

DIESEL MECHANICS



2019

ANNUAL REPORT OF PROGRAM DATA



UNIVERSITY of HAWAII®
HAWAII
COMMUNITY COLLEGE

1. Program Description

This program prepares the student for employment as a skilled tradesperson who troubleshoots, maintains, and repairs various types of diesel engines, trucks, tractors, boats, and other heavy equipment.

Program Learning Outcomes (PLOs) for Diesel Mechanics (DISL)

1. Function safely in a heavy equipment shop environment.
2. Demonstrate ability to communicate effectively to gather and convey information.
3. Apply theory and principles for proper diagnosis, repair, and maintenance in the heavy-duty truck equipment industry.
4. Practice the minimum essential mental, physical, and behavioral skills necessary to maintain professional proficiency.
5. Work collaboratively with others as well as independently.

2. Analysis of the Program

Perkins Indicators	Goal	Actual	Met
1P1 Technical Skills Attainment	93	100	Met
2P1 Completion	55	100	Met
3P1 Student Retention or Transfer	81.9	100	Met
4P1 Student Placement	66.25	50	Not Met
5P1 Nontraditional Participation	23.5	4.35	Not Met
5P2 Nontraditional Completion	23	5.26	Not Met

In reviewing the ARPD for AY 2018-19, the Perkins Core Indicators for 1P1 Technical Skills Attainment, 2P1 Completion, and 3P1 Student Retention or Transfer were met.

The Perkins Core indicator 4P1 Student Placement was not met with a score of 50, the goal being 66.25. This indicator has historically not been met due to the CIP code that does not reflect graduates who go to work in the mainland or find employment with smaller businesses that have less than 50 employees, or students that are entrepreneurs that start their own businesses and work for themselves, or work in a family business. As we stated in our last Program Comprehensive 3-Year Review AY 2012-13, AY 2013-14, AY 2014-15, and in our Program Annual Review Report AY 2017-18, we would track our graduates work placement and current employment to show that there are more employment opportunities in the county overall than the ARPD data shows, giving us a more true number and a better Health Call. Our graduates' employment is detailed below.

For the Perkins Core Indicator 5P1 Nontraditional Participation, the goal was 23.50 and the actual was 4.350. The goal for the Perkins Core Indicator 5P2, Nontraditional Completion, was also 23.00 and was also not met with 5.26. The Perkins Core Indicator 5P1 and 5P2 Nontraditional Participation and Nontraditional Completion have always been a challenge and we are currently emphasizing recruitment of non-traditional students by going to job fairs and talking to non-traditional students. We currently have two female students out of a total of 18 students enrolled in the program, or 11%. Both of these students are in their second year, and the instructor is not only confident that they will complete the program successfully, but that they will be successful upon graduation. One female student is already working in the field and has acquired her CDL license in Spring 2019, and the other female student plans to continue her education in the technical trades after graduation. Although we feel current ARPD data does not accurately reflect the current non-traditional participation and completion rates, we are aware that recruiting female students has always been a challenge for the DISL program and have continuously taken steps to change this. We hired a permanent female APT in Fall 2016 and she has been active in encouraging prospective non-traditional students to visit our booth/display, to ask questions or to examine diesel engines on the various outings that do to promote our program. The AY 18-19 was the last year that our APT will work for us because she has gone to work in the trades, but we are hopeful that we will be able to replace her with another APT who is equally energetic about the recruitment of female students.

Our demand indicator shows the program to be "Healthy" with only 10 new and replacement positions in the county. As we stated in our last Program Comprehensive 3-Year Review AY 2012-13, AY 2013-14, AY 2014-15, and in our Program Annual Review Report AY 2017-18, we would track our graduates work placement and current employment to show that there are more employment opportunities in the county overall than the ARPD data shows, giving us a more true number and a better Health Call. In tracking our previous graduates of SP 2018, we found that that there were 14 jobs available for our students locally. Seven of our graduates went to work locally for diesel mechanic shops on our island, two students took diesel mechanic jobs that are on the mainland, one student is continuing his education in the trades at HawCC, and three changed their career choices and decided to work in mechanic or auto body positions locally. One of our students was injured and currently is unable to work. The remaining four students have not confirmed their employment status. During AY 18-19, the instructor was contacted by numerous businesses who are hiring more than 10 industrial and maintenance mechanics, such as Hawaii Linen. In spring 2020, the instructor will list the employment positions of the newly graduated students in the 2019-2020 Annual Report.

The efficiency indicator for DISL is "Healthy" and the program has a 97.4% fill rate. The FTE BOR Appointed Faculty is 1 and Majors to FTE BOR Appointed Faculty is 20.

