction which includes video instructions for tasks assigned.	This Course Develops this PLO
PLO 5: Demonstrate proper pre-employment skills including resume writing, interview preparation, and professionalism related to automotive repair industry.	1. Syllabus 2. Task sheet submissions 3. Course demonstrations.	1. Attendance and Participation grading 2. Tasks requiring writing skills including work order examples built into task sheets which are submitted online in accordance with industry examples.	This Course Develops this PLO



#### Assessment Results

- a. PLO: Provide a summary of the method used for assessment i.e. exit project or capstone results, proficiency standards, stakeholders participating in the assessment process, how the data was collected/analyzed, and the results. For brevity, include a link to complete assessment reports from the Academic Affairs website or include your write-up in the appendix.

The advisory committee members met and reviewed the scaffolded data of proficiency standards in the course by examining the grade book and ASE master task sheet list. The data was collected from the CDX LMS(learning management system). The results showed an example of an exemplary student vs a subpar student.

#### [AMT 152](#)

- b. OPTIONAL CASLO: Provide a summary of CASLO assessment in the year of this annual review.
  - i. Identify CASLO and program's assessment method CASLOs
  - ii. Provide a summary of the analysis, results, and recommendations
- b) Changes that have been made as a result of the assessment results.

## 4. Action Plan

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Based on findings in Parts 1-3, develop an action plan for your program or unit from now until your next Comprehensive Review date. Be sure to focus on areas to improve identified in ARPD data, student learning or unit/service outcomes, results of survey data, and other data used to assess your program or unit. This plan should guide your program/unit through to the next program/unit review cycle and must detail measurable outcomes, benchmarks and timelines. Include an analysis of progress in achieving planned improvements.

\* CTE programs must include specific action plans for any Perkins Core Indicator for which the program did not meet the performance level.

Specify how the action plan aligns with the College's Mission and Strategic Plan.

Provide an update of last year's action plans, program advisory committee recommendations, and/or dean recommendations. (LISTED IN BLUE)

The AMT program addresses the action plan by looking backward and into the future of the automotive and autobody industries. The recommendations of advisory members were:

- 1. The size of the current shop limits the variety of vehicles that the program can maintain and have space to safely work in groups as well as on individual tasks assigned with the current curriculum and that with the combination of Electric and Petroleum-based fueled vehicles will create a cramped space for students to learn properly.
- 2.It was recommended that all the courses use the methods being used in the classes that were discussed in the assessment by the advisory members.

- 3.The two courses' separation was also discussed as the ASE test is the combination of both Ignitions and Fuels and Emissions. It is recommended that both courses be combined to teach engine performance in a more complete manner.
- 4.A Dynamometer was recommended and was supported by the advisory members.
- 5.Otto recommended that some older cars be used to teach fundamental theories of Carburation and older ignition systems. I explained that we only have one vehicle that can fit that category and Otto thought that wasn't enough.
- 6.The members also discussed that if space wasn't available for the vehicles that modular models should be purchased and used to teach what is needed to complete the curriculum.
- 7.Safety is also a large factor with space and exhaust hoses and fans are recommended to work in the space that is available for engine performance work to prevent dangerous carbon monoxide poisoning.
- 8.Some of the current PLO's don't match the courses being assessed in the context of "resume writing and interview preparation". It was recommended to try and include some of these tasks into the courses being assessed even though time is limited with the current curriculum.

