HAWAI'I COMMUNITY COLLEGE
PROGRAM COMPREHENSIVE 3-YEAR REVIEW REPORT

[Information Technology]

Date: December 7, 2015

Review Period
July 1, 2012 to June 30, 2015
AY 2012-13, AY 2013-14, and AY2014-15

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Program/Unit Review at Hawai'i Community College is a shared governance responsibility related to strategic planning and quality assurance. Annual and 3-year Comprehensive Reviews are important planning tools for the College's budget process. This ongoing systematic assessment process supports achievement of Program/Unit Outcomes. Evaluated through a college-wide procedure, all completed Program/Unit Reviews are available to the College and community at large to enhance communication and public accountability. Please see http://hawaii.hawaii.edu/program-unit-review/

PART I: ANALYSIS OF PROGRAM

For this section, analyze your Program for the 3 year period from July 1, 2012 through June 30, 2015. Provide a narrative analysis that, at a minimum, describes and discusses the following aspects of the Program:

- ARPD indicators: health factors, trends and other factors, strengths and weaknesses. ARPD website: **https://www.hawaii.edu/offices/cc/arpd/index.php**

In the 2012-13 academic year, the IT Program was listed as "cautionary." Improvements in numbers of majors and graduates, a trend that had occurred steadily over several years, led the program to be rated as "healthy" in 2013-14. A drop in the number of IT majors, coincident with a college-wide decline in enrollment, led to a program rating of "cautionary" in 2014-15. For "Demand Indicators," the IT Program was rated as "cautionary" in 2012-13, while an increase in majors and SSH led to a rating of "healthy" in 2013-14. In 2014-15, there was a decline in the number of majors, although SSH in all program classes increased significantly; however, the program was rated as "unhealthy" in his category.

Under Efficiency Indicators, the IT Program has consistently been rated as "cautionary," although fill rate and average class size has increased steadily in this three year period. As noted, the number of majors declined in the 2014-15 year, after many years of steady increases.

The IT Program has maintained a rating of "healthy" for Effectiveness Indicators during the past three years. The percentage of successful completion has steadily increased, from 75% in 2012-13 to 82% in 2014-15. Similarly, persistence rates from Fall to Fall have steadily increased during this three year period. Numbers of graduates has declined, correlated with the decline in numbers of majors, while numbers of transfers to UH four year programs sharply increased in 2014-15.

There is a significant trend for increasing SSH despite having fewer majors, as more non-IT majors take courses offered by the program. As noted below, the program plans to increase recruitment and retention efforts to increase the number of majors, which is likely to lead to even greater SSH and fill rates in IT classes.

- College Mission: How the Program aligns with and supports the College Mission and the Program's effectiveness in its support/assistance in achieving the College Mission.

The mission of Hawai'i Community College is to serve all segments of our Hawai'i community and embrace our unique Hawai'i culture. The IT Program, while fundamentally a technical program, serves students from all segments of our island community who strive to achieve a rewarding career in the computer technology field. HawCC's vision is to promote student learning emphasizing life-long learning and providing the knowledge and experience necessary for academic achievement. The IT Program challenges students to learn complex concepts that underlie the computer field. Because the IT field changes so rapidly, the program provides students with the basic information needed to understand the subject, but also how to keep up with the changes that occur due to increase understanding and technological improvements that are ongoing.

- Institutional Learning Outcomes (ILOs): the Program's effectiveness in its support/assistance in achieving the College's ILOs.
  ILO website: http://hawaii.hawaii.edu/assessment/outcomes.php#ilo

The IT Program supports all three of HawCC's institutional learning outcomes.

ILO #1 states that students will be able to communicate effectively in a variety of situations. All of the IT Program's courses address this ILO. Students learn to use computer software as tools to communicate, but also learn how to use both verbal and writing skills to communicate clearly. Programming documentation, for example, is stressed in all courses that address programming. If a program is not written logically and clearly, it will not function. Moreover, the IT professional must communicate how their program is constructed, or their clients will not be able to use it. All courses require students to write explanations for their computer work, and they receive feedback on how to improve their communication skills.

ILO#2 states that students will be able to gather, evaluate and analyze information and ideas to solve problems. This is a hallmark of IT courses, where students learn how to find ways to solve problems, whether it be by writing computer code for a specific program, how to fix a computer hardware or software problem, how to analyze and protect the functions of a network, and/or how to discover new uses for major software programs.

