

HAWAI'I COMMUNITY COLLEGE COMPREHENSIVE PROGRAM REVIEW REPORT

Agriculture

November 30, 2012

Reporting Period: July 1, 2007 to June 30, 2012
Assessment Period: July 1, 2009 to June 30, 2012

Initiator: Joel Tanabe
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Program Review at Hawai'i Community College is a shared governance responsibility related to strategic planning and quality assurance. It is an important planning tool for the college budget process. Achievement of Program Outcomes is embedded in this ongoing systematic assessment. Reviewed by a college-wide process, the Program Reviews are available to the college and community at large to enhance communication and public accountability.

HAWAI'I COMMUNITY COLLEGE COMPREHENSIVE PROGRAM REVIEW REPORT

Agriculture

Part I: Annual Program Review

College: Hawaii Community College
Program: Agriculture

The last comprehensive review for this program was on 2007, and can be viewed at:
http://hawaii.hawaii.edu/program-unit-review/docs/2007_ag_comprehensive_instructional_program_review.pdf

Program Description

Program Mission

The mission of the Agriculture Program is to maximize the potential of individuals to fulfill their personal and career goals by providing curricula that prepare students for entrepreneurship or employment within the many fields of agriculture or landscaping. Our program provides course work and direct, hands-on learning experiences emphasizing current, environmentally and economically sound, and sustainable principles and practices that develop the skills, knowledge, and abilities vital for Hawaii's green industries as well as for a healthy, productive society.

Towards Sustainability

Today sustainable agriculture is not a luxury for our islands or the world. Collectively we face tremendous challenges meeting the food and economic needs of an ever growing population. Over the past 40 years, tremendous advances in productivity have created productive but dysfunctional agricultural systems throughout the world. These systems have resulted in dwindling resources; stagnant productivity; resource-extractive agriculture practices; loss of access to arable lands; and endemic poverty, hunger, and malnutrition. Currently there are more than 800 million people that lack adequate food while 170 million children suffer from malnutrition; ironically, there would be enough food for everyone if it were distributed according to need (Raman 2006).

Sustainability, at a fundamental level connotes a balance of the resources of production with our need or demand for the food produced from those resources. One of the real challenges to this balance is that we are facing a future with mounting constraints to production while our needs are rapidly growing. It is estimated that we will require almost a doubling of food production within the century (Raman 2006). To date technological advances have been able to pry more and more productivity from available natural resources; future gains from technology will likely be more marginal and challenging.

According to Saroja Raman in *Agricultural Sustainability Principles, Processes, and Prospects*:

Sustainability in the near future requires a paradigm shift from the reductionist, technology driven natural resource degrading agricultural growth pursued hitherto to an environmentally safe, natural-resource-conserving enterprise with food security and opportunities for minimum development standards for all as its raison d'être. (Raman 2006)

HawCC's Agriculture Program serves a vital role in helping to prepare students to participate in this shift. We have embraced the four basic tenets of sustainable agriculture as core values within our program. They are ecological viability, productivity, economic viability, and social responsibility. The program is beginning to modify its curriculum and upgrade its facilities to better reflect and adopt these values and meet current and future needs for sustainable agriculture in Hawaii. As alluded above, the future of sustainable agricultural systems relies on a dynamic marriage of both technology and practices that preserve environmental quality and ecological security. There is a prevalent naiveté and romanticism for a return to subsistence agricultural practices as a path toward sustainability. It is imperative that students understand the importance that science and technology will play in conserving our resources while meeting food security needs. The educational material, equipment and facilities available for student learning are critical to help them gain that understanding.

Program Characteristics

The Agriculture Program operates on a two-year cycle with classes repeated every other year; classes build on skills and knowledge developed in prior classes with more academically rigorous classes offered in the second year. Although students with high placement scores and aptitude are allowed enrollment at any time, cohorts are added every other year due to the program design. Despite operating on a two-year cycle, fluctuations in completion(s) result from students selecting to receive a Certificate of Completion, Certificate of Achievement and/or an Associate of Applied Science degree as well as due to the few students entering the program off cycle.. The program has begun a new two year cycle in Fall 2011. The long-time professor of the Ag Program retired in Dec 2009; an instructor was hired in Jan 2011 to fill that vacancy.

Reference Cited

Raman, S. (2006). *Agricultural Sustainability Principles, Processes, and Prospects*. Binghamton, New York. Hawthorn Press Inc.