In a program with a mandated enrollment capacity, the second method on the rubric is used to determine the health score. According to the rubric, if the *Majors to FTE BOR Appointed Faculty is 15-35, the program is healthy."

The second way to determine the health call for mandated enrollment capacity programs is if the capacity is 75% or better. We forecast that the enrollment will continue to be high and our fill rate will stay above 75% and the program will continue to remain "Healthy" for the efficiency indicator.

The effectiveness score of DIMC has been rated "Cautionary." In comparing our health score of 97% to that of last year's completion rate at 100%, the percentage has decreased 3%. When comparing "Persistence Fall to Spring" the percentage increased from 88% to 90%, and when comparing "Persistence from Fall to Fall," the percentage decreased 1%. On line *20, "Unduplicated Degrees/Certificates Awarded," the data shows degrees awarded was 2 instead of 19. This is a two-year program and every other year we will not see graduates unless they are finishing related courses late. The program will continue to be rated "cautionary" every other year even when it is actually "healthy" because it is a two-year program. The number of degrees awarded has gone up significantly in the past four years, (see line 20 under Effectiveness Indicator). The instructor has tracked the students' workload and courses that students take from the first semester they began the program in order to ensure that there was no confusion as to graduation requirements. Although the effectiveness score of DISL has been rated "Cautionary" because it is a two-year program, the program has zero withdraws and 100% completion with "C" or better in the program's courses for AY 18-19. We will continue to track our graduates' work placement and current employment as well as their continuing education and/or other endeavors.

The overall health of the program is rated as "Healthy" and the program shares that conclusion. We believe that the demand indicator is flawed and we know that there are more than ten jobs available to our graduates locally. The efficiency indicator is "healthy," and the effectiveness indicator is cautionary although we believe it to be healthy. The effectiveness indicator was deemed "cautionary" due to not having graduates. The Diesel Mechanic Program is a two-year program and students will continue to graduate every other year, giving the program a "cautionary" score every other year.

The DIMC program class size has continued to be at full capacity and there is a consistent waitlist to get into the program.

The resignation of our permanent APT in the Spring 2019 was a set-back. This position was an asset to the program and provided assistance and support with lesson planning,

organization of shop and administrative duties and over all funding such as community outreach and Perkins Grants. The program will most likely feel the loss of this position immediately as the time constraints to perform these duties will be the sole responsibility of the instructor.

Prior Year's Action Plan

1. Acquiring up-to-date and green technologies / Funding

It has been the instructor's goal to acquire up-to-date and green equipment technologies so that we maintain a reputation for graduating capable students and fulfill the need for skilled mechanics. The program's progress in AY 18-19 proved to be a positive step in supporting this goal. New equipment was purchased or donated. It is the consensus of the program's Advisory Council that we should continue to research green technologies and new technologies and incorporate them into our curriculum. It is our goal to produce graduates who are familiar with and embrace these new technologies because our industry is constantly changing.

Newly acquired/donated equipment in AY 18-19 include a donated 3456 CAT Gen Set engine, purchased upgrades for the 3456 engine as well as the funding for the trainer/curriculum planner for the engine, a donated Cummins ISX engine from Edwin DeLuz Trucking and Gravel LLC, a donated heavy duty OTC 1,000 lb. drive line jack with differential adaptor from Toledo's Repair, \$2,500 monetary donation from Puna Rock, \$10,000 monetary donation from Hawthorne Caterpillar, and a donation of labor from Sam Gray of Precision Fuel Injection on O'ahu to do \$6,000 worth of injector rebuilds for the program. An electrical trainer was also borrowed from the MWIM program to physically demonstrate electrical components for students' use in the lab. The instructor was also able to purchase a 1,000 volt/600amp Fluke Multi-meter, an infrared gun and other hand tools with the monetary donation from Hawthorne Caterpillar. Three tuition grants were also given to the program so that three of the DISL students were able to attend the CDL training course through EDvance in AY 18-19. This grant made it possible for our students to go through the CDL program, two of whom currently have their CDL licenses. One student is graduating in Spring 2020 and the other student is a previous graduate. These purchases, donations, grants and borrowed training equipment all support the instructor's goal to help produce successful skilled graduates who are enthusiastic about the on-going learning required in their line of work and are able to embrace new technologies and change.

2. C3456 Caterpillar Gen Set engine upgrades, installation and training

The program is pleased to report that the Perkins Grant funding to purchase upgrades for the donated Caterpillar engine, as well as the hiring of a trainer and curriculum developer,

were approved Spring 2019. The trainer was hired to teach a few modules in the DIMC 120 Introduction to Diesel Engines Fall and Spring 2019 and 2020. (see under Action Plan below).

