

Automotive Technology (AMT) Program



2020

ANNUAL REVIEW OF PROGRAM DATA



UNIVERSITY of HAWAII®
MAUI
COMMUNITY COLLEGE

1. Program or Unit Description

Program or Unit Mission or Purpose Statement

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 discussion of principles on the operation of automotive systems and components, demonstration of repair techniques, textbook assignments, and quizzes.

What is the target student or service population?

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 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)

-  [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.](#)
 - [47.0106\) Appliance Installation and Repair Technology/Technician.](#)
 - [47.0110\) Security System Installation, Repair, and Inspection Technology/Technician.](#)
 - [47.0199\) Electrical/Electronics Maintenance and Repair Technology, Other.](#)
-  [47.02\) Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician \(HAC, HACR, HVAC, HVACR\).](#)
 - [47.0201\) Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician \(HAC, HACR, HVAC, HVACR\).](#)
-  [47.03\) Heavy/Industrial Equipment Maintenance Technologies.](#)
 - [47.0302\) Heavy Equipment Maintenance Technology/Technician.](#)
 - [47.0303\) Industrial Mechanics and Maintenance Technology.](#)
 - [47.0399\) Heavy/Industrial Equipment Maintenance Technologies, Other.](#)
-  [47.04\) Precision Systems Maintenance and Repair Technologies.](#)

- [47.0402\) Gunsmithing/Gunsmith.](#)
- [47.0403\) Locksmithing and Safe Repair.](#)
- [47.0404\) Musical Instrument Fabrication and Repair.](#)
- [47.0408\) Watchmaking and Jewelrymaking.](#)
- [47.0409\) Parts and Warehousing Operations and Maintenance Technology/Technician.](#)
- [47.0499\) Precision Systems Maintenance and Repair Technologies, Other.](#)
- [47.06\) Vehicle Maintenance and Repair Technologies.](#)
 - [47.0600\) Vehicle Maintenance and Repair Technologies, General.](#)
 - [47.0603\) Autobody/Collision and Repair Technology/Technician.](#)
 - [47.0604\) Automobile/Automotive Mechanics Technology/Technician.](#)
 - [47.0605\) Diesel Mechanics Technology/Technician.](#)
 - [47.0606\) Small Engine Mechanics and Repair Technology/Technician.](#)
 - [47.0607\) Airframe Mechanics and Aircraft Maintenance Technology/Technician.](#)
 - [47.0608\) Aircraft Powerplant Technology/Technician.](#)
 - [47.0609\) Avionics Maintenance Technology/Technician.](#)
 - [47.0610\) Bicycle Mechanics and Repair Technology/Technician.](#)
 - [47.0611\) Motorcycle Maintenance and Repair Technology/Technician.](#)
 - [47.0612\) Vehicle Emissions Inspection and Maintenance Technology/Technician.](#)
 - [47.0613\) Medium/Heavy Vehicle and Truck Technology/Technician.](#)
 - [47.0614\) Alternative Fuel Vehicle Technology/Technician.](#)
 - [47.0615\) Engine Machinist.](#)
 - [47.0616\) Marine Maintenance/Fitter and Ship Repair Technology/Technician.](#)
 - [47.0617\) High Performance and Custom Engine Technician/Mechanic.](#)
 - [47.0618\) Recreation Vehicle \(RV\) Service Technician.](#)
 - [47.0699\) Vehicle Maintenance and Repair Technologies, Other.](#)
- [47.99\) Mechanic and Repair Technologies/Technicians, Other.](#)
 - [47.9999\) Mechanic and Repair Technologies/Technicians, Other.](#)

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.

Provide high school and/or 4-year or graduate pathways articulation?
What effect has this program had on closing equity gaps?