Hawaii Community College 2012 Instructional Annual Report of Program Data

Agriculture

Part I: Program Quantitative Indicators

Overall Program Health: **Cautionary**

Majors Included: AG

Demand Indicators		Program Year			Demand Health Call
		09-10	10-11	11-12	
1	New & Replacement Positions (State)	507	3,287	172	Unhealthy
2	*New & Replacement Positions (County Prorated)	155	196	114	
3	*Number of Majors	26	38	35	
4	SSH Program Majors in Program Classes	297	264	387	
5	SSH Non-Majors in Program Classes	21	159	21	
6	SSH in All Program Classes	318	423	408	
7	FTE Enrollment in Program Classes	11	14	14	
8	Total Number of Classes Taught	6	11	6	

Efficiency Indicators		Program Year			Efficiency Health Call
		09-10	10-11	11-12	
9	Average Class Size	13.8	14.2	17.2	Healthy
10	*Fill Rate	99%	88%	100%	
11	FTE BOR Appointed Faculty	1	0	1	
12	*Majors to FTE BOR Appointed Faculty	26	0	35	
13	Majors to Analytic FTE Faculty	29.3	33.1	39.4	
13a	Analytic FTE Faculty	0.9	1.1	0.9	
14	Overall Program Budget Allocation	\$86,124	\$43,321	\$86,524	
14a	General Funded Budget Allocation	\$86,124	\$43,321	\$65,606	
14b	Special/Federal Budget Allocation	\$0	\$0	\$10,279	
14c	Tuition and Fees	\$0	\$0	\$10,639	
15	Cost per SSH	\$271	\$102	\$212	
16	Number of Low-Enrolled (<10) Classes	1	1	0	

Effectiveness Indicators		Program Year			Effectiveness Health Call
		09-10	10-11	11-12	
17	Successful Completion (Equivalent C or Higher)	80%	87%	92%	Unhealthy
18	Withdrawals (Grade = W)	3	4	0	
19	*Persistence (Fall to Spring)	64%	59%	62%	
20	*Unduplicated Degrees/Certificates Awarded	2	4	5	
20a	Degrees Awarded	1	3	2	
20b	Certificates of Achievement Awarded	0	1	1	
20c	Advanced Professional Certificates Awarded	0	0	0	
20d	Other Certificates Awarded	2	6	5	
21	External Licensing Exams Passed	Not Reported	Not Reported	N/A	
22	Transfers to UH 4-yr	1	2	3	
22a	Transfers with credential from program	1	0	0	
22b	Transfers without credential from program	0	2	3	

Distance Education: Completely On-line Classes		Program Year		
		09-10	10-11	11-12
23	Number of Distance Education Classes Taught	0	0	0
24	Enrollment Distance Education Classes	0	0	0
25	Fill Rate	0%	0%	0%
26	Successful Completion (Equivalent C or Higher)	0%	0%	0%
27	Withdrawals (Grade = W)	0	0	0
28	Persistence (Fall to Spring Not Limited to Distance Education)	0%	0%	0%

Perkins IV Core Indicators 2010-2011		Goal	Actual	Met
29	1P1 Technical Skills Attainment	90.10	100.00	Met
30	2P1 Completion	45.00	50.00	Met
31	3P1 Student Retention or Transfer	56.00	75.00	Met
32	4P1 Student Placement	51.00	0.00	Not Met
33	5P1 Nontraditional Participation	16.25	33.33	Met
34	5P2 Nontraditional Completion	15.15	80.00	Met

Last Updated: August 6th, 2012

Part II. Analysis of the Program

Demand

The estimations for new and replacement positions state- and county-wide show a decrease in demand. Codes used to identify positions were changed this year and are a likely explanation for this. As mentioned in previous reports new and replacement position numbers do not reflect estimation of entrepreneurial opportunities, which many program students hope to pursue. The state's heavy reliance on imports of food and plant materials, increased awareness of the importance of food security and community sustainability coupled with our islands' unique environments are indicators of demand for entrepreneurs beyond recognized state and county positions..

Majors to FTE faculty are reported as 35 for the 11-12 year. The Program's class capacity is currently 14 students less than 1/2 the number of declared majors. Since the program operates on a two year cycle, the disparity of seats available to declared majors represents a serious challenge to providing Agricultural education and training to those seeking it. It will be impossible to meet trending demands, new opportunities and increasing numbers of majors without an increase in classroom and faculty resources.

Efficiency

The efficiency health call has improved from cautionary in 2010-11 to healthy in 2011-12; the Ag program utilizes the resources currently available to it very efficiently. The 2010-11 average class size was 14.2 and with enrollment demand has been pushed to 17.2 for 2011-12. This represents a genuine effort on behalf of the program to accommodate students wishing to pursue this major and an agricultural career. Program cost per SSH (\$212) remains very low. For example TEAM which is a sister Agriculture/Natural science program at HawCC has an SSH cost of \$528. It is also much lower than Carpentry, \$350; HLS, \$307; and ABRP \$280.

Effectiveness

The Effectiveness Health Call remains unhealthy; 2 degrees and 5 certificates were awarded with over 90% of students competing the courses. Three students transferred, which is desirable. This years report represents year 1 of the two year program and it is expected that the 2012-13 report will see greater numbers of degree and certificates. However, students exiting the program do not always apply for certificates or degrees. Increased mentoring and counseling may help to improve numbers for certificates and degrees awarded. While it is certainly a goal to achieve program retention and high numbers of degrees awarded, awarding of degrees is not the complete expression of effectiveness. The program provides a technical and hands-on learning

environment that may not always necessitate awarding of a degree to meet our program mission. It is important that future efforts to improve effectiveness indicators are harmonious with that mission and maintain program integrity and rigor.