The UHMC AMT Program action plan includes

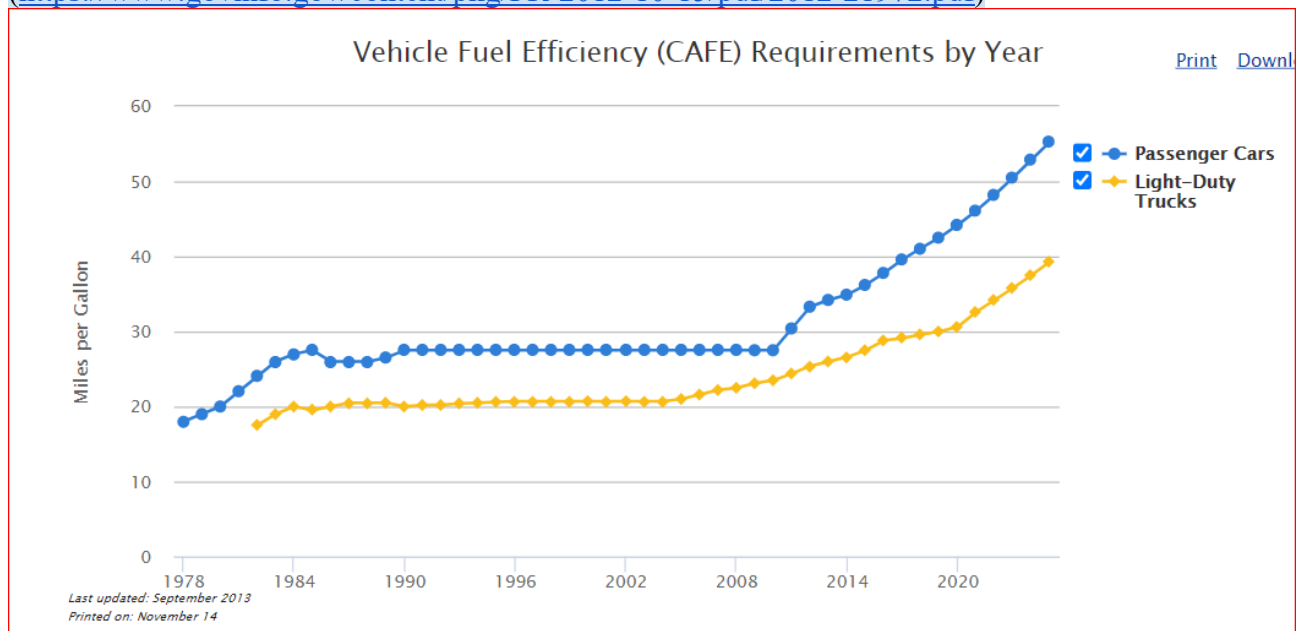
1. Taking into consideration all the recommendations of the advisory board members from the program assessment listed above. The Department chair and Dean will be consulted about many of the standards set by ASE Education Foundation. These standards involve significant upgrades to the facilities and the current tools required for accreditation. The recommendations by the advisory board are being followed currently, such as the Dynamometer which is held up at the facilities requirements due to the age of the infrastructure and current power grid limitations. The size of the shop is being reviewed for efficiency and use of space. Modular training units have been written for in Perkins grant and the Program Coordinator will continue to pursue grant-funded acquisitions for more to make use of the spaces provided. Safety factors are being reviewed and more hoses will be acquired for exhaust fumes which are dangerous however a proper ventilation system should be installed to move all toxic exhaust fumes out of the shop.
2. Answering and addressing the ASE Education Foundation(NATEF) Standards by the current administration and Full-Time Faculty members will help to create a budget and timeline for accreditation. This accreditation will solve the lack of Industry financial and physical support for the UHMC AMT program. The industry does not support nonaccredited schools.
3. Perkins funds will be requested for the replacement of vehicle work to training modules. The vehicles that are donated to the program often require significant repairs to safety and functional parts to continue training from course to course. With the budget restraints, minimum repairs have been allotted from the budget and student training has been minimized.
4. NATEF or ASE Education Foundation accreditation application will be continued to be pursued by the program coordinator by continuing to upgrade to current program standards by approval of the department chair and the involvement of new and active advisory board members. The program coordinator has learned of equipment and tools that have not been replaced that is required by NATEF(ASE Education Foundation) and will continue to update



these requirements as quickly as possible in order to turn in applications for accreditation. Some of the standards that must be looked at by the school and advisory board include

4.1  
8.5  
8.6  
9.1  
9.3  
9.7  
9.8  
9.9.