ILO#3 states that students will develop knowledge, skills and values to make contributions to the community in a manner that respects diversity. The goal of the IT Program is to train students to become IT professionals, assisting businesses, government agencies, or charitable organizations with their computer resources. IT students have taken on projects that have benefitted the community while engaged in hands-on learning. All students are required to

obtain experience working for local agencies or businesses so that they can observe the requirements of their profession while assisting the agencies for which they work.

- 2008-2015 Strategic Plan: the Program's alignment with the 2008-2015 Strategic Plan and the value of the Program to the College in terms of achieving that Strategic Plan's goals and initiatives.
  [Hawaii Community College Strategic Plan: 2008-2015](#)

  [HawCC Strategic Outcomes and Performance Measures 2008-2015 listed with funding sources and responsible parties.](#)

Beyond the Program's support of the college's mission, the Program supports the college's seven imperatives. The Program prepares students to serve their community as highly trained professionals (Community Development) with a concern to give back to the community by providing their expertise to projects involving good causes; the Program has involved students in such projects as part of their training.

A strength of the program is developing a technologically trained workforce (Workforce Development) that allows companies that require highly trained personnel to succeed in the local community. Within the last three years, IT graduates continued to be hired in the IT field: for example: Gemini Observatory, County of Hawaii-Information Department, KTA Superstores, in the military etc. (See table below). The IT Program continues to train students from diverse backgrounds (Cultural Competency), and through community service projects provides students with an awareness and appreciation for their environment, whether social, natural, or economic (The Environment). IT students are placed in the community for actual work experience in the IT Capstone course. ITS 293-IT Program Internship.

The IT Program does not directly address the study of Hawaiian cultural knowledge (Hawaiian Culture and Values) but does emphasize professional ethics and values, as well as providing students with technical skills for disseminating Hawaiian knowledge through technological means. Through a Help Desk Support (ITS 218) course, IT students are trained to work with clients to solve their computer and technical problems in different and sometimes adverse situations. The IT Program emphasizes cooperative work, with students doing several group projects; learning the importance of cooperation in the forming of healthy communities (Healthy Communities).

Finally, the IT Program is a leader at the college of providing technological training for students, whether majoring in IT or those taking computer literacy courses (Technology).

From 2012 to 2015, there were 44 unduplicated degrees/certificates awarded. (Data taken from 2015 UH System ARPD)

Degree/certificates Awarded	AY 12-13	AY 13-14	AY 14-15
Unduplicated degrees/certificates	12	24	8
AS degree	8	6	4

Based on unofficial tracking of the 44 students who received "Unduplicated Degrees/Certificates" from 2012-2015, four students are continuing their computer science education at UH-Hilo. Two students are working in the IT field othe US mainland, 18 students are employed as I.T. personnel in different organizations such as: the County of Hawaii (2); Gemini Observatory(1); KTA Superstores (1); Keonepoko Elementary School(1); the National Guard- Air Force division(1), and Hilo Motors (1) etc. Another student is now a fire fighter with the County of Hawaii. Eight students are working on finishing their education courses to complete the IT-AS degree while others are doing I.T. consulting work.

- Assessment results: discuss how the overall results of course-level assessments during the 3-year period under review demonstrate the Program's achievements or challenges in meeting its Program Learning Outcomes (PLOs).
  PLO website: http://hawaii.hawaii.edu/assessment/outcomes.php#plo

In order to assess the IT program objectively, all assessments are done by outside reviewers. Course work is collected during the academic year. The artifacts are assembled in random order and distributed to the IT Program Advisory Committee during the yearly Program Advisory Committee meeting. The committee is given a rubric and instructions on how to assess the students' work. Results are collected and compiled before publishing to the HawCC assessment site. (Please refer to the HawCC Assessment site for prior reports)

In the 2012-2013 academic year, two IT courses were assessed: ITS 103 (Introduction to the Programming Process) and ITS 118 (Visual Basic Programming for Business Applications). Evaluations of students in the two courses reported that 87.6% of assessments were for meeting or exceeding expectations, above the Program's goal of 85%. Both of these courses focused on PLO#3 (Programming), but at different levels of experience.