Distance Education

The Agriculture Program does not currently participate in distance education classes. Although this option was considered, it was deemed too difficult to provide a “hands-on” class at every class site for every class period. If demand continues to rise, it may be necessary to reevaluate this decision.

Perkins IV Core Indicators

Perkins IV Core Indicators show that all but 4P1 was met. In the previous report three indicators were not met. The 4p1 student placement indicator goal is listed as not met and it has a value of 0.0. An absence of a value for this indicator suggests there may be a problem with the data. Also, it is unclear how data are obtained for this indicator; possible explanations for not meeting placement goals may be due to data that is lacking or inaccurate, data that does not reflect students engaged in entrepreneurial activities or analysis biases due to the cyclic nature of the program. The remaining three Perkins indicators have been met in this evaluation period. The most robust indicators for the program are in the nontraditional completion and student retention or transfer categories (80 and 75, respectively).

Part III. Action Plan

The mission and values of the Agriculture Program are aligned with those of HawCC and the university system. Our high value in Perkins nontraditional student completion is an example of our alignment with HawCC's mission. We continue to strive to improve the program and meet all Perkins Indicator and Effectiveness Health Call goals. Previous funding from Perkins provided both classroom video/computer resources and materials to upgrade farm shadehouse facilities. These resources have improved the technical education opportunities and exposed students to the most current, sustainable, plant-production methods as well as helped with assessment. This project is nearing completion with the final upgrades to be completed this year.

The program will begin to examine the 4P1 core indicator. After examination a plan will be implemented to improve this indicator.

Natural, organic and sustainable farming continues to be integral to the program; the methods will continue to be incorporated into aspects of classes with production components. As funds permit, we are continuing to acquire the materials and equipment

necessary to adopt the methods more deeply; maintenance and improvement of farm facilities is ongoing.

Assessment plans and rubrics continue to be developed to evaluate student-learning outcomes as well as for individual assignments. The program is working diligently to meet accreditation related responsibilities.

Beginning this year a several year plan to modify the program course offerings will begin. Goals of the modification plan include creating a AS degree and development of new courses that create a better pathway for students to transfer to UHH.

Part IV. Resource Implications

As mentioned in the introduction, HawCC has a vital role in preparing students for employment or entrepreneurship as well as facilitating the collective shift towards greater sustainability. The educational material, equipment and facilities available for student learning are critical to help them gain those proficiencies. At present, our facilities are in the process of implementing current and best technologies available for water and resource conservation or production methodologies. This will require continued allocation of resources to complete the projects.

Investment in classroom computers and software (e.g. landscape design software) is imperative to address rising class sizes and provide the most current learning opportunities for students. This area of deficiency has yet to be addressed.

As stated in the previous report, the Agriculture Program has a wonderful tissue culture laboratory facility that is currently underutilized; investment in new plant disease diagnostic and biotechnology kits and equipment would not only complement the existing resource but could prepare students for work in more technical and emerging fields.

Finally, resources are required to purchase tools and equipment for landscaping and production equipment. Increasing class sizes require purchase of additional equipment so students can receive enough hands on opportunities for skills development.

Resource implications will be addressed in greater detail in this year's comprehensive revue.

Program Student Learning Outcomes

For the 2011-2012 program year, some or all of the following P-SLOs were reviewed by the program:

**Assessed
this
year?**

Program Student Learning Outcomes

**Assessed
this
year?**

Program Student Learning Outcomes

- 1 Yes Plan and manage projects and cultivate horticultural crops using legal; sustainable; safe; ecologically, biologically, and technologically sound practices.
- 2 No Design gardens that demonstrate the aesthetic principles of unity, repetition, balance, color, and texture congruent with the customers' desires.
- 3 Yes Operate and maintain tools and equipment.
- 4 No Set-up and manage a business enterprise.
- 5 No Interact with customers and co-workers in ways that effectively supports the work to be accomplished.

A) Evidence of Industry Validation

No content.

B) Expected Level Achievement

No content.

C) Courses Assessed

Ag 54B Tropical Ag Production

D) Assessment Strategy/Instrument

Students in Ag 54B Tropical Ag Production were assessed on plant production methodologies through hands on demonstration and a quiz during their demonstration. The demonstration was designed to model real situations they would encounter during production of a crop. Students received a rating of 4 if they demonstrated mastery of the skill or answered all questions within a category correctly. Ratings of 3 represented partial mastery of the skill or 1 minor error in relaying information through the quiz within the element. Students received a rating of 2 if their demonstration showed they were just progressing in that skill or if they had one major error or two or more minor errors in responses for that element.