5. The program plans to make changes to the schedule coming out of the pandemic to offer students a more streamlined graduation plan. The current plan is under works with the Program Coordinator, Department Chair, Program Counselor, and Dean.
6. Student support in the form of ASE Entry Level Certification tests as well as Professional level certifications will be attempted to be offered through Perkins funding. This immediate change to the program's ability to offer trained and certified entry-level technicians will offer the program the ability to keep students till completion. The support of the local industry will follow when they witness the level of qualified technicians in the industry and the students will want to stay to graduation when they see what benefits the program offers them that the local industry does not.
7. Currently the ASE Education Foundation does not require a full development of a program involving hybrid or electric vehicle certificate or degree, however, it is believed by the UHMC AMT program that due to the current federal CAFE(Corporate Average Fuel Economy standards) that the program should innovate earlier and provide the community and industry with a certificate training students in preparation for these changes.  
(<https://www.govinfo.gov/content/pkg/FR-2012-10-15/pdf/2012-21972.pdf>)



Kaua'i Community College currently has a certification in Electric Vehicles and Hybrids and Leewards Community College has been asked by the industry to develop a certification to fulfill the

demand that the Industry is placing on their employees. This would be a significant development for UHMC and the island of Maui as we currently prepare for higher fuel prices and implications of all manufacturers moving the production of vehicles to Electric and Hybrid across their fleets. This change would involve moderate to significant changes to the current infrastructure as safe spaces are required for high-voltage training and repairs to these types of vehicles. This should have a minimum of 60" around the whole vehicle which includes a corded-off section with safety signs requiring high-voltage gloves when entering. The list of training can include

1. Safety

2. OE (original equipment) Training

3. Technology

The UHMC Automotive Program has been recently funded with Perkins grant to purchase and acquire the safety and tools required for the implementation of the technology into the program. Training from the company ACDC was supported by the Chancellor to provide the program the education needed to further train students.

The last step of implementing this into the current infrastructure is to modify the automotive building with the space provided to allow training to occur within the required safe space rules. These allotted bays would require safety tape and signs warning of high-voltage work. It would also require enough safe space to remove and disassemble high-voltage components for teaching purposes as well as repair.

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Last years action plan by 1 and 5 year.

1. 1 year plan

- a. Modify shop space and examine current equipment for functionality and storage.
- b. Offer 190 V courses in EV and Hybrid vehicles during summer
- c. Acquire updated tools and equipment to match the industry standards and provide training to students to ensure that the automotive program is current and valuable to the Automotive industry.
- d. Increase capacity of current courses in automotive and autobody. This will be accomplished through recruitment strategies with the Program Coordinator and new recruitment specialist. Increasing capacity will also be increased by providing new and current industry knowledge in both self-driving cars and non-self-driving cars with incoming supplies funded by Perkins and by creating new partnerships with local industries that will provide scholarships and employment opportunities.
- e. Continue recruitment for lecturers in automotive and autobody courses.

2. 5 year plan

- a. Have all standards met by ASE Education Foundation and Accreditation complete by either a new facility or significant modifications to the current facility
- b. Acquire Industry support from either Ford, Honda, Chevy, or Toyota.
- c. Have a Program certification in EV and Hybrid vehicles.
- d. Increase capacity of courses in automotive and autobody to 16.
- e. Continue partnerships with Industry and local businesses to provide multiple pathways of employment and Internship opportunities.
- f. Modifications to curriculum to provide Internship opportunities to students which will require modifications to courses taught to balance the work-school schedule that currently exists. Reduction and reworking of the credit loads that exist for AMT 262, 240, and 246. These curriculum changes will help to reduce the total hours of the program to 1,587 from 1,710 hours.