3. Continue to work with the Advisory Council and industry to develop an apprenticeship for our students

The Diesel Mechanic Program met with Hawthorne Caterpillar continually in AY 18-19 to discuss apprenticeships for our students. There is more research needed, curriculum needs to align with the curriculum of Hawthorne Caterpillar's training modules, and more discussion is needed. The program had hoped that if curriculum was aligned during AY 18-19, that possible apprenticeships could start as early as Spring 2020. This alignment was not finished due to changes that Hawthorne Caterpillar made with personnel and losing the key navigators who were working on this project, the program's APT and the Development Manager for Hawthorne Caterpillar, who were working together with the DISL instructor to complete the curriculum alignments. We anticipate that the alignments will be completed in AY 19-20 and apprenticeships could start as early as Fall 2021.

4. Model Home Project

The program continues to assist the Model Homes Project. In AY 16-17, we did repairs on various machinery used for the project, such as the tractor, backhoe and excavator. In AY 18-19, the program assisted with hydraulics and engine maintenance. The Model Homes Project currently uses an older excavator and the upkeep, which is continuous, serves as a great learning tool for our students. We look forward to continually assisting the Model Homes Project.

5. Scheduled Driving Simulator time for Diesel Mechanic Students

The need for CDL drivers on Big Island and the mainland is ongoing. The program has now witnessed three classes graduate from the HawCC EDvance CDL program and has been able to have our students use the driving simulator throughout the semester with the help of our APT. The driving simulator has allowed students' knowledge of the mechanics of a truck to be taken to another level by driving the truck and seeing, hearing, and feeling the mechanics in motion. Incorporating the simulated driving of a diesel truck into our curriculum has allowed our students to understand more fully the importance of their mechanic work. We do not anticipate the same amount of time being scheduled for the use of the driving simulator in AY 2019-20 due to lack of personnel. With the loss of our APT, there will be time constraints; scheduling driving time will fall on the instructor solely.

6. Parts Washer

The Parts Washer installation has been time consuming and has required some assistance from the Auto Mechanics Technologies and Machine Welding & Industrial Mechanics programs to assemble and to rearrange the DISL shop for safe accessibility to the Washer. The anticipated use of the Parts Washer was expected to begin in AY 18-19. This goal was not completely achieved due to time constraints, but the instructor hopes to have the Parts Washer working in full capacity by Fall 2020 when DIMC 120, Introduction to Engines, is taught.

7. Internships

The Diesel Mechanic Program has been working with Waiakea High School to develop internships for the high school students. Communication with the high school is on-going and the internships could start as early as Fall 2020. The high school students would be able to shadow our HawCC students for a few days out of the week for a few hours in order to show them what college is all about, and introduce them to diesel mechanics early. The high school students could possibly earn college credit toward graduating from HawCC. We hope to start an internship program in the Spring 2020 semester.

3. Program Student Learning Outcomes

a) List of the Program Student Learning Outcomes

Program Learning Outcomes (PLOs) for Diesel Mechanics (DISL)

1. Function safely in a heavy equipment shop environment.
2. Demonstrate ability to communicate effectively to gather and convey information.
3. Apply theory and principles for proper diagnosis, repair, and maintenance in the heavy-duty truck equipment industry.
4. Practice the minimum essential mental, physical, and behavioral skills necessary to maintain professional proficiency.
5. Work collaboratively with others as well as independently.

b) Program Student Learning Outcomes that have been assessed in the year of the Annual Review of Program Data.

The program had completed its full five-year cycle of Initial and Closing-the-Loop assessments for all DISL/DIMC courses in SP 2018, therefore no courses

