

**ANNUAL**  
REPORT OF PROGRAM DATA

**2022**

UNIVERSITY of HAWAI'I

**HAWAI'I**  
COMMUNITY COLLEGE



**July 1, 2021 through June 30, 2022**

**Fire Science**

## 1. Program or Unit Description

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### Program or Unit Mission or Purpose Statement

The Fire Science Program prepares individuals with the academic knowledge for entry employment in the Fire Service field as well as meets the needs of in-service professionals.

Upon completion of this program, students will have the knowledge to prepare for a career with federal, state, and local fire and emergency service agencies, with courses in Structural Fire Fighting, Wildland Fire Suppression, Hazardous Materials Incidents, Fire Prevention and Investigation, Emergency Medical Technician, Fire Management and Administration, and Incident Command System.

After earning the Associate in Science (A.S.) Degree, students have the opportunity to pursue a Bachelor's Degree in Fire Administration from Eastern Oregon University through distance learning.

Health and physical requirements vary with different employers in the Fire Service field, so prospective students should seek advice before enrolling.

### What is the target student or service population?

The program services three populations.

1. Students out of high school who are looking for a career in the fire service.
2. Veterans who are also looking for employment in the fire service.
3. In-house professionals who are looking for education that will enhance their promotion opportunities.

## 2. Analysis of the Program/Unit

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College: **Hawai'i Community College**

Program: **Fire Science**

Status: Report Complete

**Program Quantitative Indicators**



**Overall Program Health: Cautionary**

**Workforce Alignment:** Classification of Instructional Programs (CIP) -to- Standard Occupational Classification (SOC)

**Fire Science**

**CIP Code = 43.0203**

33-2021 - Fire Inspectors and Investigators33-2011 - Firefighters33-2022 - Forest Fire Inspectors and Prevention

Specialists

2022 Hawai'i Community College ARPD  
Fire Science

#	Demand Indicators	2019 - 20	2020 - 21	2021 - 22
1.	New & Replacement Positions (State)	163	167	167
2.*	New & Replacement Positions (County Prorated)	35	35	35
3.	Number of Majors	118	125	98
3a.	Number of Majors Native Hawaiian	67	65	55
3b.	Fall Full-Time	59%	58%	56%
3c.	Fall Part-Time	41%	42%	44%
3d.	Fall Part-Time who are Full-Time in System	3%	1%	2%
3e.	Spring Full-Time	42%	34%	40%
3f.	Spring Part-Time	58%	66%	60%
3g.	Spring Part-Time who are Full-Time in System	1%	4%	2%
4.	SSH Program Majors in Program Classes	1,521	1,439	1,169
5.	SSH Non-Majors in Program Classes	20	44	10
6.	SSH in All Program Classes	1,541	1,483	1,179
7.	FTE Enrollment in Program Classes	51	49	39
8.	Total Number of Classes Taught	26	29	27
<b>Demand Health</b>		<b>Healthy</b>		

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

#	Efficiency Indicators	2019 - 20	2020 - 21	2021 - 22
9.	Average Class Size	20	17	14
10.*	Fill Rate	75.7%	82.3%	68.1%
11.	FTE BOR Appointed Faculty	1	1	1
12.*	Majors to FTE BOR Appointed Faculty	118	125	98
13.	Majors to Analytic FTE Faculty	39	42	33
13a.	Analytic FTE Faculty	3	3	3
14.	Overall Program Expenditures	\$149,277	\$159,603	\$225,440
14a.	General Funded Budget Allocation	\$145,537	\$158,355	\$222,502
14b.	Special/Federal Budget Allocation	0	0	0
14c.	Tuition and Fees	\$3,740	\$1,248	\$2,938
15.	Cost per SSH	\$97	\$108	\$191
16.	Number of Low-Enrolled (<10) Classes	2	5	11