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

2020 Maui Community College ARPD
Program: Automotive Technology

Demand Indicators: **Healthy**

<https://uhcc.hawaii.edu/varpd/index.php?y=2020&c=MAU&t=CTE&p=2226>

#	Demand Indicators	2017 - 18	2018 - 19	2019 - 20	Demand Health
1.	New & Replacement Positions (State)	653	644	652	Healthy
2.*	New & Replacement Positions (County Prorated)	71	69	71	
3.	Number of Majors	46	41	39	
3a.	Number of Majors Native Hawaiian	10	10	11	
3b.	Fall Full-Time	53%	49%	68%	
3c.	Fall Part-Time	47%	51%	33%	
3d.	Fall Part-Time who are Full-Time in System	0%	0%	0%	
3e.	Spring Full-Time	56%	55%	39%	
3f.	Spring Part-Time	44%	45%	61%	
3g.	Spring Part-Time who are Full-Time in System	0%	0%	0%	
4.	SSH Program Majors in Program Classes	710	678	706	
5.	SSH Non-Majors in Program Classes	3	44	23	
6.	SSH in All Program Classes	713	722	729	
7.	FTE Enrollment in Program Classes	24	24	24	
8.	Total Number of Classes Taught	13	14	14	

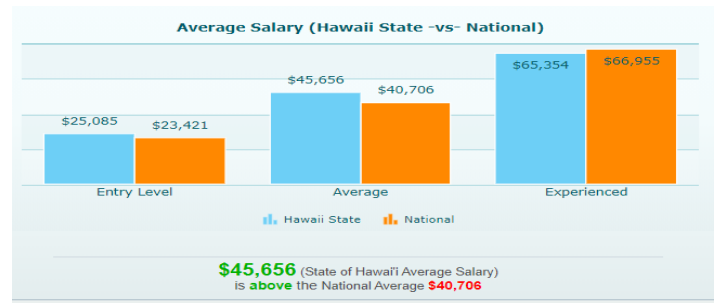
NOTE: New & Replacement jobs updated ([View Methodology](#)).

Efficiency Indicators: **Healthy**

#	Efficiency Indicators	2017 - 18	2018 - 19	2019 - 20	Efficiency Health
9.	Average Class Size	14	13	14	Healthy
10.*	Fill Rate	85.8%	81.1%	85.1%	
11.	FTE BOR Appointed Faculty	2	2	2	
12.*	Majors to FTE BOR Appointed Faculty	23	21	20	
13.	Majors to Analytic FTE Faculty	23	21	20	
13a.	Analytic FTE Faculty	2	2	2	
14.	Overall Program Expenditures	\$296,507	\$318,262	\$243,308	
14a.	General Funded Budget Allocation	\$177,693	\$217,289	\$191,918	
14b.	Special/Federal Budget Allocation	\$48,574	\$46,041	\$23,119	
14c.	Tuition and Fees	\$70,240	\$54,932	\$28,271	
15.	Cost per SSH				
16.	Number of Low-Enrolled (<10) Classes	1	1	1	

The UHMC Automotive Program(AMT) is in high demand by students and by the automotive industry on Maui. The trade itself is in high demand in the United States where positions cannot be filled fast enough by qualified employees. The average salary of an entry level technician is \$25,085 and the average level technician is \$45,656 which is shown in a graph below. This level meets the living wage of a single person in Hawaii.

https://uhcc.hawaii.edu/career_explorer/occupations/profile.php?state=HI&soc=49-3023



The AMT program has become more efficient with curriculum changes which included articulation with other Hawaii community colleges, updates to program learning outcomes, student learning outcomes, and competencies. These updates are also tied together with the strengths of the program which are directly related to the Industry standards set forth by the accrediting bodies of Automotive Service Excellence (ASE) and the National Automotive Technicians Education Foundation (NATEF). The Program is currently working toward Accreditation with NATEF and is actively working towards an agreement linking the high-school Automotive and Auto body programs to the college Automotive and Auto body programs as a 2+2 agreement.