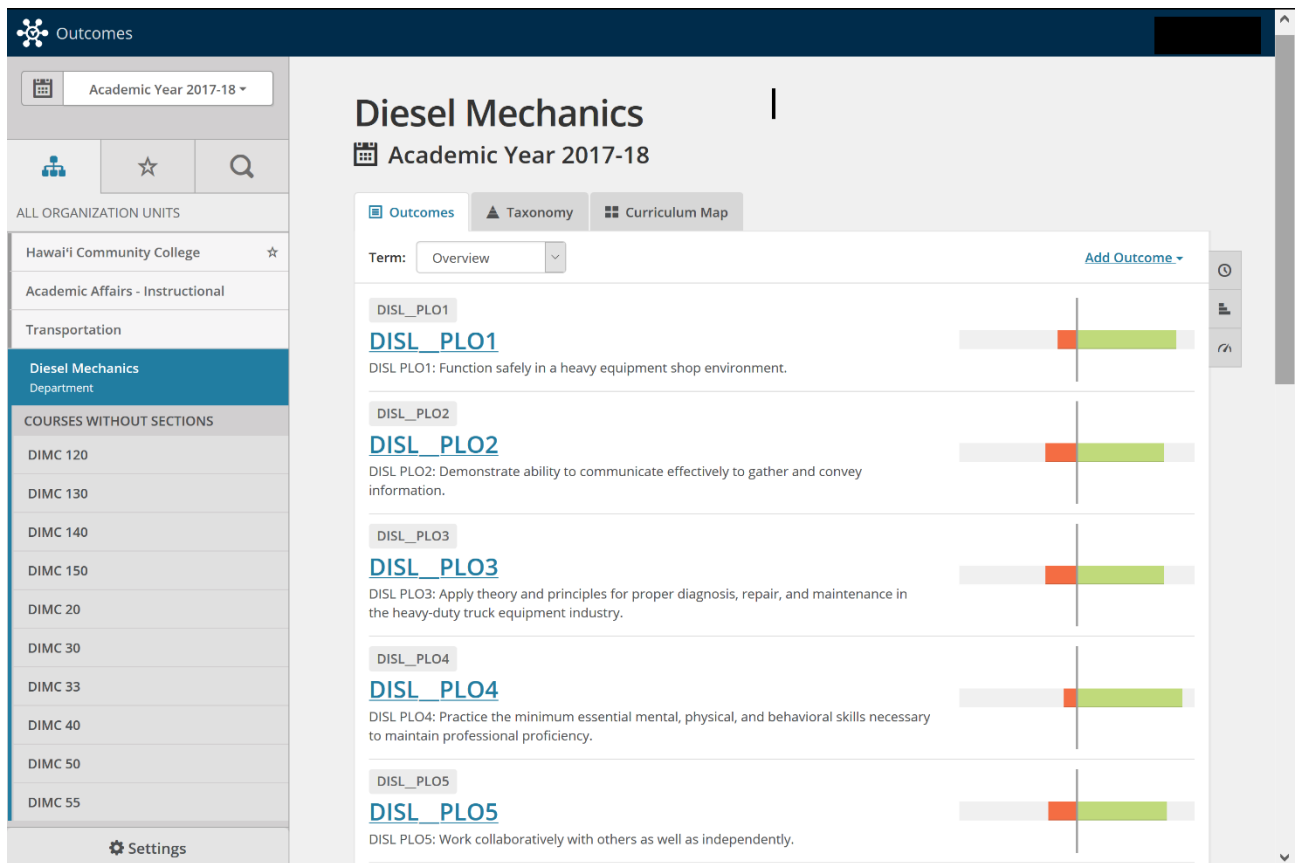
or PLOs were assessed in AY18-19. The program's next assessment cycle will commence in Fall 2019.

c) Assessment Results

The data graph below shows the program's AY17-18 PLO assessment results for Closing-the-Loop assessments for all second-year courses. This represents the learning achievements of our last cohort of graduates. The changes noted in part "d" below are based on these and previous years' results.

DISL Program AY17-18 Assessment Results

Dark Green = Exceeds // Light Green = Meets // Orange = Partly Meets // Red = Does not Meet



d) Changes that have been made as a result of the assessments.

The program has been working closely with the Institutional Assessment Coordinator to re-write and edit all assessments and rubrics. The assessment results, successes and

challenges are being addressed. In the last four years, CLOs have been re-written and re-aligned to the re-written PLOs and courses have been re-named and re-numbered. The program will continue to go to assessment workshops and work with the Institutional Assessment Coordinator so that the results of the assessments are clear and accurate.

Changes were made to the overall teaching pedagogy in AY 18-19 due to assessment results from the two previous years that showed that students have a more hands-on initial approach to learning. The assessments showed that students were more successful in the shop and in lab assessments than they were in the classroom. The instructor used these assessment results and, with the assistance of the Institutional Assessment Coordinator, was able to evaluate and change the initial approach to lessons. Please see the "Adjustments made in teaching pedagogy" in the Action Plan below.

There are no assessments due until Fall 2019 and the program is currently up-to-date with all assessments that have been done over the last four years.

4. Action Plan

1. 3456 Caterpillar Gen Set engine upgrades

The 3456 Caterpillar Gen Set engine upgrades were approved with a Perkins Grant in Spring 2019. Parts are hoped to be received and installed by Fall 2019. Curriculum and lesson plans will be developed by the trainer and the approved training on the new components and Gen Set engine will all take place in the Fall 2019.