**Efficiency Health**

**Progressing**

#	Effectiveness Indicators	2019 - 20	2020 - 21	2021 - 22
17.	Successful Completion (Equivalent C or Higher)	90%	84%	83%
18.	Withdrawals (Grade = W)	8	13	6
19.*	Persistence Fall to Spring	78%	70%	67%
19a.	Persistence Fall to Fall	58%	46%	48%
20.*	Unduplicated Degrees/Certificates Awarded	40	46	26
20a.	Degrees Awarded	17	25	21
20b.	Certificates of Achievement Awarded	23	33	16
20c.	Advanced Professional Certificates Awarded	0	0	0

2022 Hawai'i Community College ARPD  
Fire Science

20d.	Other Certificates Awarded	0	0	0
21.	External Licensing Exams Passed <sup>1</sup>			
22.	Transfers to UH 4-yr	2	1	3
22a.	Transfers with credential from program	1	0	1
22b.	Transfers without credential from program	1	1	2
<b>Effectiveness Health</b>		<b>Progressing</b>		

<sup>1</sup> Campus to include in program analysis if applicable.

#	Distance Indicators	2019 - 20	2020 - 21	2021 - 22	
23.	Number of Distance Education Classes Taught	0	8	8	
24.	Enrollments Distance Education Classes	0	209	176	
25.	Fill Rate	0%	76%	79%	
26.	Successful Completion (Equivalent C or Higher)	0%	80%	85%	
27.	Withdrawals (Grade = W)	0	7	2	
28.	Persistence (Fall to Spring Not Limited to Distance Education)	0%	87%	78%	
#	Perkins Indicators	Goal	Actual	Met	
29.	1P1 Postsecondary Placement	33	91.89	Met	
30.	2P1 Earned Recognized Credential	33	84.06	Met	
31.	3P1 Nontraditional Program Concentration	N/A	N/A	N/A	
32.	Placeholder - intentionally blank	N/A	N/A	N/A	
33.	Placeholder - intentionally blank	N/A	N/A	N/A	
34.	Placeholder - intentionally blank	N/A	0	N/A	
#	Performance Indicators	2019 - 20	2020 - 21	2021 - 22	
35.	Number of Degrees and Certificates	40	58	37	
36.	Number of Degrees and Certificates Native Hawaiian	30	25	14	
37.	Number of Degrees and Certificates STEM	Not STEM	Not STEM	Not STEM	
38.	Number of Pell Recipients <sup>1</sup>	16	18	14	
39.	Number of Transfers to UH 4-yr	2	1	3	

\* Used in Rubric to determine Health Indicator

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### Demand: Healthy

The FS program has 98 majors with 55 Native Hawaiians enrolled. There is slight decrease in enrollment numbers, and I believe this is due to Covid and the low unemployment rate. There will always be a need for first responders who protect the population from fire and provide Emergency Medical Services. The demand will remain healthy.

### Efficiency: Progressing

- The BOR Appointed Faculty is 1.
- The Analytic FTE Faculty is 3.
- There was a decline in Average Class Size to 14. I attribute this to Covid and a low unemployment rate.
- There was an increase in the Number of Low-Enrolled classes due to FS classes at Palamanui Campus. There were no low-enrolled classes at the Manono Campus.

### Effectiveness: Progressing

Item 20A: The number of degrees and certificates awarded – 37. This accounts for approximately 20% of all AS degrees awarded by the college annually.

The Fire Science program prepares students for a career with the various federal, state and local fire service agencies. The program also provides training for in-house employees, and private companies. A career as a firefighter is well rewarding with high pay and benefits. Firefighters serve as first responders and provide an essential service to the population of the Island of Hawai'i such as: providing emergency medical services, fighting fires, protecting property, responding to hazardous material incidents, providing search and rescue on land and sea, and protecting the natural and cultural resources of Hawai'i.

The demand for a well-trained professional fire department will continue. The population of the Island will continue to grow, and approximately 80% of all fire calls are Emergency Medical Services (EMS) related. Due to climate change, we are now experiencing increased fire activity such as the Mana Rd. Fire which is the largest fire in the State of Hawai'i history (40,000 acres). A few years ago, the voters of Hawai'i Island approved the change in the County Charter that requires the Hawai'i Fire Department's Fire Chief to have the experience and education of a Bachelor of Science degree or equivalent. The Fire Commission recently hired Mr. Kazuo Todd as Fire Chief who has as a BS degree in Fire Administration from Colorado State University.