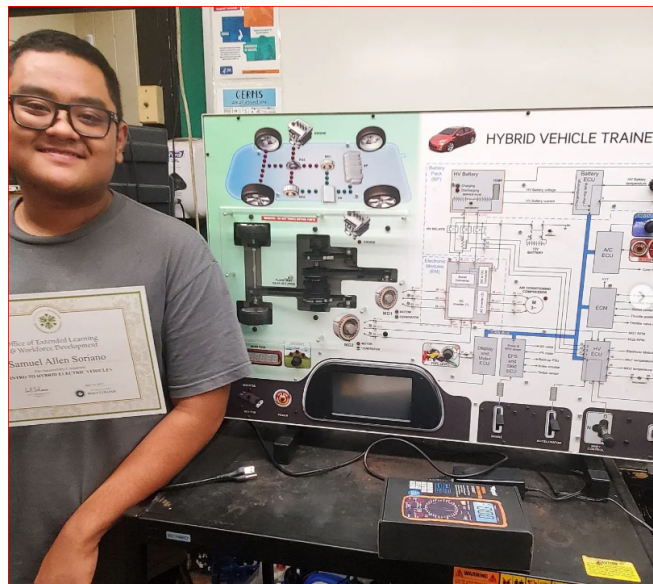
### **Addressing Above Statements**

**1a.** The program coordinator has spent many hours of free time shifting shop equipment around to clear up space at each lift giving the students more room to operate while doing shop tasks. Equipment has been thoroughly explored and tested. Broken equipment has been dumped including three old brake lathes that were replaced with one on-car lathe from equipment replacement funds. Equipment that is required for new ASE tasks is being purchased so that students can complete new tasks required for accreditation. This also applies to the safety of the students in the program including large fans to push the exhaust fumes out of the shop. The program coordinator has also worked with security to leave some of the windows open overnight to help vent the building from the toxic fumes that build up.

The PLOs that don't match have been integrated into classes such as AMT 100 Introduction to Automotive where they were not introduced in the past.

The program coordinator will be requesting further Perkins funding to purchase modular training equipment this year as well as updated scan tools specifically for hybrid and electric vehicles. The budget requested last year applied to the purchase of a dynamometer and hybrid training equipment and supplies. The budget for this year only applied to student ASE entry-level certifications, AVI video training, and Electude student accounts.

**1b.** During the summer of 2022 a hybrid and electric vehicle course was taught with the purchase of required equipment for the safety and testing of hybrid and electric vehicles through Perkins funds. Each student who attended did so in the evening after work and they all received a Certificate of Completion. This course was funded by the Hana Lima grant. This grant supplied all the other necessary cutaway models as well as the software for the high-voltage trainer boards that allowed students to gain necessary testing capabilities (on a safe and low voltage) before applying them to live vehicles. Of these 10 students, 7 of them had their ASE entry-level certifications and the plan from the grant was to allow these 10 students to take the L3 advanced level Hybrid and Electric vehicle exam at no cost. Due to the complexity of using student information which is required by ASE the test has been forgone for now. Below are pictures of this passing class.



1c. The automotive program has been vigilant with purchasing necessary equipment and tools pertaining to the pursuit of teaching hybrid and electric vehicle courses. These included training boards seen in the pictures above, as well as all the equipment necessary for learning how to diagnose and repair these vehicles. The program has also acquired a dynamometer that will allow instructors to perform task sheets that haven't been able to complete before.

1d. An ADAS(Advanced Drivers Assistance Systems) rack was purchased, this year, with Perkins funds to support the electrical, steering and suspension, brakes, and engine performance classes which are now required to learn and perform tasks related to the use of this tool. Training from Autel was supplied to both automotive instructors after installation and setup were performed by factory technician. This tool is located in the autobody shop and although great interest has been shown by students on the island and industry, an instructor for the autobody courses cannot be found. Recruitment attempts for an Autobody Instructor have been exhausted throughout our community. Ads for hire as well as continued community outreach will be continued until someone is found.

1e. Continued recruitment of Automotive Technology lecturers has gone well including the hiring of two new lecturers for Introduction to Automotive Technology and the Automotive HVAC course. The program will continue recruitment for lecturers as the program needs support if a lecturer cannot perform his or her duties for a given time due to other responsibilities.

5a. Money in the amount of 4 million dollars has been allocated to rebuild a structure for the trades which hopefully will upgrade the structure of the automotive building. The program coordinator will communicate with the Vice Chancellor of Administrative services to ensure that the ASE standards are applied to the new structure.

5b. Industry support has come this year in the form of an apprenticeship opportunity from [Servco Hawaii and Toyota Ttep program](#). This program is slated to begin accepting applications in early January of 2023. Hawthorne CAT has also donated \$3000 to the automotive program students. The program will continue to outreach to manufacturer support.

5c. Due to the changes in task sheet requirements as well as CDX training curriculum the need for a specific program training certification in HEVs is not required at this time. The 3rd edition of CDX Fundamentals of Automotive Technology, Engine Performance Chapters, has filled the gap in what the program was missing in terms of training students to be prepared for in the industry. Chapter 74 is listed above with the changes in the course which didn't include a devoted chapter in previous editions.