E) Results of Program Assessment

Element	Mean Rating \pm S.D.	
	Hands on	Quiz

1. Transplanting PLO 1	3.5 ± 0.8	4.0 ± 0.0
2. Fertigation dilution calculation PLO 1 &4	3.1 ± 0.3	3.4 ± 0.7
3. Dosatron calibration and testing PLO 1 & 4	3.7 ± 0.6	
4. Irrigation controllers and emitters PLO 1 & 4	3.8 ± 0.6	3.4 ± 0.8
5. Scouting PLO 1	3.6 ± 0.8	3.6 ± 0.5

Strengths:

Overall averages among the elements were >3. The transplanting, irrigation testing and Dosatron demonstrations were elements with the greatest numbers of students displaying mastery.

Weaknesses:

Overall students were better at demonstrating skill than they were at verbally responding to questions. During some demonstrations it seemed if students hadn't had enough opportunity to practice using the equipment. Some quiz responses seemed to indicate that students were memorizing answers rather than grasping the concept more deeply and able to translate that understanding to new or different circumstances.

F) Other Comments

No content.

G) Next Steps

Results from the assessment indicate students must get more direct hands on experience with the equipment (timers and Dosatron) and more opportunities to explain verbally and in writing the processes they are carrying out and the reasons for those processes. In addition greater manual calculation should be practiced (Dosatron). Minor changes will be made in the future course flow to create those specific learning opportunities and address the identified needs.

The greatest need for action as a result of the assessment process was not with student learning but rather the assessment methodology itself. This was the first attempt at assessing students through hands on demonstrations. Not enough time was allocated for the assessment process and too many students were engaged in demonstrations at one time. It was very difficult to accurately assess students. Future assessments will have to allow more time and have students work in no more than groups of three for any one skill.

Part II:

A. Program Effectiveness

1. In Table 1, write a brief narrative describing the program. Clearly describe how the program supports the College's mission and Institutional Learning Outcomes (ILOs).

Table 1: Description and Alignment with Mission and ILOs

Program Description:

The Agriculture Program seeks to maximize the potential of individuals to fulfill their personal and career goals by providing curricula that prepare students for entrepreneurship or employment within the many fields of agriculture or landscaping. Our program provides course work and direct, hands-on learning experiences emphasizing current, environmentally and economically sound, and sustainable principles and practices that develop the skills, knowledge, and abilities vital for Hawaii's green industries as well as for a healthy, productive society.

The Agriculture Program operates on a two-year cycle with classes repeated every other year; classes build on skills and knowledge developed in prior classes with more academically rigorous classes offered in the second year.

How does this Program support the College's mission?

The Agriculture Program recognizes and embraces the uniqueness of Hawai'i island from both a cultural and environmental perspective. Sustainable production practices presented through the program draw from methods practiced throughout Polynesia as well as those practiced by other cultures that are relevant and appropriate. Natural environmental and ecosystem characteristics throughout the island are explored as they relate to agriculture.

The program strives for excellence and is actively engaged in assessment, reflection and self-improvement. These characteristics are instilled in students of the program as well.

Finally, the program is proud of the diversity within its classroom. It far exceeds Perkins non-traditional student completion indicators. There is a great diversity of ethnicities within the program and ages of students have ranged for 17- 58 years of age.

ILO: Our graduates will be able to communicate effectively in a variety of situations.

How does the Program support the ILO:

Students in the program work closely with fellow classmates and through this learn communicative and collaborative skills. As they progress through the program, they learn to conduct literature searches and write reports. They also conduct and summarize scientific research. In the business component of the program they gain experience drafting resumes and business plans. Oral presentations are a part of nearly every class. Finally, students gain experience with computers and various forms of media development.

ILO: Our graduates will be able to gather, evaluate and analyze ideas and information to use in overcoming challenges, solving problems and making decisions.

How does the Program support the ILO:

Agriculture by its very nature relies very heavily on observation, analysis and decision making processes. Every crop cycle represents new opportunities for refinement of practices and also new challenges. Students gain experience in this area through a hands on real world learning environment.

ILO: Our graduates will develop the knowledge, skills and values to make contributions to our community in a manner that respects diversity and Hawaiian culture.

How does the Program support the ILO:

Agriculture and food security is foundational to any healthy community and society. Students learn and develop skills to provide healthy and wholesome food for their families and on a commercial scale. Sustainable methods of production include indigenous practices from Hawaii and other cultures.

2. In Table 2, list the Program's top 3 goals/plans from the last **Comprehensive Review period: AY-2006/07 to AY-2011/12**. Evaluate the accomplishments of each goal.

Table 2: Previous Goals

Goal 1:

1. SLO & PLO Completion

Goal 1 Evaluation:

Accomplished

Student learning outcomes and program learning outcomes have been created and continue to be renewed and refined. Methods of assessment of these outcomes are in place and continue to be developed.

Goal 2

2. Recruit more active advisory committee members.

Goal 2 Evaluation:

Accomplished

A new team of advisory committee members from academia, landscape, tropical fruit and nursery industries is in place and are actively providing input to improve program effectiveness.

Goal 3

3. Create a recruiting plan to increase enrollment.

Goal 3 Evaluation:

Accomplished

Enrollment has been increased dramatically and classes are now at or beyond historical capacity.