### Program Strengths:

- Consistent high enrollment with a three-year average of 113 students. Currently we have 98 FS majors.
- The FS program accounts for approximately 20% of all the AS degrees awarded annually by the college (for AY 2019-22, 135 degrees and certificates were awarded).
- Due to high enrollment and low administrative costs (98 majors to 1 BOR appointed faculty), the FS program generates a dollar surplus every AY.
- Number of Native Hawaiian majors is 62 per semester over a three-year average, with a current enrollment of 55 students.
- Successful completion (C or higher) for a three-year average is 86%.

The following areas are where the FS program needs support from the College Administration.

- The Honolulu Fire Dept. donated a \$250,000.00 fire engine for students to have a hands-on experience. The engine has been parked in the open and exposed to the elements and is now slowly deteriorating. The College Administration needs to decide if they are going to provide a covered parking space for the engine or sell the engine.

Perkins Indicators

	Goal	Actual	Met
1P1 Postsecondary Placement	33	91.89	Met
2P1 Earned Recognized Credential	33	84.06	Met

Significant Program or Unit Actions

- I plan to continue assessing ways to improve the program.
- With Perkins funding, I purchased two \$50,000.00 Virtual Reality FLAIM fire suppression programs for both campuses. This allowed students in our Fire 101Lab course to experience firefighting without placing students in a live fire situation.
- I submitted a proposal to modify the FS curriculum by deleting EMT as a requirement for the FS AS degree and have EMT as a stand-alone Certificate of Competence degree. This would allow individuals to take EMT without having to take FS classes as lifeguards, park rangers, etc.
- We have a signed Articulation Agreement with Eastern Oregon University which allows our students who graduate the opportunity to obtain a Bachelor of Science Degree in Fire Administration through distance learning.
- With \$62,000.00 in HEERF funding, I purchased equipment for our Emergency Medical Technician (EMT) classes for the Manono and Palamanui Campuses.

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

- a) List all Program Learning Outcomes (PLOs) or Unit/Service Outcomes (UOs) and their alignment to the College's Institutional Learning Outcomes (ILOs).

<b>Program Learning Outcomes</b>	<b>ILO Alignment</b>
PLO 1: Meet the minimum academic training requirements of the National Fire Protection Association's (NFPA) Standard 1001, Standard for Fire Fighter Professional Qualifications (Fire Fighter I).	ILOs 1, 2, 3, 6
PLO 2: Perform as fully qualified wildland firefighters (FFT2) in accordance with National Wildfire Coordinating Group PMS 310-1 standards.	ILOs 1, 2, 3, 6
PLO 3: Utilize the Incident Command System to manage a wide variety of planned and un-planned incidents.	ILOs 1, 2, 3
PLO 4: Demonstrate knowledge of modern fire service strategies, tactics, and management for both structural and wildland fire incidents.	ILOs 1, 2, 3, 6
PLO 5: Meet the requirements for National Fire Protection Association's (NFPA) 472, Standard for Professional Competence of Responders to Hazardous Materials Incidents for the Awareness and Operational Levels.	ILOs 2, 3
PLO 6: Apply the principles of interpersonal communication, cooperative teamwork, supervision, and management for leadership in the fire service.	ILOs 1, 3
PLO 7: Apply theoretical principles of the chemistry of fire and hydraulics to solve water supply problems.	ILO 2
PLO 8: Take the National Registry Examination for certification as an Emergency Medical Technician.	ILOs 1, 2, 3, 5

- b) List the PLOs or UOs that have been assessed in the year of this Review. Instructional programs must list the courses that have been assessed in the year of this Review and identify the alignment(s) of Course Learning Outcomes (CLOs) to the PLOs. If no assessment was conducted in the year of this Review, provide an explanation and schedule of upcoming planned assessments.