In 2013-2014, the IT courses ITS 104 and ITS 151 were assessed. For these courses, the program far surpassed its goal of 85% of students meeting or exceeding expectations, with 92.5% of

students meeting this criterion. ITS 104 (Computer Hardware Support) particularly addressed PLO#4, to work independently and cooperatively to deliver reports, programs, projects, and other deliverables that document a business organization's IT requirements. ITS 151 (Applied Database Programming in an Object Oriented Environment) addressed PLO#3, to plan, develop, implement and document computer programs that meet the requirements of a business organization.

In 2014-15, two IT courses were evaluated: ICS 101 and ITS 121D. As with the first two years under review, the program exceeded its goal of 85% of students at least meeting expectations. ICS 101 is designed to introduce the students to material needed to achieve all of the PLOs. Specifically, the course introduces Information Systems (PLO#1), and allows students to understand the skills and knowledge required to plan, develop, and implement computer system in a business environment. The course only touches on PLO #2 (Networking). PLO#3 is Programming, introduced in ICS 101, but not covered in depth. A major focus of ICS 101 is to have students learn how to work independently and cooperatively, a major component of PLO #4 (Productivity). The assessment report focuses on how the students' assignments – those that were evaluated by the Assessment Committee - demonstrate the Program's achievement in meeting ILO #5 (Legal/Ethical/Professional). The assessment showed that 88.9% of evaluations met or exceeded expectations, well above the program expectation of 85%. Finally, ICS 101 introduces the students to what is required to Explore (ILO#6) their field. ICS 101 is an introductory course that exposes students to all the program's ILOs, but does not go into the depth of knowledge necessary for students in pursuing successful careers in the IT field. The depth of knowledge required by students for their IT careers is achieved by courses that deal with specific issues of computers and information technology. The second course assessed in 2014-2015 was ITS 121D, which is an in-depth programming course. The course thus focuses on ILO #3 (Programming). Two projects were assessed, and for both projects, 85% or more of the students met or exceeded expectations, which was the program's goal.

- CERC comments and feedback: based on the CERC comments and feedback from your most recent Comprehensive Review, discuss CERC's recommendations and your Program's successes and/or challenges in implementing them.

The feedback from the previous program review primarily suggested more elaboration of discussions. The low completion rate was a particular concern, and the Program has worked with students to increase retention rates, by careful monitoring of students' courses work and requiring at least one individual meeting per semester. This has been successful. A concern was in obtaining evidence for Program activities and goals; this has been addressed in the following section of this report.

- Other successes, challenges/barriers, concerns, and/or other issues not addressed elsewhere in this Comprehensive Report.

The Program has steadily grown for a number of years, presenting challenges to the single full-time faculty member. A drop in majors in the most recent year, coincident with a college-wide enrollment decline, has presented another challenge: finding time for the only full time faculty member to increase recruitment efforts.

The IT Program benefits from strong community support, particularly from the IT Program Advisory Council.   IT graduates have been successful. Once they graduate, the majority of our program graduates have obtained employment and most of them in the field of Information Technology. For those who are already employed, they most often begin to move up from entry level jobs into supervisory positions within a few years. Our graduates continue to thrive in their IT positions and provide invaluable service to their employers. Most of them are staying with their company as reported in previous years' reports. These include the IT coordinator of Parker School. IT Specialist for: the National Guards, the Prosecuting Attorneys of Hawaii, the Medical Center, Hawaii State Judiciary, Hawaii Electric Light Company, KTA Superstores, various intermediate and high schools, Gemini Observatory, Hawaii Community College and the County of Hawaii, to name a few. These graduates are involved in government, private industry, and in community groups including those dedicated to education of Native Hawaiians. The four students in the past three years who have gone on to four year programs, are continuing their pursuit of the Computer Science degree and one for Liberal Arts degree. Of special mention is a graduate from Spring 2011 (John E.) who has gone on to receive his Computer science degree from UH-Hilo last year and is now working for Google. The former graduate who has graduated from Hawaii Pacific University majoring in Computer Information Systems (Blaine B.) has returned to Hilo as an IT specialist in the UH-Hilo School of Pharmacy. Another student (Kirk Y. Spring 2010) who has gone on to Oregon Community College majoring in Network Security has also received a computer science degree in Computer Forensic from Champlain University in Vermont. He is now working as a Computer Forensic Specialist of US Bank and is able to telecommunicate to work from Hilo.

