

HAWAI'I COMMUNITY COLLEGE PROGRAM ANNUAL REVIEW REPORT

Fire Science

Date: November 15, 2015

**Review Period
July 1, 2014 to June 30, 2015**

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Program Description

Please provide a brief description of your Program. Include your Program Mission statement.

Program Description

The Fire Science Program prepares individuals with the academic knowledge for entry employment in the Fire Service field as well as meeting 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 an emphasis on Structural Fire Fighting, Wildland Fire Suppression, Hazardous Materials Incidents, Fire Prevention and Investigation, 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 Colorado State 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.

Mission Statement

Provide the residents of the State of Hawai`i an education in Fire Science that will enhance their employment opportunity with federal, state, and local fire service agencies. Encourage students to continue their education after graduation by pursuing a Bachelor's Degree in Fire and Emergency Administration from Colorado State University through distance learning. Provide in-house professionals the education necessary to upgrade their knowledge and skills which help in promotional opportunities.

- Part I: Program Quantitative Indicators

- Overall Program Health: **Cautionary**

- Majors Included: FS Program CIP: 43.0203

Demand Indicators		Program Year			Demand Health Call
		12-13	13-14	14-15	
1	New & Replacement Positions (State)	65	65	67	Unhealthy
2	*New & Replacement Positions (County Prorated)	9	10	11	
3	*Number of Majors	80	101	102	
3a	Number of Majors Native Hawaiian	43	56	53	
3b	Fall Full-Time	54%	60%	63%	
3c	Fall Part-Time	46%	40%	37%	
3d	Fall Part-Time who are Full-Time in System	1%	3%	0%	
3e	Spring Full-Time	52%	53%	56%	
3f	Spring Part-Time	48%	47%	44%	
3g	Spring Part-Time who are Full-Time in System	2%	5%	1%	
4	SSH Program Majors in Program Classes	736	1,077	1,116	
5	SSH Non-Majors in Program Classes	106	90	61	
6	SSH in All Program Classes	842	1,167	1,177	
7	FTE Enrollment in Program Classes	28	39	39	
8	Total Number of Classes Taught	17	17	17	

Note: For AY 13-14 the Demand Indicators were “Healthy”. For 14-15 it is now “Unhealthy”. When asked how it went from Healthy to Unhealthy while the numbers remained virtually the same, I was told that the formula was changed. This formula change has affected most programs including Fire Science at the college. This is not an accurate reflection on the need for firefighters. The Hawai`i Fire Department has been recruiting approx. 20 personnel per year for the past 4 years. Our program last year graduated 17 students with degrees. As the table below shows there is now only one program that is healthy.

EMSI_COUNTY	CTE_PROGRAM_MAJORS	health call demand	MAJOR_IRO_COUNT
0.0	DMA	0.0 Unhealthy	30.5
1.0	AEC	0.0 Unhealthy	26.0
1.0	TEAM	0.0 Unhealthy	25.0
2.0	ABRP	0.1 Unhealthy	39.5
2.0	MWIM	0.1 Unhealthy	33.0
5.0	ECED	0.1 Unhealthy	71.0
1.0	ET	0.1 Unhealthy	9.5
11.0	FS	0.1 Unhealthy	102.0
5.0	IT	0.1 Unhealthy	36.0
4.0	DISL	0.1 Unhealthy	27.0

18.0	AJ	0.2	Unhealthy	97.5
7.0	AG	0.2	Unhealthy	37.0
8.0	HOST	0.2	Unhealthy	39.0
40.0	NURS	0.2	Unhealthy	194.0
19.0	ACC	0.3	Unhealthy	69.5
11.0	PRCN	0.3	Unhealthy	34.0
23.0	AMT	0.4	Unhealthy	65.5
26.0	BTEC	0.4	Unhealthy	73.5
5.0	SUBS	0.5	Cautionary	11.0
27.0	EIMT	0.5	Cautionary	57.0
18.0	HLS	0.5	Cautionary	35.0
15.0	MKT	0.6	Cautionary	27.0
57.0	CULN	0.6	Cautionary	102.5
27.0	CARP	0.8	Cautionary	35.0
27.0	HSER	3.0	Healthy	9.0