3. In Table 3, list the Program's Strengths and Weaknesses
 - a. Briefly describe the program's top 3 strengths and 3 weaknesses to include:
 - 1) An analysis of data elements - demand, efficiency & effectiveness (Data may be determined by UHCC System or campus)
 - 2) Other pertinent information

Table 3: Strengths and Weaknesses

Strengths

S1:

1. Excellent and varied experiential learning environment for horticulture, landscape and agronomic production. The physical classroom and tissue culture laboratory are excellent. Much potential for increased effectiveness through enhancement of core facilities.

Evaluation:

Students are able to develop skills and proficiencies by engaging in real world activities. The horticulture and production laboratory includes a field area, two greenhouses, and a shade house. Since the last comprehensive review efforts have been made to improve these facilities to reflect best industry practices. Work continues in this area.

Program students also complete a capstone landscaping project through participation in the HawCC Model Home Project. This is another excellent example of real-world learning opportunities within the program.

S2:

The program is very efficient and is utilizing resources available effectively.

Evaluation:

The program has a low cost per SSH, a capacity enrollment and is exceeding all but one Perkins Core Indicators.

S3:

3. The program offers varied curriculum, which allows students to pursue specific areas of interest and leave at various levels of expertise to pursue their personal goals.

Evaluation:

The program has a varied curriculum and offers multiple certificates and an AAS degree. The core design of the program is strong. However, there are also weaknesses within this area.

Some updates to courses and modifications to program design are required and planned to strengthen and develop this area to meet strategic planning goals.

Weaknesses

W1:

Enrollment and demand currently far exceed capacity of program especially as courses are offered only on a two-year cycle.

Evaluation:

The most current advising list of program students shows 58 students interested in Agriculture. This far exceeds even the most ambitious attempts to expand class capacities to accommodate more students. This area is especially important as the state is faced with a shortage of farmers and ranchers. This directly links with Hawcc's strategic goals A and B.

W2:

The program is in need of equipment, supplies and maintenance support for its facilities.

Evaluation:

The program is in need of new and additional equipment for its classroom, laboratory, and landscaping activities.

The nature of plant production requires year round attendance and with the large production areas it is exceedingly difficult to maintain for only one program instructor. As the areas are improved and put into production this task will become nearly impossible.

W3:

Although the foundational design and flow of the program curriculum is strong, there are some weaknesses to address.

Evaluation:

The program is in need of a better pathway to 4 year institutions and greater alignment with other UH Community Colleges. Extensive program modifications are needed to create an AS degree rather than only an AAS degree. Again efforts for improvement in this area relate to strategic goals A and B.

Below is a table with a more detailed examination of program strengths and weaknesses:

Status, Health and Effectiveness of Ag Program

Landscaping	Production Horticulture		Laboratory	Classroom and Courses
<p>Program lacks even the most basic equipment required to provide hands-on experience and teach higher level skills.</p> <p><i>Unhealthy</i></p> <p>Action:</p> <p>USDA grant will fund a single landscape design software license (2012).</p> <p>Outlook/Priority:</p> <p><i>Unhealthy/High</i></p>	<p>Food Security Sustainable Practices</p> <p>Farm facilities run down basic equipment lacking.</p> <p><i>Unhealthy</i></p> <p>Action:</p> <p>Program has been funded by Sustainability Center grant to improve crop production and advanced production techniques (2011-2012).</p> <p>Perkins has funded export nursery shade house renovation (2012).</p> <p>Current USDA proposal includes tiller and</p>	<p>Ornamental and Advanced Production Methods</p> <p>Growing or emerging areas and the program lacks these components.</p> <p><i>Unhealthy</i></p> <p>Action:</p> <p>Program proposed component in C3T grant. (2012)</p> <p>Outlook/Priority:</p> <p><i>Unhealthy/Moderate</i></p>	<p>Food Safety, Postharvest, Value Added</p> <p>Laboratory facility is very good. Basic laboratory practices (hygiene, sterile technique etc) can be taught effectively. Program lacks equipment to teach higher level skills such as disease diagnostics and genetic/biotech competencies. ELISA, PCR and gel electrophoresis desirable.</p> <p><i>Cautionary</i></p> <p>Action:</p> <p>No action taken to date.</p> <p>Outlook/Priority:</p> <p><i>Cautionary/Moderate</i></p>	<p>Students lack access to the most basic technology and computer equipment/software- especially business and marketing. Computers, software and equipment are needed to promote technological literacy. Many courses are below 100 level. Curricula on record do not reflect most current green industry.</p> <p><i>Unhealthy</i></p> <p>Action:</p> <p>Perkins funds are purchasing two computer and two video cameras</p>

<p>Substantial resource allocation required:</p> <p>Software, timers, sprinklers, mowers, verticutters, ropes, climbing gear etc.</p>	<p>implements. (2013)</p> <p>Outlook/Priority</p> <p><i>Healthy/High</i></p> <p>No action required.</p>	<p>Uncertain. Incorporate subjects in curriculum changes.</p>	<p><i>ate</i></p> <p>First step will be to get some ELISA kits (2012)</p> <p>Begin studying feasibility of obtaining PCR and gel electrophoresis. (2013)</p>	<p>(2012).</p> <p>USDA proposal will fund small improvement (2013).</p> <p>Strategizing curriculum changes (2011).</p> <p>Outlook/Priority:</p> <p><i>Unhealthy/High</i></p> <p>Continued resource allocation and Curriculum modifications needed.</p>
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4. List the Program Outcomes in Table 4. Indicate the assessment method for each outcome, summarize the data gathered and briefly describe any changes made based on assessment and results of the change from the prior year (closing the loop).