Chapter 74 Electric, Hybrid, and Fuel Cell Electric Vehicles
Chapter 74 Preview
LO 74-1 Describe battery electric vehicles.
74-1 Quiz
LO 74-2 Describe battery technology and ratings.
74-2 Quiz
LO 74-3 Describe battery electric vehicle components.
74-3 Quiz
LO 74-4 Describe hybrid drive configurations, enhancements, and operation.
74-4 Quiz
LO 74-5 Describe hybrid and electric vehicle service precautions, personal protective equipment (PPE), and tools.
74-5 Quiz
MAST8019 - Identify safety precautions for high voltage systems on electric, hybrid, hybrid-electric, and diesel vehicles.
LO 74-6 Disable the high-voltage system, and service the 12-volt battery.
74-6 Quiz
MAST8021 - Identify hybrid vehicle auxiliary (12v) battery service, repair and test procedures.
LO 74-7 Describe fuel cell operation.
74-7 Quiz
MAST1009 - Identify service precautions related to service of the internal combustion engine of a hybrid vehicle.
Chapter 74 End of Chapter Questions
Chapter 74 Test
Anatomy of a Car Activities
Anatomy of a Car: Hybrid Vehicle Components
Chapter 74 Resources
Chapter 74: Key Review
Chapter 74: Slide Presentation
Chapter 74: Audio Book
Chapter 74: Flashcards
Chapter 74: Media Gallery

5d. The application of another Introduction to Automotive class in Spring 2023 is planned to increase class sizes back up to 16.

5e. The continuation of partnerships with Industry and local businesses to provide multiple pathways of employment and Internship opportunities is ongoing and community members will also be continued to be recruited into the advisory community to assist with improvements to the overall training methods of the program.

5g. Modifications to the curriculum are ongoing and the program coordinator has been delicately encouraging changes. Throughout the next paragraph, the abbreviation R.R. will be used in place of Resistance to Restructure. This has been the hardest part of accreditation and modification to the curriculum for other program faculty members. These changes and recommendations to improve the program to the level of Master level of accreditation through the ASE education foundation require many changes that have been met with much resistance. These changes are supported by the advisory committee members and administration. These changes will require careful consideration and time to allow the changes to marinate and be integrated into the program.

New faculty members, in the form of lecturers, will help facilitate 2 other course changes that will help move the program forward quicker but will not fully take effect until Spring 2023. These classes that will have new lecturers are AMT 100 Introduction to Automotive and AMT 144 Heating and Air Conditioning.

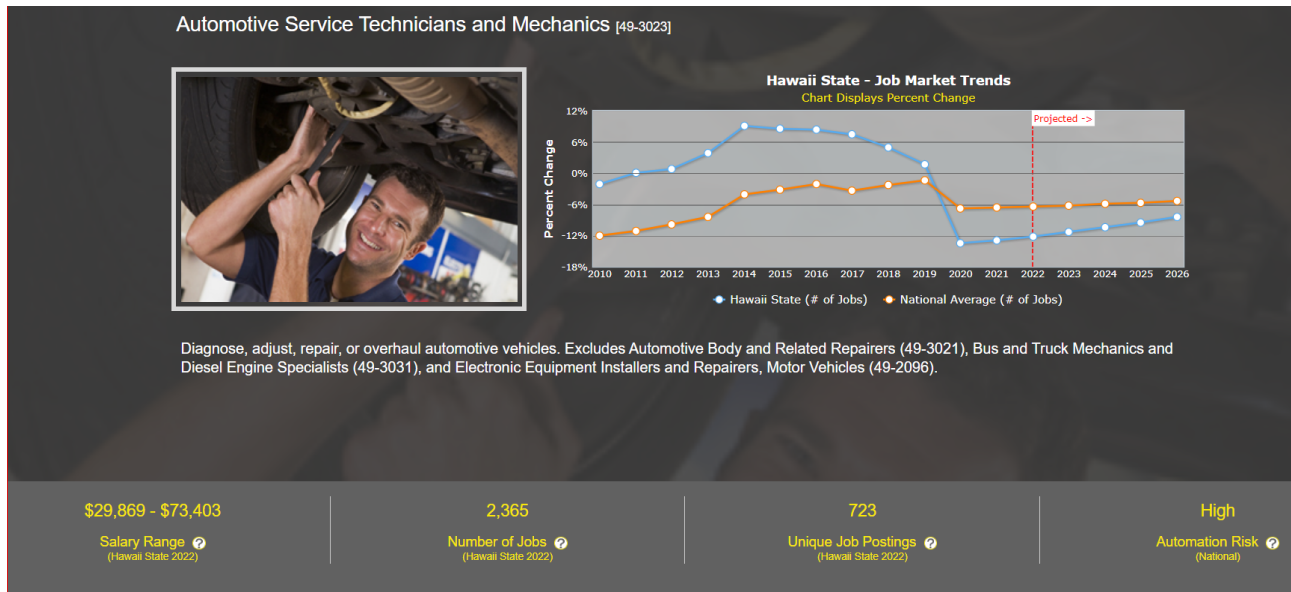
The program will continue to work with community businesses to provide internship opportunities to students. These opportunities will require modifications to courses taught to balance the work-school schedule that currently exists. Reduction and reworking of the credit loads that exist for AMT 262, 240, and 246. These curriculum changes will help to reduce the total hours of the program to 1,587 from 1,710 hours. As read above these changes will require at least another year to carefully work them out in the program if possible.