PART II: ACTION PLAN

> **For this section, describe and discuss your Program's Action Plan for the 3 year period from July 1, 2015 through June 30, 2018. For each action strategy or tactic, provide details about the goal, expected level of success, implementation timeline, and any challenges or barriers you anticipate may affect implementation or success.**
>
> **Action Plans must align with the new Hawai'i Community College 2015-2021 Strategic Plan. Discuss how the Program's Action Plan aligns with and supports the 2015-2021 Strategic Plan's Initiatives, Strategies, and Tactics.**
> http://hawaii.hawaii.edu/docs/hawcc-strategic-directions-2015-2021.pdf

The IT Program plans a three-pronged Action Plan for the next three years: increase recruitment efforts at the local high schools, improve retention rates for students in the Program, and continue to refine offerings to bring the latest information and topics in the fast-changing computer field to our students. To fulfill our plan in improved recruitment, the Program coordinator will increase her communication with local high schools, and continue to meet/communicate with IT instructors and/or students at the high schools. Based upon the recruitment work already engaged in, it is anticipated that both one on one and group meetings will continue to be necessary. The IT faculty was successful in increasing enrollment when she joined forces with the HawCC recruitment and retention committee and participated in high schools visitations in order to advertise and increase the awareness of the IT program. This action plan clearly aligns with the Strategic Plan's HGI Action Strategy 1: Strengthen the pipeline from K–12 to the university to improve college readiness and increase college attendance.

The second and third parts of the Action Plan, to **improve retention** and **keep course topics current**, are actually integrated efforts, since updating of curriculum is crucial in retaining students. These thrusts align with HGI Action Strategy 2: Implement structural improvements that promote persistence to attain a degree and timely completion. The IT Program has attracted more full time (versus part-time) students than in the past, and this trend is likely to lead to improved retention. Another element to retention is finding part-time work for the students, allowing them to help finance their educations while getting hands-on experiences in the IT field.

The IT Program plans to add computer security as a major part of its curriculum, developing a certificate in this subarea of IT. It is a field of great national importance, and the HawCC IT Program has joined with the UH system in a major grant to train the workforce in computer security issues. This third thrust of the IT Action Plan aligns with HGI Action Strategy 3: Anticipate and align curricula with community and workforce needs.

PART III: Budget Items

For this section, describe and discuss your Program's cost-item "budget asks" for the 3 year period from July 1, 2015 through June 30, 2018. For <u>each</u> budget item, describe the needed item in detail, including cost(s) and timeline(s).

Budget asks for all categories of cost items may be included in the 3-year Comprehensive Review. Explain how the item aligns with the Hawai'i Community College 2015-2021 Strategic Plan (see link above in Part II). Identify and discuss how each item aligns with the Strategic Plans Initiatives, Goals, Action Strategies, and Tactics.

In order to accomplish the three thrusts in the Action Plan described above, the IT Program has a need for a second full-time faculty member in order to have the ability to expand the IT curriculum and thus meet the system grant and Program goal of a cybersecurity certificate. This additional position will also provide the Program with time flexibility to allow for increased recruitment activities, and to provide elective courses to meet students' diverse interests and thus aid in retention efforts. An annual salary of $65000 should be allocated for the new hire starting in the second year of this plan.

The program continues to require software updates such as the annual renewal of the software licenses for MSDN (Microsoft Developer Network) which we use for eight of the IT major courses (ITS 101, ITS 103,ITS 104, ITS 108, ITS 118, ITS 121, ITS 151 and ITS 215). The cost for the annual renewal is $500. Currently our software need is expanded to include the needed software for the proposed new cybersecurity certificate. The Program also needs an increase in general IT laboratory supplies, such as cables, jump drives, printer cartridges, and so forth. To setup the IT laboratory properly for IT courses, computer tables, chairs and networking equipment is needed. An additional $3500 should be available as soon as possible for both software updates and laboratory setup.

Because the IT field changes so quickly and complexly, there is a need for an Increase in the IT program budget to allow the IT faculty to attend conferences that relate to hardware, software, cybersecurity, networking, and the latest industry trends. Starting in 2016, $5000 should be budgeted for travel.

The above budget requests align fully with the Hawai'i Community College 2015-2021 Strategic Plan Strategies 1,2 and 3.