<b>FIRE 157 - INTERMEDIATE WILDLAND FIRE BEHAVIOR</b>	"CLO 1: Develop an Intermediate knowledge of the parameters that effect wildland fire behavior."	PLOs 2, 4, 6
	"CLO 2: Be able to take weather observations in the field and analyze the data."	PLO2
	"CLO 3: Be able to use FLAME GUIDE to predict wildland fire behavior."	PLO 2

<b>FIRE 207 - HAZARDOUS MATERIALS AWARENESS AND OPERATIONS</b>	"CLO 1: Identify hazardous materials from a variety of sources and understand their properties and behavior"	PLO 5
	"CLO 2: Size up, analyze and develop the appropriate response to HAZMAT incident at the Operations Levels"	PLO 5
	"CLO 3: Establish a perimeter, decontamination entry and exit points, and protect the public at a HAZMAT incident"	PLO 5
	"CLO 4: Articulate the limitations of Personal Protective Equipment, decontamination procedures, and use of various air monitoring equipment."	PLO 5
	"CLO 5: Preserve evidence at a variety of illicit laboratories and explosive devices"	PLO 5

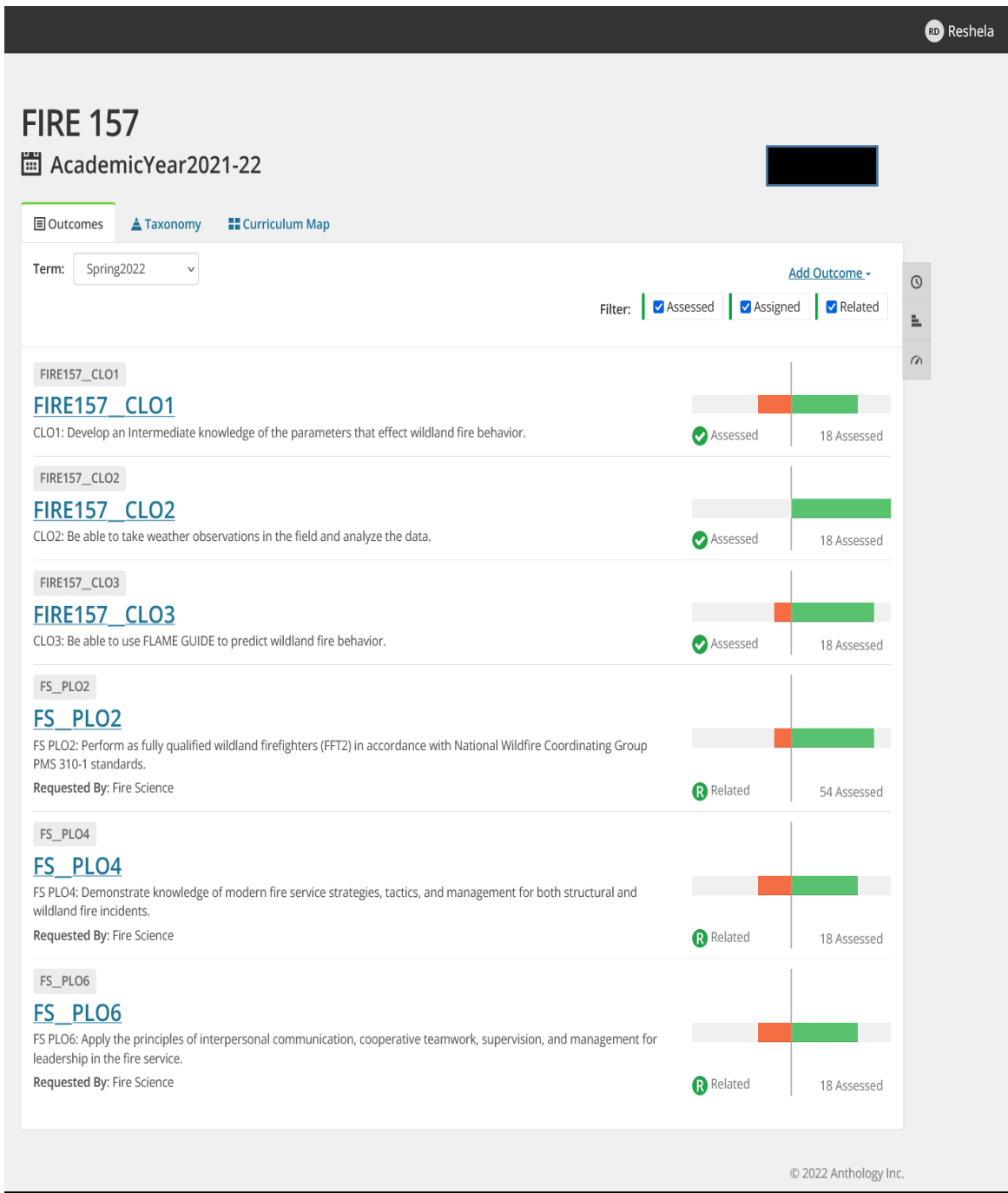


- c) Assessment Results: provide a detailed discussion of assessment results at the program (PLO) and course (CLO), or unit (UO), levels in the year of this Review. Provide an analysis of how these results reflect the strengths and challenges of the program or unit in meetings its Outcomes.

**FIRE SCIENCE Program  
Spring 2022 Assessment Results Key**

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

**FIRE 157, CLOSING THE LOOP, SPRING 2022**



All students are expected to achieve a 70% or higher.

CLO #1: 72% of students met or exceeded

CLO #2: 100% of students met or exceeded

CLO #3: 98% of students met or exceeded

CLO #1 indicates students need to have a better understanding of the parameters that affect wildland fire behavior.

CLO #2 indicates students have an understanding of weather observations in the field, and able to analyze the data.

CLO #3 indicates students understand the FLAME Guide and how it is used.

Analysis: Scores indicate there is room for improvement. CLO1: needs more emphasis. I taught the entire course via Distance Learning. When in the classroom, I can observe the student's facial expressions and body language. I believe this is an added tool to improve my teaching skills.