Table 4: Program Assessment Data

Report on assessment of program outcomes for the past five years. Use the sample format shown below or use your program-specific format.

LEARNING OUTCOMES ASSESSMENT RESULTS

NAME OF PROGRAM

Assessment Period: Artifacts collected *Fall 2010*

Artifacts assessed *Spring 2011*

Submitter: Chris Jacobsen

Title: Instructor

Date Submitted: June 1, 2011

Evaluation Team Members (name and title):

Orlo Steele Forest T.E.A.M. Program Director

Chris Jacobsen Ag Instructor

Program Learning Outcomes Assessed:

PLO # 6 out of a Total of 7 PLOs; Cycle #

State PLO(s) assessed:

Set-up and manage a business enterprise.

Description of Artifact Sampling:

Eight random samples (80%) of student business plans from Ag 230- Agriculture Business Management were collected and evaluated by the team using a rubric that was developed prior to Fall 2010 classes. Business plans were divided into seven elements that were each assessed on a four-point scale (1-Does Not Meet Expectations to 4-Exceeds Expectations).

Evaluation Team Members' Results:

Element	Mean Rating \pm SD
1. Statement of Purpose	3.13 \pm 0.35
2. State of Hawaii Farm Loan Application	3.00 \pm 0.0
3. Resume	2.88 \pm 0.83
4. Description of Product	2.63 \pm 0.74
5. Description of the Enterprise	2.63 \pm 0.52
6. Financial Information	2.75 \pm 0.46
7. Cash Flow Projection	3.00 \pm 0.53

Strengths:

All artifacts evaluated met or exceeded expectations in Element #s 1-3 of the business plans. Element #3 reflects a rating of less than 3.00 due to a plan that did not include that element; it

was given a rating of 1- Does NOT Meet Expectations. Element #7 was also an area of strength although one artifact was deemed to be 2-Approaching Expectations

Weaknesses:

Element #s 4-6 represented the greatest area of weakness among the artifacts collected.

Course of Action Using the Assessment Results:

This project was challenging for students due to the fact that it was somewhat intangible; many students had difficulty conceptualizing a business enterprise and its inherent financial concepts. The program will begin greater integration of business and financial concepts as well as work to develop spreadsheet proficiency in prior classes so that students will be better prepared with tangible experiences and desirable skills upon enrolling for Ag 230. At the onset of the class, the instructor envisioned that Element #s 4 & 5 would require less emphasis and classroom time as those elements shared similarities to prior research assignments. Future Ag 230 classes will devote more time to these elements and students will be required to submit early drafts for review and guidance.

LEARNING OUTCOMES ASSESSMENT RESULTS

NAME OF PROGRAM

Assessment Period: Artifacts collected Spring 2012

Artifacts assessed Spring 2012

Submitter: Chris Jacobsen

Title: Instructor

Date Submitted: June 1, 2012

Evaluation Team Members (name and title):

Janis Iyo UHH CAFNRM Research Associate

Chris Jacobsen HawCC Ag Instructor

Program Learning Outcomes Assessed:

PLO # 1, 3, 4, & 5 out of a Total 7 PLOs;

State PLO(s) assessed:

1. Use safe, ecologically sound and legal horticultural practices.
3. Cultivate horticultural crops in a sustainable manner.
4. Operate and maintain tools and equipment.
5. Plan and manage projects based on sound biological and technological principles.

Description of Artifact Sampling:

Students in Ag 54B Tropical Ag Production were assessed on plant production methodologies through hands on demonstration and a quiz during their demonstration. The demonstration was designed to model real situations they would encounter during production of a crop. Students received a rating of 4 if they demonstrated mastery of the skill or answered all questions within a category correctly. Ratings of 3 represented partial mastery of the skill or 1 minor error in

relaying information through the quiz within the element. Students received a rating of 2 if their demonstration showed they were just progressing in that skill or if they had one major error or two or more minor errors in responses for that element.

Evaluation Team Members' Results:

Element	Mean Rating \pm S.D.	
	Hands on	Quiz
1. Transplanting PLO 1,3, & 5	3.5 \pm 0.8	4.0 \pm 0.0
2. Fertigation dilution calculation PLO 1, 3,4, & 5	3.1 \pm 0.3	3.4 \pm 0.7
3. Dosatron calibration and testing PLO 1, 2, 4, & 5	3.7 \pm 0.6	
4. Irrigation controllers and emitters PLO 1, 2, 4, & 5	3.8 \pm 0.6	3.4 \pm 0.8
5. Scouting PLO 1, 3 & 5	3.6 \pm 0.8	3.6 \pm 0.5

Strengths:

Overall averages among the elements were >3. The transplanting, irrigation testing and Dosatron demonstrations were elements with the greatest numbers of students displaying mastery.