Address opportunities for re-envisioning the program. How does the plan address emerging or future economic opportunities? What is the projected industry/community demand in 5-6 years?

Discuss how these recommendations for improvement or actions will guide your program or unit until the next Comprehensive Review. Be sure to list resources that will be required, if any, in section 5 below.

\*The action plan may be amended based on new initiatives, updated data, or unforeseen external factors.





The Program Coordinator has started re-envisioning the automotive program, in the near future, by working with the UHMC Engineering Technology Program and Associate Director, Jung Park. This re-envisioning will help support the Automotive Technology program to redirect students, who choose not to pursue automotive technology employment, toward a Bachelorette program on Maui, developing and applying automotive work into mechatronics, robotics, and engineering. This new pathway will help provide students who have gained mechanical skills to push forward into engineering. This is to help with the future high automation risk possibilities of the automotive repair industry. Through discussions with graduates of the automotive program and potential graduates, the program coordinator started to see the engineering similarities between the Engineering degree and the Automotive Technology degree. Some students if given the opportunity may continue a bachelor's degree in Engineering on Maui.

This partnership with STEM can help offer new financial opportunities to both programs, the students, and the community of Maui.

The automotive program coordinator is working diligently on not only the application for accreditation but also the standard changes which have just undergone an update into the 2022 year. All work previously done has to be restarted. A budget included in this [link](#) has been estimated for what the automotive program roughly uses and the supplies and equipment have approximately been listed. This is too much for one person to maintain and monitor while performing full-time instructor duties and program coordinator duties.

Implementing an APT into the automotive program it will allow the only 2 faculty members to teach more efficiently and safely. The faculty members will become more efficient at teaching while the APT maintains equipment, supplies, and the budget for all necessary course materials. The APT will be ASE certified and will be able to assist and roam the shop to help students with automotive tasks while the Instructor is teaching other groups to keep the class moving forward and not stuck waiting for the Instructor. This efficiency will help to reduce wait times which is a huge

problem with multiple groups and accreditation standards that requires schools to have enough instructor support for all the students and required tasks.

The Automotive Program with the support of the advisory committee members will be asking for the support of the college to move forward into the future of transportation by using a modern 4-step process which includes:

- Step 1. E-learning
- Step 2. Virtual Labs
- Step 3. Faultable training equipment
- Step 4. Real-world applications in the form of live jobs.

The program has been funded by Perkins to procure e-learning through Electude, and H.E.V. faultable training equipment. The program still requires more faultable training equipment in the form of 1. mechanical engine trainers that are able to mimic hybrid engine faults 2, CAN (Controller Area Network) BUS trainers/multiplex network trainers, and 3. Engine performance trainer. The program also requires virtual 3d training labs. These methods have been implemented into the welding classes to help save on material costs which will also apply to the automotive program. All of these methods listed above will set UH Maui College Automotive Technology Program ahead and apart from any other automotive training facility in the State of Hawaii.

## 5. Resource Implications

Detail any resource requests, including reallocation of existing resources (physical, human, financial). \*Note that CTE programs seeking future funding via UHCC System Perkins proposals must reference their ARPD Section 4. Action Plan and this ARPD Section 5. Resource Implications to be eligible for funding.