Strengths

The Strengths of the UHMC Automotive Technology program are high employability skills and persistence of NATEF accreditation. Students who are enrolled or graduate from the program with either certificate(s) or degree are in high demand in the mechanical industries on Maui. According to the High Demand Occupations list (https://uhcc.hawaii.edu/career_explorer/index.php?state=HI) the automotive is 12 down on the list and is projected to have 329 new or replacement jobs available in the Automotive Service Technician and Mechanic occupations.

Data collection and analysis of completion of Industry certifications (ASE) at entry level which validates our training methods. Graduates are in such high demand that the Automotive Industry has been employing students while attending UHMC AMT courses and allow them time to attend class while employed. This can effect persistence of our student's graduation rates. I propose a method of Industry apprenticeship where we can partner with different businesses but students are required to graduate as well as work a minimum required time by contract. This would help to satisfy both Industry and College needs. With NATEF accreditation, as a goal this year, it is believed that industry support will be easier attained.

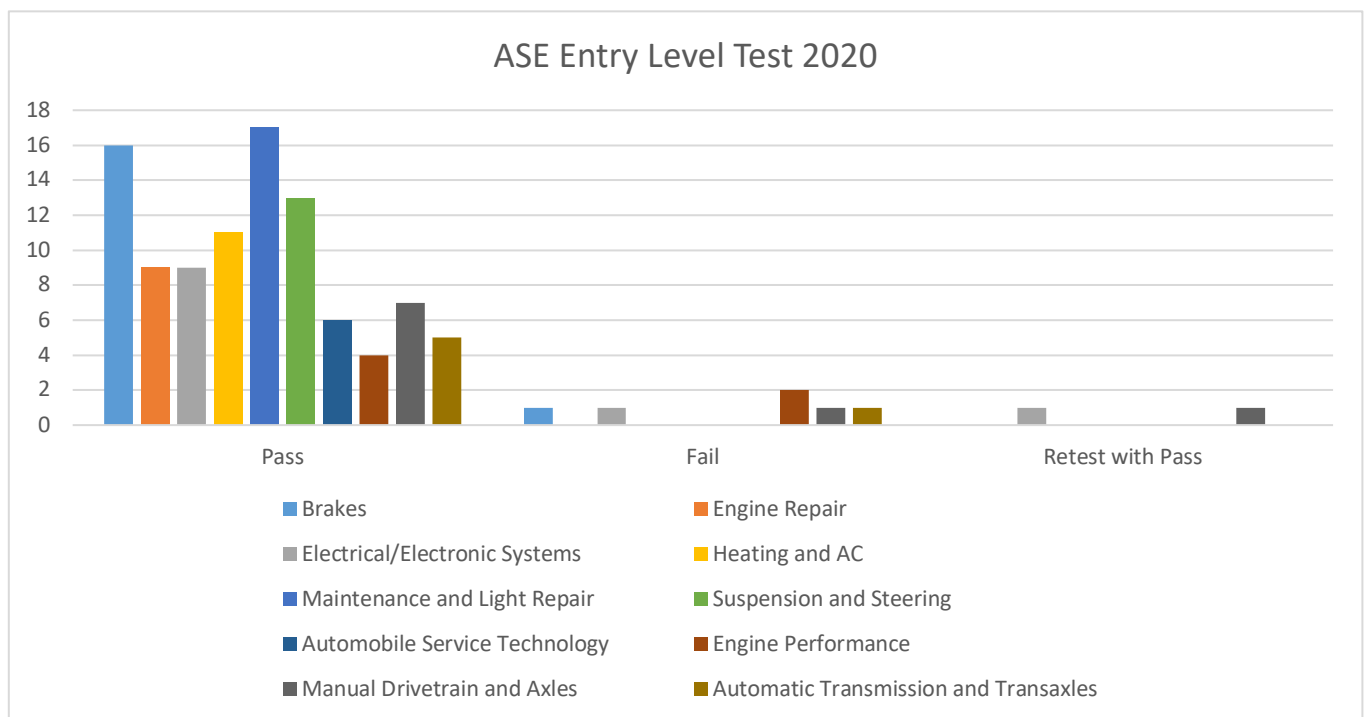
The higher education pathway set forth by the industry certificate and degree pathway clearly shows value. Although some students choose to attain the certificate and not the degree they have moved forward and attained positions in the automotive industry. The students whom have attained the degree have also chosen pathways into the automotive industry however the value of their degree may give them options into the future if chosen by the graduate. Without the associates degree said students may have to return to school to finish the associates degree before moving on to higher education. This also gives the