The 3456 Caterpillar Gen Set engine is one of the most common and modern engines and is necessary for the program in order to teach students with a training tool that is up-to-date so that students are current on the latest innovative technology. In receiving the donated engine, at the current fair market value of approximately \$35,000, and the necessary components for some of the missing parts with the Perkins Grant money, which was \$15,000 including the salary of the trainer and the curriculum that the trainer will provide, the program is addressing the need for up-to-date technologies that will support technical skills acquired, 1P1, retention and completion 2P1 and 3P1, placement 4P1 and 5P1 and 5P2, non-traditional participation and completion. Students will acquire skills on the latest technologies being used in industry and therefore, they will increase motivation to finish the program and as a result, a better chance at employment or job placement. Newer and relevant technologies support non-traditional participation as well. Female students are drawn to a program that offers an education which embraces mechanical challenges that are diagnosed with technology and mental competency.

2. Job Fairs and Career Days for Elementary Schools as well as High Schools

The Diesel Program is continuing to go to high school career day and job fairs, and with the help of the APT, has recently reached out to elementary schools as well. HAAS Elementary Charter School was first contacted, and the APT for the Diesel Mechanic Program went to the school and visited two classrooms to talk about the diesel and welding programs at HCC. We have also visited Keonepoko Elementary School in Fall 2018. We plan to do more outreach to elementary schools in the next year to discuss possible career day dates and reaching out to female students and encouraging non-traditional participation in our visits.

3. Adjustments made in teaching pedagogy

Adjustments made in teaching pedagogy in AY 18-19 to a more hands-on initial approach were successful and the instructor is very enthusiastic about the restructuring of the lecture time during this year. In the past, the lecture and note taking were done before the demonstration of the use of diagnostic equipment and tools. After multiple discussions with colleagues, diesel mechanics, the Advisory Council, and a retired diesel mechanic instructor from Palomar Junior College in Escondido, California, the instructor has decided that the introduction to the diagnostic equipment and some of the tools will be done first and before the lecture takes place. Students will participate in the hands-on demonstrations with the instructor, then return to the classroom for lecture and note taking. This "hands-on learning first" approach was implemented in AY 18-19. In the beginning of the Fall 2018 semester, the instructor used multi-meters, electrical testing equipment, voltage drop testers, amp readers and electrical training boards to demonstrate lab tasks that were done before giving the lectures on electrical theory. The instructor felt that by switching this around, the students will have a more concrete understanding of the curriculum before learning the theory behind it and he plans to integrate this for every course.

Another example was taking students to Hawthorne Caterpillar in the first couple of weeks of the first semester at the start of the new cohort. Allowing students to see, feel, hear, and experience an actual operating local diesel mechanic shop was successful and gave students a better idea of the mechanic work that was expected of them. The instructor has found that most of the students in the program are hands-on learners and prefer tangible instruction to theory. In teaching the hands-on lessons first, the instructor feels the students became more motivated to learn the classroom lessons, which involve lecture, note taking, and reading and studying the textbooks and manuals. Results of the

integration of this approach showed it is a success. We believe this will be demonstrated in our upcoming AY19-20 assessment results.

4. Continue to work with the Advisory Council and industry to develop an apprenticeship for our students

The Diesel Mechanic Program met with Hawthorne Caterpillar continually in AY 18-19 to discuss apprenticeships for our students. There is more research needed, curriculum needs to align with the curriculum of Hawthorne Caterpillar's training modules, and more discussion is needed. The program hopes that if curriculum is aligned during AY 19-20, then possible apprenticeships could start as early as Spring 2020.

5. PROFESSIONAL DEVELOPMENT:

The instructor plans to attend future Northwest Diesel Instructor Conferences. The instructor was able to attend the Northwest Diesel Instructor Conference in the state of Washington, April 18-20, 2018. This conference is a two-day training that gives instructors a chance to gain insight into the future of the technologies we teach and share experiences with other educators. Funding was provided by the Hawthorne Caterpillar monetary donation. The instructor finds the conference to be insightful and in alignment with the goals of the program and the mission of the College.

5. Resource Implications

Search:

BUDGET:

The operating budget has not increased since the original formula was developed and implemented in the late 1990's. All of our resource costs have increased with inflation over the years but we still have to manage with the same budget.

It is safe to say that a typical diesel part from the 1990s has increased in price at least 50% when compared to today's prices. The program is always creatively looking for ways to acquire monies such as donations. We are also mindful of what we do not use and try to refurbish and recycle parts as often as possible.

2019 Hawai'i Community College ARPD
Program: DIESEL MECHANICS

There are currently no imminent budget requests at this time except that the program is hopeful that the College will replace the APT who left the program at the end of AY 18-19.