What is the cost? How can your program plan to reduce cost and streamline? Could elements of this program be combined with another program? Discuss any potential system partnerships and/or opportunities for collaboration.

☐ I am NOT requesting additional resources for my program/unit.

As listed in section 4 the program will be requesting an APT which will be requested through Perkins funds at the cost of \$46884 annually.

The Program Coordinator will also be asking for Perkins funds to purchase modular training models to streamline current and future curriculum to allow classes to work on same modular engines to save funds for tools for various makes and models of donated vehicles. This will train students much quicker than how the program is operating. It will also be much easier to train a new lecturer or instructor as the curriculum and models will all be based on one vehicle not many different manufacturers.

**Instead of thinking about what we can cut the program coordinator has worked on ways to create more funding from work done by students in the form of live jobs applied towards the student's task sheets. This will drive more money into the programs revolving account and the program will then be able to replace the required necessary tools and expendables out of that budget.**

## **6. Optional: Edits to Occupation List for Instructional Programs**

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Review the Standard Occupational Classification (SOC) codes listed for your Instructional Program and verify that the occupations listed align with the program learning outcomes. Program graduates should be prepared to enter the occupations listed upon program completion. Indicate in this section if the program is requesting removal or additions to the occupation list.

☐ **I am requesting changes to the SOC codes/occupations listed for my program/unit.**

**Dear Lawrence Martinson,**

**Mahalo for your submission of the 2021-2022 Automotive Tech Program Review.**

**From your program analysis submitted last year, it appears that program demand was identified**

**as healthy, program efficiency as healthy, and program effectiveness as progressing. Some summary points from the quantitative indicators and your last program analysis:**

- **The program provides 3 or more ASE entry-level certification program tests within the program**
- **COVID reduced class sizes**
- **The program coordinator has been working on PLA with Maui County DOE CTE director for AMT 100**
- **Portfolio Model #3 was used to assess AMT 240 and 246**
- **As cited in the program review, the CTE General-Funded departmental operating budget is anticipated to be increased as requested**
- **As cited in the program review, the VOCTECH buildings are in planning stages for renovation and updating**
- **FTE enrollment in the program appears to have remained steady since 2018 at 24 students; however, the number of classes appeared to have increased from 14 to 16.**

**As you prepare to submit the 2021-2022 report, please share an update on the following action plan items you identified last year and recommendations from your dean:**

**1. Curriculum modifications:**

- a. **AMT 262 course to reduce the number of hours to 120 instead of 240 or by implementing an internship program**
- b. **AMT 240 and 246 courses combined into an Engine performance class and reduced to 5 credits.**

**2. Share an update on the proposed English/Written communication course.**

- 3. Share the program's NATEF status in the next program review**
- 4. Status of Program advisory committee recommendations that include:**
  - a. use the methods being used in the classes discussed in the assessment**
  - b. use of a Dynamometer**
  - c. Use of modular models and older cars for curricular enhancement**
  - d. Addition of exhaust hoses and fans to prevent dangerous carbon monoxide poisoning.**
  - e. A review of current PLOs doesn't match the courses being assessed in the context of "resume writing and interview preparation" and instead include**

**310 W. Ka'ahumanu Avenue**

**Kahului, HI 96732-1617**

**Telephone: 808 984-3346**

**Website: [www.maui.hawaii.edu](http://www.maui.hawaii.edu)**

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**some of these tasks into the courses being assessed even though time is limited with the current curriculum.**

**As program coordinator, please consider the following as goals for this year. You do not need to**

**report on these in this year's submission unless you choose to include them in your action plan:**

- Coordinate trainings that meet community and industry demand in collision**
- Continue development and teaching of electric and hybrid curriculum certificate training that include Safety; OE (original equipment) Training; and Technology**
- Secure NATEF accreditation requirements so that an application for accreditation can be submitted by May 2023.**

- **Develop and conduct your program's course level assessment for the 2021-2022 academic year to be included in your program review in October 2022.**
- **Develop for your program's 2022-2023 course level assessment to be included in your program review in October 2023.**

**If you have any questions, please reach out to your department chair and dean for support.**

**Mahalo for all your work as program coordinator for the Automotive Tech program.**

**Mahalo,**

**Kahele Dukelow, Dean of Arts and Sciences**

**Laura Lees Nagle, Dean of Career and Technical Education**