Strengths: This is a very technical course that requires an understanding of how fuels, topography, and weather influence wildland fire behavior which requires many disciplines. The challenge is how to deliver a very complex subject matter in a way students can understand. This has been a challenging course for students in the past, and not teaching face-to-face makes this more difficult.

### FIRE 207, INITIAL, SPRING 2022

**FIRE 207**  
AcademicYear2021-22

Outcomes Taxonomy Curriculum Map

Term: Spring2022

Filter:  Assessed  Assigned  Related

Outcome ID	Outcome Description	Status	Assessed Count
FIRE207_CLO1	CLO1: Identify hazardous materials from a variety of sources and understand their properties and behavior	Assessed	14 Assessed
FIRE207_CLO2	CLO2: Size up, analyze and develop the appropriate response to HAZMAT incident at the Operations Levels	Assessed	14 Assessed
FIRE207_CLO3	CLO3: Establish a perimeter, decontamination entry and exit points, and protect the public at a HAZMAT incident	Assessed	14 Assessed
FIRE207_CLO4	CLO4: Articulate the limitations of Personal Protective Equipment, decontamination procedures, and use of various air monitoring equipment.	Related	14 Assessed
FIRE207_CLO5	CLO5: Preserve evidence at a variety of illicit laboratories and explosive devices	Related	14 Assessed
FS_PLO5	FS PLO5: Meet the requirements for National Fire Protection Association's (NFPA) 472, Standard for Professional Competence of Responders to Hazardous... Requested By: Fire Science	Related	42 Assessed

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All students are expected to achieve a 70% or higher.

CLO #1: 86% of students met or exceeded

CLO #2: 100% of students met or exceeded

CLO #3: 100% of students met or exceeded

CLO #1 indicates students need to have a better understanding of how to use the Emergency Response Guidebook (ERG).

CLO #2 indicates students have an understanding of size up and the appropriate response to a HAZMAT incident.

CLO #3 indicates students have the knowledge to protect the public.