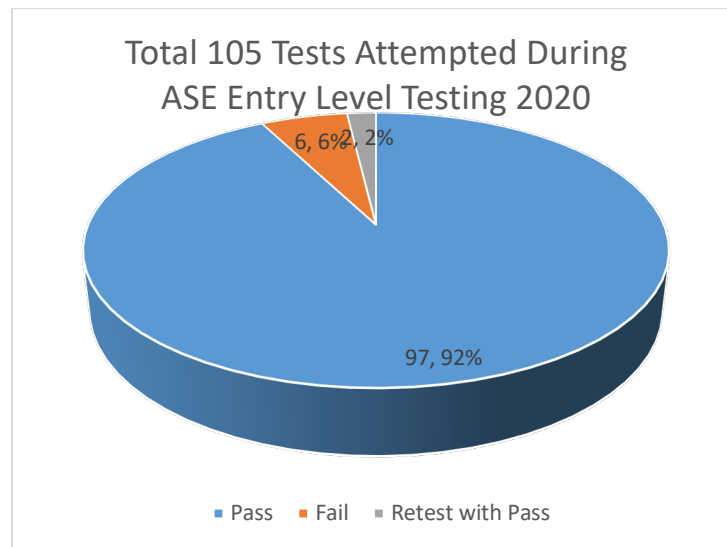
students more value when applying for positions in Industry. The ASE certification process requires one of 2 pathways.

“In addition to passing an **ASE Certification test**, automotive technicians must have two years of on the job training or one year of on the job training and a two-year degree in automotive repair to qualify for **certification**. The tests are challenging. Only two out of every three **test**-takers pass on their first attempt.” By implementing the ASE Entry level testing into the AMT Program, students have shown an increase in interest in staying in the degree pathway and have improved required test taking skills.

<https://www.ase.com/about-ase.aspx#:~:text=In%20addition%20to%20passing%20an,pass%20on%20their%20first%20attempt.>

The ARPD data does not reflect the industry entry level certifications that have been attained this year by students in the AMT program. This data is shown below.





According to the UHMC AMT Program Mission, the program is for attainment of employment in the Automotive Industry. The ARPD data has not reflected the number of students who have attained entry and midlevel positions in the Automotive Industry while in the program or have held positions after graduation with degree or certificates. These numbers are reflected below.



Weaknesses

Some weaknesses of the AMT program are that we have not yet completed the NATEF accreditation process. Although the AMT Program has implemented the standards set forth by NATEF not having this major accreditation may influence the future financial support from the Automotive Industry.

Through the past 3 years the number of majors has declined due to the space in the Automotive Shop. The inadequate space has limited the number of courses that can be taught in a given year with only 1 classroom and limited shop space. While this has occurred the program has focused on high quality graduates being sent into the Automotive Industry by implementing Perkins funds into the program. The Perkins funds have given the program major updates to teaching materials and tools that were previously unavailable. With current map changes to the AMT Program and the expansion into the Auto Body Classroom it can be projected that an increase in full time majors will occur. The classroom and shop limitations have limited advanced course from being offered in the AMT Program because limited space.

Currently unlike other larger states based on the continental United States, Industry infrastructure on the Island of Maui is not currently as supportive of UHMC AMT Program as Industry on Oahu. The major business shop sizes have not grown like the vehicle population. Although the numbers of vehicles have increased on Maui the numbers of automotive positions at major dealerships have not significantly grown. This is reflected in the steady data from the Hawaii CC career explorer program which shows a 3% growth over the year.