Efficiency Indicators		Program Year			Efficiency Health Call
		12-13	13-14	14-15	
9	Average Class Size	18	24.6	24.6	Cautionary
10	*Fill Rate	65.1%	92%	92%	
11	FTE BOR Appointed Faculty	1	1	1	
12	*Majors to FTE BOR Appointed Faculty	79.5	100.5	102	
13	Majors to Analytic FTE Faculty	45.7	57.7	58.6	
13a	Analytic FTE Faculty	1.7	1.7	1.7	
14	Overall Program Budget Allocation	\$87,063	\$104,925	Not Yet Reported	
14a	General Funded Budget Allocation	\$57,743	\$62,659	Not Yet Reported	
14b	Special/Federal Budget Allocation	\$0	\$10,977	Not Yet Reported	
14c	Tuition and Fees	\$29,320	\$31,289	Not Yet Reported	
15	Cost per SSH	\$103	\$90	Not Yet Reported	
16	Number of Low-Enrolled (<10) Classes	0	0	0	

*Data element used in health call calculation

Last Updated: October 7, 2015

Effectiveness Indicators		Program Year			Effectiveness Health Call
		12-13	13-14	14-15	
17	Successful Completion (Equivalent C or Higher)	87%	86%	94%	Healthy
18	Withdrawals (Grade = W)	3	2	0	
19	*Persistence Fall to Spring	59.3%	74.5%	82.8%	
19a	Persistence Fall to Fall	43.1%	51.5%	54.3%	
20	*Unduplicated Degrees/Certificates Awarded	8	19	17	
20a	Degrees Awarded	6	14	10	
20b	Certificates of Achievement Awarded	2	6	11	
20c	Advanced Professional Certificates Awarded	0	0	0	
20d	Other Certificates Awarded	0	0	0	
21	External Licensing Exams Passed	Not Reported	Not Reported	N/A	
22	Transfers to UH 4-yr	1	2	0	
22a	Transfers with credential from program	0	0	0	
22b	Transfers without credential from program	1	2	0	
Distance Education: Completely On-line Classes		Program Year			
		12-13	13-14	14-15	
23	Number of Distance Education Classes Taught	0	0	0	
24	Enrollments Distance Education Classes	N/A	N/A	N/A	
25	Fill Rate	N/A	N/A	N/A	
26	Successful Completion (Equivalent C or Higher)	N/A	N/A	N/A	
27	Withdrawals (Grade = W)	N/A	N/A	N/A	
28	Persistence (Fall to Spring Not Limited to Distance Education)	N/A	N/A	N/A	

Perkins IV Core Indicators 2013-2014		Goal	Actual	Met	
29	1P1 Technical Skills Attainment	91.00	86.11	Not Met	
30	2P1 Completion	47.00	33.33	Not Met	
31	3P1 Student Retention or Transfer	75.21	73.61	Not Met	
32	4P1 Student Placement	68.92	64.00	Not Met	
33	5P1 Nontraditional Participation	17.50	8.16	Not Met	
34	5P2 Nontraditional Completion	16.00	13.33	Not Met	
		Program Year			

Performance Funding		12-13	13-14	14-15	
35	Number of Degrees and Certificates	8	20	21	
36	Number of Degrees and Certificates Native Hawaiian	2	9	11	
37	Number of Degrees and Certificates STEM	Not STEM	Not STEM	Not STEM	
38	Number of Pell Recipients	39	46	43	
39	Number of Transfers to UH 4-yr	1	2	0	

*Data element used in health call calculation

Last Updated: October 7, 2015

Part II. Analysis of the Program

Overall Health -- Cautionary

Demand -- Unhealthy

The demand for firefighters continues to grow. As the population of the Island of Hawai'i increases, the demand for Fire and Emergency Medical Services will continue. The Fire Science program is one of the top three programs with 102 majors.

Efficiency -- Cautionary

The average Class Size is 24.6 with a Fill Rate of 92%. The Fire Science program generates income for the college.

Tuition and fees were:

AY11-12, \$16,704

AY12-13, \$29,320

AY13-14, \$31, 289

AY 14-15, Not yet reported

Effectiveness -- Healthy

Successful completion of students with a grade of C or higher continues to increase.

AY12-13, 87%

AY13-14, 86%

AY14-15, 94%

Perkins IV Core Indicators

- **Technical Skills Attainment** – Met 94% of established goal. I will continue to improve.
- **Completion** – Met 70% of established goal. The Fire Science program is a challenging one, which indicates it is not an easy degree to attain. I do not plan to lower the standards.
- **Student Retention** – Met 98% of established goal.
- **Student Placement** – Met 94% of established goal.
- **Nontraditional Participation** – Met 44% of established goal. Firefighting requires individuals with a special skill set. It is not a profession for everyone. I continue to promote nontraditional enrollment into the program.

- **Nontraditional Completion** – Met 81% of established goal. Nontraditional participants do complete the program. However, I have noticed that well qualified female students get hired by the Hawai'i Fire Dept. in their freshman year, and do not complete the program.