Strengths: Students have an understanding of the role, limitations, and operational responsibilities of responding to a HAZMAT incident at the Operations Level. Following the national standards works well in teaching our students.

Weaknesses: I will spend more time explaining the use of the ERG, and have the students perform an exercise using the ERG. There is no need for the students to purchase the ERG, but I can provide pages that represent the guidebook.

### FIRE SCIENCE PLOS, AY21-22

The screenshot displays the 'Outcomes' management system for Fire Science in the Academic Year 2021-22. The interface includes a sidebar with navigation options for organization units and courses without sections. The main content area lists eight PLOS, each with a description, an 'Assigned' status, and a progress bar indicating the number of students assessed.

PLOS ID	Description	Assigned	Assessed
FS_PLO1	Meet the minimum academic training requirements of the National Fire Protection Association's (NFPA) Standard 1001, Standard for Fire Fighter...	Assigned	No Results
FS_PLO2	Perform as fully qualified wildland firefighters (FFT2) in accordance with National Wildfire Coordinating Group PMS 310-1 standards.	Assigned	54 Assessed
FS_PLO3	Utilize the Incident Command System to manage a wide variety of planned and un-planned incidents.	Assigned	No Results
FS_PLO4	Demonstrate knowledge of modern fire service strategies, tactics, and management for both structural and wildland fire incidents.	Assigned	18 Assessed
FS_PLO5	Meet the requirements for National Fire Protection Association's (NFPA) 472, Standard for Professional Competence of Responders to Hazardous...	Assigned	42 Assessed
FS_PLO6	Apply the principles of interpersonal communication, cooperative teamwork, supervision, and management for leadership in the fire service.	Assigned	18 Assessed
FS_PLO7	Apply theoretical principles of the chemistry of fire and hydraulics to solve water supply problems.	Assigned	No Results
FS_PLO8	Take the National Registry Examination for certification as an Emergency Medical Technician.	Assigned	Not Selected

- d) Changes that have been made as a result of the assessment results: instructional programs must provide a discussion of changes made as a result of the analysis of assessment results, e.g., to curriculum, instruction, development of student learning opportunities, faculty professional development activities, assessment strategies, etc.; non-instructional units must provide a discussion of changes made as a result of the analysis of assessment results, e.g., to services, operations, personnel training, assessment strategies, etc.

**Action Plan for Fire 157**

I plan to teach this course face-to-face in spring of 2023. This should provide the students with a better learning environment. I will then be able to place more emphasis on the parameters that affect wildland fire behavior.

**Action Plan for Fire 207**

There is no need to change the curriculum, and I must follow the training requirements of National Fire Protection Association's 472 and the Occupational Safety and Health (OSHA) administration.

## 4. Action Plan

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Although the Overall Fire Science Program is Cautionary, I plan to continue to improve on the following:

- Establish Emergency Medical Technician (EMT) training as a stand-alone Certificate of Competence Degree under the Fire Science Program that meets the educational requirements by the State of Hawai'i for Emergency Medical Technician (EMT) - Non-Transportation Licensure from the Dept. of Commerce and Consumer Affairs (DCCA).  
**This Action Plan aligns with HGI Strategy #3.**  
*Timeline: Fall 2023*
- Increase enrollment in the Palamanui campus 10% by being pro-active in promoting the Fire Science program at high school job fairs and informing the Kona side communities the availability of the Fire Science program at the Palamanui Campus.  
*Timeline: Continuous*
- Provide storage space at the Palamanui Campus for fire equipment. *Supplies are currently stored at the Kona Airport Fire Station and the Hualalai Fire Brigade Station (near the Palamanui Campus). A Matson Container would resolve this issue.*
- **This Action Plan aligns with HGI Strategy # 4.**  
*Timeline: Fall 2023*
- Increase Successful Completion (Equivalent C or Higher) to 95%.  
*Timeline: Spring 2023*

- Disposition of Fire Engine. Need to secure a covered parking to protect fire engine from the elements.  
*This issue has not been met. Having an operational engine provides students with hands-on experience that enhances their learning of hydraulics. This Action Plan aligns with HGI Strategy # 3.*  
*Timeline: Fall 2023*

**I will need the support of the College Administration to address the above issues.**

## 5. Resource Implications

### **\* Special Resource Requests not included in operating “B” budget \***

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Detail any special, one-time or personnel resource requests in the categories listed in the table below that are **not included in your regular program or unit operating “B” budget.**

\*Note: 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.