Weaknesses:

Overall students were better at demonstrating skill than they were at verbally responding to questions. During some demonstrations it seemed if students hadn't had enough opportunity to practice using the equipment. Some quiz responses seemed to indicate that students were

memorizing answers rather than grasping the concept more deeply and able to translate that understanding to new or different circumstances.

Course of Action Using the Assessment Results:

Results from the assessment indicate students must get more direct hands on experience with the equipment (timers and Dosatron) and more opportunities to explain verbally and in writing the processes they are carrying out and the reasons for those processes. In addition greater manual calculation should be practiced (Dosatron). Minor changes will be made in the future course flow to create those specific learning opportunities and address the identified needs.

The greatest need for action as a result of the assessment process was not with student learning but rather the assessment methodology itself. This was the first attempt at assessing students through hands on demonstrations. Not enough time was allocated for the assessment process and too many students were engaged in demonstrations at one time. It was very difficult to accurately assess students. Future assessments will have to allow more time and have students work in no more than groups of three for any one skill.

Insert grid showing alignment of courses to program outcomes:

Agriculture Program and Student Learning Outcomes

1. Plan and manage projects and cultivate horticultural crops using legal; sustainable; safe; ecologically, biologically, and technologically sound practices.
2. Design gardens that demonstrate the aesthetic principles of unity, repetition, balance, color, and texture congruent with the customers' desires.
3. Operate and maintain tools and equipment.
4. Set-up and manage a business enterprise.
5. Interact with customers and co-workers in ways that effectively supports the work to be accomplished.

Matrix of Student Learning Outcomes by Course

COURSE	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5
AG 31 Farm Equip/Machinery/Power			3		1
AG 33 Greenhouse Construction			1		1
AG 40 Plant Identification		1			1
AG 46 Landscape Maintenance	1	2	2	1	2
AG 54A Tropical Agriculture Production I	1		1	1	1
AG 54B Tropical Agriculture Production II	2		2	2	2
AG 122 Soil Technology	3				2
AG 141 Integrated Pest Management	3		3		2
AG 157 Marketing of Agriculture Products				3	3
AG 200 Principles of Horticulture	3		3		3
AG 230 Agriculture Business Management				3	3
AG 250 Sustainable Crop Production	3		3		3
AG 250L Sustainable Crop Production Lab	3		3		3
AG 260 Tropical Landscape Horticulture	3	3	3	3	3

1- Introductory. Basic understanding and proficiency relating to SLO.

2- Intermediate. The SLO is familiar. Greater proficiency and depth of understanding.

3- Advanced. Comprehensive mastery of SLO; SLO is fully developed.

Assessment Plan

All SLOs are assessed and repeat with the two-year course cycle as shown below.

Semester/Year	Course	SLOs	Artifact	Evaluators
Spring 2012	Ag 46	1-5	Model Home Project	Instructor and Advisory Member or other Faculty
Fall 2012	Ag 200	1&3	Hort Production Project	Instructor and UHH Farm Technician
Fall 2012	Ag 230	4	Business Plan	Instructor and Advisory Member or other Faculty
Spring 2013	Ag 260	1-5	Model Home Project	Instructor and Advisory Member or other Faculty
Fall 2013 or Spring 2014	Ag 54A or B	1,3,4&5	Hort Production Project	Instructor and UHH Farm Technician
Spring 2014	Ag 46	1-5	Model Home Project	Instructor and Advisory Member or other Faculty
Fall 2014	Ag 200	1&3	Hort Production Project	Instructor and Advisory Member or other Faculty
Fall 2014	Ag 230	4	Business Plan	Instructor and Advisory Member or other Faculty
Spring 2015	Ag 260	1-5	Model Home Project	Instructor and UHH Farm Technician
Fall 2015 or Spring 2016	Ag 54A or B	1,3,4&5	Hort Production Project	Instructor and UHH Farm Technician
Spring 2016	Ag 46	1-5	Model Home Project	Instructor and Advisory Member or other Faculty

5.

Fall 2016	Ag 200	1&3	Hort Production Project	Instructor and Advisory Member or other Faculty
Fall 2016	Ag 230	4	Business Plan	Instructor and Advisory Member or other Faculty

6. Other Important Considerations

In Table 5, provide other considerations that could affect the program during the next three academic years (e.g. trends noted over the review period, comparisons to any applicable standards, summaries of Student and/or Employer Satisfaction Surveys, Program Advisory Board recommendations, external factors, etc. (if applicable))

Table 5: Other Considerations Affecting the Program.

The economic downturn created great incentive for people to return to college for further education. This likely contributed to the agriculture program's dramatic increase in enrollment. In years prior, the program was chronically under enrolled. It is unclear what impact improving economic conditions will have on program enrollment.