Part III. Action Plan

Describe in detail the Program's overall action plan for the current/next academic year. Discuss how these actions support the College's Mission and can lead to improvement(s) in student learning. Include specific action plans to address any ARPD Health Call scores of "Cautionary" or "Unhealthy," and any Perkin's Core Indicator(s) for which the Program's Goal was not met.

For AY July 1, 2014 to June 30, 2015 the Fire Science program accomplished the following:

- Due to enrollment we hired 4 Lecturers for the fall semester, and 1 Lecturer for the spring semester.
- The curriculum changed by eliminating PHIL 110 as an alternative to Math 100 or higher. Students are now required to complete Math 100 or higher.
- The Honolulu Fire Department announced they would donate a surplus structural fire engine to our Fire Science program. I completed all the necessary forms. I contacted Young Bros. and they agreed to donate the shipping fees from Honolulu to Hilo. I expect delivery of the engine before the end of the fall, 2015 semester. This will allow our students a more hands-on experience with performing hydraulics for our Fire 202 Hydraulics class. When the engine is not in use the Diesel Mechanics program can work on the engine during the spring semester.
- We have a signed Memorandum of Agreement between Hawai'i CC and the State of Hawai'i, Department of Transportation, Airports Division. The Federal Aviation Administration is planning a \$30 million dollar Regional Aircraft Rescue and Firefighting Training Center at the Kona Airport. This facility will have classrooms and facilities available to the college. Construction is planned to begin in the spring of 2016.
- Submitted an Articulation Agreement between Hawai'i CC and the Hawai'i Fire Department (HFD) for Prior Learning Assessment. The Agreement implements a College-Credit Equivalency Program. The Articulation Agreement facilitates the process of awarding college credit for college-level learning received during training in the County of Hawai'i, Hawai'i Fire Department.
- Emergency Medical Technician (EMT). Made the preparations necessary to Modify the Fire Science program by adding Emergency Medical Technician (EMT) training to the curriculum. The HawCC and the Honolulu CC Fire Science programs are in alignment, as well as having our EMT training in alignment with Kapiolani CC EMT courses. Students who become licensed by the State of Hawai'i will greatly enhance their employment opportunities. The Hawai'i Fire Dept. is responsible for Emergency Medical Services on the Island of Hawai'i. There is also a critical shortage of EMTs in the State of Hawaii. The plan is to start teaching EMT in the Fall 2016 semester.
- During the spring semester, Ms. Gabriella Cabanas, Human Resources Manager for Hawai'i County gave a presentation to our freshman class on the upcoming Hawai'i Fire Department recruitment. She talked about the application process, dos and don'ts on filling out the application, how to dress and perform during the interview portion, and we had a general question and answer period. Several of my students are in the current recruitment class.

- I have maintained a working relationship with Ms. Mei Lin Lantz, Forest Tribal Liaison, Willamette National Forest, Region 6 (Oregon and Washington). She has assisted students interested in summer seasonal firefighting employment.
- Maintained an active participation in the following professional groups; The Big Island Wildfire Coordination Group, The Hawai'i Fire Chief's Association, and The California, Nevada, and Hawai'i Fire Council.
- Maintained membership in the National Fire Protection Association (NFPA).
- I relocated my office to Hale Aloha, Room 125 and was designated a shared storage room.

Part IV. Resource Implications

1. The Nursing program and UH-Hilo continue to provide classroom space for our courses.
2. The Emergency Medical Technician (EMT) Lecturer will need office space due to the size and complexity of administering the EMT courses.
3. Submit Perkins Funding to help purchase supplies necessary for implementing the EMT courses.
4. Since our laboratory classes are at night, it would be nice to have a well-lit outdoor space to conduct exercises. The area we currently use is marginal.

Part V. Comprehensive Review Information

Please provide a short summary regarding the last comprehensive review for this program. Discuss any significant changes to the Program since the last comprehensive review that are not discussed elsewhere.

Since the last comprehensive review the University of Hawai'i, Board of Regents granted Permanent Status to the Fire Science program in May 2013.

The Fire Science curriculum has been modified to prepare our students for success when taking EMT training. Bot 101, 101L General Botany and Biol 100 Human Biology were deleted, and replaced by Biol 141, 141L 142, and 142L Human Anatomy and Physiology.

Required for ARPD Web Submission: Provide the URL to the specific location of this Unit's last Comprehensive Review on the HawCC Program/Unit Review website (see link on page 1):

http://hawaii.hawaii.edu/program-unit-review/docs/2011_fire_comprehensive_instructional_program_review.pdf

Part VI. Program Student Learning Outcomes

For all parts of this section, please provide information based on the PLOs (P-SLOs) that were assessed through PLO-aligned course assessments in AY 2014-15.