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

**XX I AM requesting additional resource(s) for my program/unit.**

**Total number of items being requested:   2   (4 items max.)**

**\*For each item requested, make sure you have gathered the following required information and all relevant documentation before you upload this Review; you will submit all information and attachments for your **Resource Request** as part of your Review document submission via the**

**[Hawaii CC - Program & Unit Review Submission portal](https://hawaii.kualibuild.com/app/builder/#/app/60ef56c477b0f470999bb6e5/run)**  
**<https://hawaii.kualibuild.com/app/builder/#/app/60ef56c477b0f470999bb6e5/run>**

#### **Item #1**

Funding requested to attend the Annual Hawai'i Fire Chiefs Association meeting on Kauai in the fall of 2023.

#### **Justification:**

In attendance is approximately 150 members from various federal, state and local fire service agencies. This allows me to network with professionals in the fire service and exchange the latest information on issues in the fire service. In addition, there are speakers who present information on a variety of topics. There are also vendors who display the latest technological equipment available to the fire service.

By attending these conferences, I am able to keep abreast of the latest issues and technology advances in the fire service. I can then pass this information on to my students, so they are aware of what is happening in the fire service.

**Priority Criteria**

Promote professional development.

**Estimated Date;**

Fall 2023

**Have you applied before?**

Yes

**Was it approved?**

Yes

**Professional Development Type:**

Attending Fire Service conference.

**Total Costs:**

\$2,500.00 to cover: airfare, conference registration, hotel, and taxicab.

**Item #2**

Establish a covered parking area for the fire engine and have electrical and water utilities available. Since most classes are during the evening hours, external lighting is required for safety reasons.

**Justification:**

The Honolulu Fire Dept. donated a \$250,000.00 engine to the college. The engine would provide students with a hands-on experience of understanding engine operations and water hydraulics. The engine is currently parked in the open and exposed to the elements, The engine is deteriorating and either needs protection or the college should dispose of it.

**Estimated date needed:**

Fall 2023.

**Total Costs:**

Approximately \$25,000.00

**Recurring Costs;**

None

**Utilities Required:**

Plumbing to provide students with adequate water to maintain engine. Electrical to keep the engine batteries charged and provide outdoor lighting.



<b>CATEGORY</b>	<b>Category-Specific Information Needed</b>			
<b>Equipment</b>	Estimated Date Needed	Quantity / Number of Units; Cost per Unit	Total Cost (with S&H, tax)	On Inventory List (Y/N); Decal #, Reason replacing
<b>Facilities Modification</b>	Estimated Date Needed	Total Cost	Monthly/Yearly Recurring Costs	Utilities Required
<b>Personnel Resource</b>	Estimated Date Needed	FTE; Position Type; Position Title	Estimated Salary	Was an Existing Position Abolished? (Y/N); Position #
<b>Professional Development</b>	Estimated Date Needed	Have you applied before (Y/N); was it approved?	Professional Development Type	PD Details; Impact; Total Cost
<b>Reallocation of Funds</b>	Estimated Date Needed	Total Cost	Monthly/Yearly Recurring Costs	Reallocation Proposal

## 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.

**XX I am NOT requesting changes to the SOC codes/occupations listed for my program.**

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

[O\\*Net CIP-SOC Code Look-up](#)

*\*in the **Crosswalks** box, choose "Education," then enter CIP number to see related SOC codes*

List below each SOC code for which change is being requested and include details of requested code deletions and/or additions. Include justification for all requested changes.

\*All requested changes to the SOC codes/occupations listed for programs must be discussed with and approved by the Department/Division Chair.