There have been increasing opportunities for agricultural training and education outside of the credit program at HawCC. The college itself is offering non credit classes and there are also external groups offering training opportunities. These developments may have some impact on the program.

Part III Goals and Program Improvement

1. Goals for AY 2013 – 2017

List the **Program's top 3 goals for Program success in the next Comprehensive Review period: AY 2012/13 to AY 2017/18**. Explain how these goals align with the mission, ILOs, UH Program counterparts, etc. (if applicable). Describe how these goals might improve the program and student learning.

Table 6: Goals and Alignment

Goal 1

Modify current program curriculum to create an AS Degree and a stronger pathway to UHH or other 4 -year institutions.

ILO alignment

This goal aligns with all ILOs and the college mission. It is an example of the program's attempt to strive for greater excellence. Program update and improvement will result in improvement in alignment with ILOs, as they will be considered as part of the planning process.

UH Collaboration

Faculty members from UHH CAFNRM are advisory members to the program and have already provided input on curriculum plans. They will continue to be involved in the process as it progresses. Contact will be made with UH Maui College to better align courses with their program.

Goal 2

Improve learning environment through greater access to computers, software, tools and equipment.

The program lacks access to computers and Agriculture, business and design related software. Also, tools and equipment if available are not sufficient to provide student enough hands on contact to fully master skills and proficiencies necessary to obtain higher-level positions within the industry.

ILO alignment

This aligns with all ILOs and mission. Again, improvement of the learning environment is an example of striving for excellence. This will provide students that participate in the program greater skills and proficiencies. Access to computers will improve their digital communicative abilities. New tools and technologies in the program will naturally result in opportunities for higher order problem solving as many program students are active learners. Finally, students will leave the program with greater potential to positively impact the community and their families.

UH Collaboration

While not readily apparent some opportunity for collaboration with UHH may exist. Purchase of certain farm equipment could be shared or used as demonstration examples at the UHH farm where both programs' facilities are located. Strengthening some of our program areas in combination with goal 1 above could result in a two-way pathway between HawCC and UHH with some UHH students enrolling in HawCC Ag Program courses (e.g. Landscape Horticulture).

Goal 3

Increase the capacity of the program.

ILO alignment

This meets all ILOs and college mission by creating greater access to education.

UH Collaboration

Not likely applicable unless a plan to share a lecturer or faculty position can be developed. The author of this document is not familiar enough with hiring processes to know if potential for this exists.

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Innovations

<p>It may be possible to develop online components to aspects of the program that could increase capacity. Another innovation that will be explored is a noncredit to credit pathway between an OCET C3T training program and the HawCC AG program.</p>

2. Action Plan for Program Improvement

Complete Table 7 to provide justification for Program budget requests

Table 7: Prioritized Top 3 Cost Items (“G” funded requests only)				
(examples given in <i>italics</i> ; delete & replace with Program’s items)				
Budget Categories: P=Personnel; E=Supplies Enhanced; EQ=Equipment (>= \$5k); S1x=Program Review Special Fund;				
Budget Guidelines: Position requests should be listed separately; NO B Budget requests should be included				
Priority	\$ amount & budget category* Except R/M	Best fits which Action Strategies in the Strategic Plan and how? If it does not match to any of the existing Action Strategies, you may write a new one for recommendation.	Addresses which strength or weakness?	If currently grant funded, please explain: put date when funding ends and indicate HawCC commitment to support, if any
<i>1.a purchase classroom computers and related software and/or b. landscaping tools and equipment and/or c. laboratory equipment for disease and genetic diagnostics.</i>	<i>a. \$30k, S EQ b. 15K c. 30k S EQ</i>	<i>A.2, B.3, E.3 Additional resources in this area will create opportunities to develop higher order skill and gain exposure in STEM areas. It also supports sustainability by maximizing potential of existing core resources.</i>	<i>W2, S1</i>	
<i>1.hire 1 FTE faculty or-APT</i>	<i>\$62k, P (estimate from 2007 comp review)</i>	<i>D.1, B.1 A new instructional position will expand capacity creating greater numbers of degrees and educated students capable of contributing positively in the community. Dollars created through agricultural endeavors have multiplier effects within the economy. A position also represents a positive addition to the human resources of the college.</i>	<i>W1</i>	
<i>3.Purchase van for carrying students to farm laboratory</i>	<i>\$25-45k, EQ (Estimation)</i>	<i>B.1 A purchase of a van will allow potential to expand enrollment as Ag program courses leave campus to travel to the farm laboratory. Lack of transportation capacity represents a real roadblock to increasing class sizes beyond 14 students.</i>	<i>W1</i>	

**Strategic Outcomes Goals and Performance Measures are: A1.1, B4., C1., D3., E2., etc.

3. Use Table 8 to indicate staffing levels.

Table 8: Staffing

Faculty/Staff	Number of Positions
Faculty	1
Lecturers	0
APT	0
Clerical	0