A. Course(s) Assessed

Fire 207 Hazardous Materials

B. Expected Level of Achievement

70% of students are expected to receive a grade of "C" or better on the Final Exam. A "C" or better is required to achieve a Training Certificate indicating the student is "Operational Level Qualified" in accordance with the National Fire Protection Association 472.

C. Assessment Strategies & Instruments

The Final Exam was administered to all 26 students enrolled in the course, and is a comprehensive evaluation of the entire course material covered during the course.

D. Results of Course Assessment

85% of students received a grade of "C" or better.

Changes Implemented as a result of Assessment	Evaluation of the changes that were implemented
Since the students exceeded expected level of achievement, I do not plan to make any changes.	The course material is specifically outlined by the National Fire Protection Association standards.

E. Next Steps -- *Based on your experience with Assessment so far, what do you plan to do in the future? Include any changes that are planned for the Program as a result of course assessments. For example, changes to rubrics, changes to level of expectation, any Program and/or curriculum modifications, etc.*

No further changes are expected.

A. Course Assessed

Fire 202 Fire Hydraulics

B. Expected Level of Achievement

70% of students are expected to receive a grade of "C" or better on the Final Exam.

C. Assessment Strategies & Instruments

The Final Exam was administered to all 25 students enrolled in the course, and is a comprehensive evaluation of the entire course material covered during the course.

D. Results of Course Assessment

96% of students received a grade of "C" or better.

Changes Implemented as a result of Assessment	Evaluation of the changes that were implemented
Since the students exceeded expected level of achievement, There is no plan to make any changes.	

A) Evidence of Industry Validation (CTE Programs)

[General Pre-Professional Programs can skip industry validation.]

Provide documentation that the program has submitted evidence and achieved certification or accreditation from an organization granting certification in an industry or profession. If the program/degree/certificate does not have a certifying body, you may submit evidence of the program's advisory committee's/board's recommendations for, approval of, and/or participation in assessment(s).

There is no single certifying body for a fire science program. The training and certification standards in the Fire Service are guided by two bodies that establish national standards. One is the National Fire Protection Association (NFPA) and the other is National Wildfire Coordination Group (NWCG). The majority of Fire Science courses meet the national standards established by either one of these bodies, and are recognized by various fire service agencies.

C) Courses Assessed

List all Program Courses assessed during AY 2014-15. Also list Program Courses for which a follow-up “Closing the Loop” assessment was implemented in AY 2014-15.

Assessed Course Alpha, No., & Title	Semester assessed	PLO-aligned CLOs that were assessed
Fire 202 Fire Hydraulics	Fall 2014	PLO #7- Apply the theoretical principles of chemistry of fire, and hydraulics to solve water supply problems.
Fire 207 Hazardous Materials Awareness/Operations	Spring 2015	PLO #5- Meet the requirements for National Fire Protection Association’s (NFPA) 472, Standards for Professional Competence of Responders to Hazardous Materials Incidents for the Awareness and Operational Levels.
“Closing the Loop” Assessments Alpha, No., & Title	Semester assessed	PLO-aligned CLOs that were assessed
No Closing Loop Assessment		

G) Next Steps

Based on the Program's overall AY 2014-15 assessment results, describe the Program's intended next steps to enhance instruction in order to improve student learning. Instructional changes may include, for example, revision to curriculum, teaching methods, learning outcome statements, student support, and other options. Please note here if proposed changes will involve Program and/or Course modifications requiring approval.

1. I plan to Modify the Fire Science program by adding Emergency Medical Technician (EMT) (16 credits) to the fall, 2016 curriculum. This will greatly enhance the student's employment opportunities. Besides the fire service, there is a critical shortage of EMTs in the State of Hawai'i. Our students also have training in Hazardous Materials at the Operations level which qualifies them for employment at the Hilo Medical Center as an EMT on the HAZMAT team. By adding EMT to our curriculum we will be in alignment with the Honolulu CC Fire Science program.
2. I plan to continue Lecturer evaluations, and encourage Lecturer professional development.
3. I will continue to pursue establishing a Bachelor of Science in Fire and Emergency Administration with the UH-Hilo.
4. I will explore the possibility of extending the Fire Science program to the Palamanui Campus when the FAA Regional Training Center is completed.

Part VII. Cost Per SSH

Please provide the following values used to determine the total fund amount and the cost per SSH for your program:

AY13-14 is the latest information available.

Costs Per SSH	= \$90
General Funds	= \$62,659
Federal Funds	= \$10,977
Other Funds	= \$ 0
Tuition and Fees	= \$31,289

Part VIII. External Data

If your program utilizes external licensures, enter: N.A.

Number sitting for an exam _____

Number passed _____

[If your program does not utilize external licensures, skip Part IX.]