Historically AMT students don't take general education classes until after automotive program courses are complete while attaining a degree. This is believed to be attributed to the classes not being of value to the AMT students careers in the Automotive Industry. The program believes that modifications to the course types in general education may encourage more students to fulfill those degree requirements while simultaneously taking Automotive required courses. This would allow more students to enter the program and would increase the graduation completion rates. Another weakness is believed that students should have better computer skills course involved in program including pdf training and time management skills

COVID-19 has effected and will negatively impact the AMT program, industry and the economy this year and the next few years. Although vehicles still need to be repaired customers and businesses will be cautious taking risks through the negative economic forecasts.

Efficiency Indicators: **Cautionary**

#	Effectiveness Indicators	2017 - 18	2018 - 19	2019 - 20	Effectiveness Health
17.	Successful Completion (Equivalent C or Higher)	87%	75%	73%	Cautionary
18.	Withdrawals (Grade = W)	3	4	7	
19.*	Persistence Fall to Spring	72%	67%	80%	
19a.	Persistence Fall to Fall	52%	38%	47%	
20.*	Unduplicated Degrees/Certificates Awarded	15	13	8	
20a.	Degrees Awarded	8	10	7	
20b.	Certificates of Achievement Awarded	9	8	7	
20c.	Advanced Professional Certificates Awarded	0	0	0	
20d.	Other Certificates Awarded	9	5	3	
21.	External Licensing Exams Passed ¹				
22.	Transfers to UH 4-yr	0	1	0	
22a.	Transfers with credential from program	0	1	0	
22b.	Transfers without credential from program	0	0	0	

¹ Campus to include in program analysis if applicable.

The data listed for persistence Fall to Fall has shown a growth over the last 2 years but is still less than 2017-2018. This is because historically when the economy is doing well students choose to work over completion of the degree or certification. Recruitment strategies were also lacking in the 2017-2018 year.

3. Program Student Learning Outcomes or Unit/Service Outcomes

- List of the Program Student Learning Outcomes or Unit/Service Outcomes - Bloom's taxonomy is a well-known description of educational objectives. At the Program Level, outcomes aim for application, analysis, evaluation, and synthesis.
- Program or Unit/Service Outcomes that have been assessed in the year of this Annual Review.
- Assessment Results. Include 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.
- Changes that have been made as a result of the assessment results. Other questions that resulted from the assessment and how you will follow up?
- List of the Program Student Learning Outcomes or Unit/Service Outcomes - Bloom's taxonomy is a well-known description of educational objectives. At the Program Level, outcomes aim for application, analysis, evaluation, and synthesis.

1. The UHMC Automotive Program PLO's are:

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

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

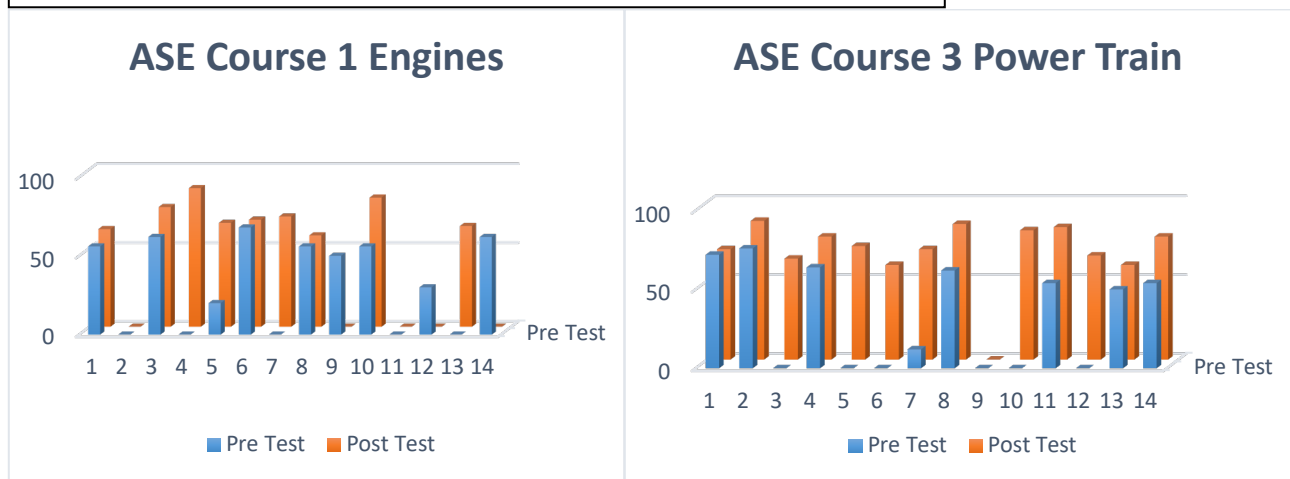
AMT ABRP PLO 3. Demonstrate the ability to identify characteristics and functions of automotive components.

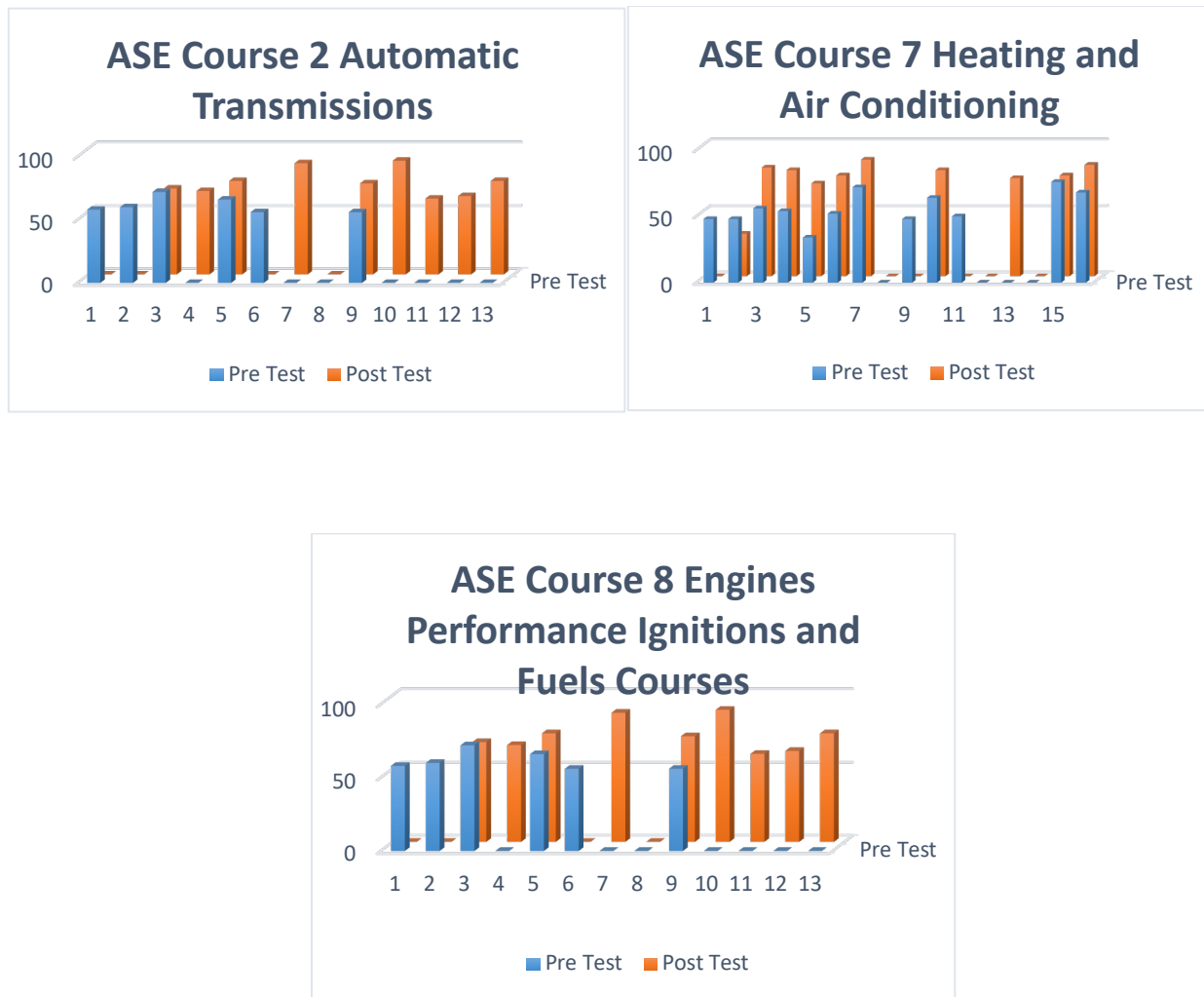
AMT ABRP PLO 4. Demonstrate the ability to diagnose, service, and repair automotive vehicles.

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

The Automotive Technology program used outcomes from PLO 3 and 4 to assess the 2020 year. The graphs below show the data collected from 6 of the courses taught in the AMT program and reflect a growth in student's retention of material throughout the courses.

2020 Data Collected From CDX





4. Action Plan

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.

Address opportunities for re envisioning your program? How does your 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 UHMC AMT Program action plan includes continuation of acquisition of Perkins Grant and other relevant grants for funding to acquire more updated teaching materials and tools for students to participate and learn from. These purchases will help expand into current market related skills such as ADAS (Advanced Drivers Assistance Systems) alignment rack and a Dynamometer. With these new tools students and other community members will be drawn to our college because Maui doesn't currently have them in the aftermarket community. Besides an increase in student revenue these tools can also raise money within the AMT Program to help with budget costs.

With the program coordinator currently working on NATEF Accreditation the plan for the program is positive into the future and will address the following unmet Perkins Indicators with a stronger effort.

NOT MET 1P1, 2P1, 5P1, and 5P2

#	Perkins Indicators	Goal	Actual	Met	
29.	1P1 Technical Skills Attainment	94.75	88.46	Not Met	
30.	2P1 Completion	61	46.15	Not Met	
31.	3P1 Student Retention or Transfer	86	100	Met	
32.	4P1 Student Placement	66.75	68.75	Met	
33.	5P1 Nontraditional Participation	23.75	7.55	Not Met	
34.	5P2 Nontraditional Completion	23.25	0	Not Met	

The program has followed through with the previous year's Program review which is described below.

"We will be working on changing our program map and changing some automotive courses to articulate with other CC's Automotive Programs. We will have to join the Auto-Body (ABRP) program with Automotive Program to help support to overcome the deficiencies that the ABRP Program has. Program Student Learner Outcomes will have to change; Student Learner Outcomes and Course Competencies will be modified. The ABRP method of instruction will have change from self-paced method to Lecture Lab." Through 2019 the UHMC Automotive Program and Auto Body Program both underwent massive curriculum changes which left both housed under the Automotive Technology Program. The Automotive curriculum changes started with the articulation agreement between the other Community College Automotive Programs. The Auto Body program changed from self-paced to Lecture Lab. These changes were for the betterment of both programs because they now share core automotive classes thereby increasing future enrollments in the Automotive Technology Program with specialties in either Auto Body or Automotive.

These goals were met this year and will be used into the following year to improve recruitment and increase workforce pathways for incoming students as they finish the program.

Perkins Indicators

Looking at Perkins 1P1 and 2P1 can show that technical skills attainment and completion rates have not been met. The requirements of Perkins indicator 1P1 is:

<http://uhcc.hawaii.edu/ovpcc/academic/perkins/core-indicators>

"i. **1P1: Technical Skill Attainment**, "Student attainment of challenging career and technical skill proficiencies, including student achievement on technical assessments, that are aligned with industry-recognized standards, if available and appropriate".

B3. Increase by 6% per year degrees/certificates achievement awarded in Science Technology, Engineering, and Math (STEM) fields. B4. Increase by 3% per year the number of individuals enrolled in non-credit certificates programs that lead to occupations where there is a demonstrated state of Hawai'i shortage of qualified workers, and where the average wage is at or above the U.S. average. (\$38,651 YR2006).

Goal 3: Increase the numbers of students, especially Native Hawaiian, low-income, & other under-served students, who complete all courses they take, earning a grade of C or higher."

The 1P1 Perkins Indicator will be addressed by the Program Coordinator seeking industry support. If the Industry that requires trained employees stops cannibalizing students before they finish the Program, with a degree or certificate, these numbers will increase. The only way this can happen is with the cooperation between industry and the college. This change will take time as it is something new to the Island of Maui. It will also take accreditation and support from both the AMT Program and Industry which is currently being worked on.

And the requirements of 2P1 is:

ii. **2P1: Credential, Certificate, or Degree**, "Student attainment of an industry-recognized credential, a certificate, or a degree".

B. Hawaii's Educational Capital - Increase the educational capital of the state by increasing the participation and completion of students, particularly low- income students and those from underserved regions

B4. Increase by 3% per year the number of students who successfully progress and graduate (3,608 degrees by 2015).

Goal 5: Increase the numbers of students, especially Native Hawaiian, low-income, & other under-served students, who earn certificates and/or degrees.

It is unclear how the data shown for Perkins 2P1 has been attained in terms of its definition. By looking at section 2 under Strengths you can see that the students in the UHMC AMT Program were able to achieve ASE entry level certifications which should count as an industry-recognized credential but is not in the ARPD data. Some credit should be counted in this data for this National based certification.

The UHMC AMT Program will address these by increasing attention towards industry relevant members of the Advisory Board. With this change it is hoped that alliances between industry and the college can be formed to create an apprenticeship program where students may earn a degree and begin working. This would involve a contract between the above partners, UH Maui College AMT Program, Industry Partner, and Student.

The Perkins Indicators 5P1 and 5P2 nontraditional student rates are not met. According to the Hawaii Career Explorer site, data collected shows the Automotive Industry in the State of Hawaii employs 2,840 Automotive Technicians. Of those 98% of the Automotive Workforce is Males (2,777) and 2% (62) are Females.

https://uhcc.hawaii.edu/career_explorer/occupations/profile.php?state=HI&soc=49-3023

The UHMC AMT Program plans to implement our new female lecturer to recruit more nontraditional students to our program. However, by looking at the data listed above you can see that only 2% of the industry is employed by female gender. Although the data reflects a low percentage of female to male ratio in the Industry the UHMC AMT Program also plans to address this by continuing recruitment within the different high schools on Maui. Currently there are 2 AMT female majors.

The different strategies that are being implemented involve using social media as well as a YouTube channel. In August attempts were executed toward further recruitment with student interviews that took place on campus.

Auto Body Program

The Auto Body Program (ABRP) has been in a disordered state since the combination of both programs into Automotive Technology. It is believed that with a proper lecturer in place that students will be encouraged more to attend the program which has been put on hold for the remainder of the 2020 year with the loss of enrollment and the previous lecturers' departure. The new Program Coordinator will be recruiting from the D.O.E for the ABRP Courses for Fall 2021 and is actively recruiting for a new lecturer. Hopefully with the use of zoom recruitment at the high schools will be possible for the next year.

5. Resource Implications

Detail any resource requests, including reallocation of existing resources (physical, human, financial)

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.

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

