HAWAI\'I COMMUNITY COLLEGE
ANNUAL INSTRUCTIONAL
PROGRAM REVIEW

TROPICAL FOREST ECOSYSTEM AND
AGROFORESTRY MANAGEMENT
PROGRAM

November 24, 2008

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ANNUAL INSTRUCTIONAL PROGRAM REVIEW
Tropical Forest Ecosystem and Agroforestry Management Program
College: Hawai‘i Community College

Program: Forest TEAM

<table>
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<th>AS</th>
<th>ATS</th>
<th>AAS</th>
<th>CA</th>
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College Mission Statement (or provide link)
Hawai‘i Community College promotes student learning by embracing our unique Hawai‘i Island culture and inspiring growth in the spirit of “E ‘Imi Pono.” Aligned with the UH Community College system’s mission, we are committed to serving all segments of our Hawai‘i island community.

Imperatives
Dedicated to student learning, Hawai‘i Community College commits to the following imperatives:

- **Community Development** The College will provide students with opportunities to serve their community.
- **Workforce Development** The College will teach the skills needed to succeed in the workforce.
- **Cultural Competency** The College will respect and learn from all its students.
- **Environment** The College will build an awareness, appreciation, and sense of personal responsibility for the natural, social, and economic environments.
- **Hawaiian Culture and Values** The College will be the center for the study of Native Hawaiian cultural knowledge.
- **Healthy Communities** The College will work with students to build healthy communities.
- **Technology** The College will provide access to current technology that supports student learning.

I. Narrative and Analysis of Data

a. Statement on the mission or purpose of the program, including the target student population.
The Forest TEAM program is an Associate of Science degree program which is designed to prepare individuals for careers as Ecosystem Management Technicians, which includes work in native forest conservation and restoration, with commercial forest plantations, or with Agroforestry operations. Graduates are prepared for employment with state and federal agencies, the private sector, or to set up their own businesses. Students may also opt to continue with their four-year degree.

TEAM graduates at HawCC are prepared with knowledge and skills for entry-level positions in the fields of plant propagation, forest restoration, forest surveying, agroforestry, and use of GIS in decision making and management.

TEAM students should be able to:

I. **Apply basic eco-system concepts to natural resources.**

   A. Acquire knowledge of forest ecology in Hawai‘i;
   B. Demonstrate awareness of wildlife population dynamics;
   C. Demonstrate knowledge of natural cycles such as water, carbon, minerals, etc.;
   D. Understand unique Hawaiian ecosystems;
   E. Acquire knowledge of natural disturbances such as hurricanes, volcanoes, and fires;
   F. Acquire basic knowledge of hydrology;
   G. Be familiar with water quality and chemistry;
   H. Understand habitat for aquatic animals;
   I. Be familiar with the geography of the Hawaiian Islands;
   J. Understand edges and corridors;
   K. Conduct an environmental assessment for a specific site;
   L. Understand volcanic geology.

II. **Use an understanding of general science concepts to apply experimental designs.**

   A. Complete core courses in science and math; Science courses to include ecology and either botany or zoology;
   B. Apply simple experimental designs;
   C. Analyze simple experimental data.

III. **Use knowledge of applicable laws and regulations to make decisions about managing ecosystems.**

   A. Identify applicable regulations;
   B. Comply with regulations;
   C. Communicate with regulatory agencies and/or supervisor;
   D. Apply chemicals in a safe and appropriate manner;
   E. Able to determine applicability of various laws and regulations to specific projects.
IV. Apply effective interpersonal and communication skills.

A. Demonstrate leadership skills;
B. Be able to write reports, correspondences, etc.;
C. Be able to work collaboratively as part of a team;
D. Give effective oral presentations;
E. Demonstrate computer literacy;
F. Write a management plan.

V. Recognize, collect, and interpret field data.

A. Inventory natural resources;
B. Demonstrate survey techniques—must include land survey, GPS aerial photo interpretation, data loggers, and assorted survey equipment;
C. Use GIS and other modeling programs in field analyses;
D. Interpret GIS and other modeling programs in field analyses;
E. Produce reports on data analysis (both oral and written).
F. Analyze and summarize data;
G. Demonstrate knowledge of field identification methods of plants and animals;
H. Demonstrate knowledge of an environmental management plan;
I. Conduct property title search and tax map key search;
J. Review aerial photo images;
K. Interpret maps.

VI. Apply effective management practices to commercial or conservation efforts.

A. Demonstrate general business skills;
B. Demonstrated knowledge of integrated pest management;
C. Be familiar with mensuration and inventory management;
D. Identify forest restoration principles;
E. Practice silviculture;
F. Be aware of tropical agro-forestry practices and products;
G. Understand the issue of biodiversity;
H. Prepare and write a management plan for a specific parcel of land;
I. Be aware of tropical agro-forestry practices.

b. Information on external factors affecting the program.

In the 1990s, studies of the State of Hawai`i workforce targeted forest and conservation workers as an area with a large potential need and lack of in-state training programs. In response to this and a Secretary of Conservation Biology workshop in 1997, the State of Hawai`i Dept. of Labor’s Workforce Development Office and the Hawai`i Community Forestry Initiative provided seed money for Hawaii Community College to develop grant proposals that led to the initiation of the Forest TEAM program.
The strengths of the program are:

- Requires internships with potential employers;
- Produces qualified graduates that are employed in the local community;
- Through articulation agreements with Oregon State University and University of Hawai`i at Hilo, the program provides graduates with opportunities to complete 4-year degrees in natural resources;
- The program is situated in an ideal environment which provides students with the opportunity for hands-on field experience;
- The program has a strong relationship with its Advisory Board, which strengthens the program and provides internship opportunities for students.
- Utilizing the latest technology, the program is distributing its courses throughout the entire island of Hawai`i.

Challenges for the program are:

- Under-prepared students that require remedial/developmental education prior to entering the program, which reduces enrollment;
- Students from other islands find it difficult to relocate to the Big Island.

c. Attach PHI Report - See attached.

d. Required external measures, if applicable - Not applicable

Analysis of Data

Although the number of majors decreased by 9% from 2006 to 2007, students were taking more units and the number of student semester hours (SSH) increased at an even higher rate (10%). When 2007 was compared to 2005, the number of majors remained relatively even (a 3% drop) but the number of SSH increased dramatically: 24%. This means that although there were fewer students in the 2007 academic year, they were taking more classes and the small drop in enrollment was countered by this increase.

The average class size remained fairly constant from 2005 through 2007 (a 7% increase from 2005 to 2006, then constant from 2006 to 2007) but the fill rate of the classes increased substantially (18% between 2006 and 2007 and 36% from 2005 to 2007).

The persistence rates for students from fall to spring semester has been steadily dropping: a 6% decrease from 2005 to 2006 and a 7% decrease from 2006 to 2007 for a total decrease of approximately 10% (81% persistence in 2005 compared to only 71% persistence in 2007).

However, our graduation rates are rising with a doubling of graduates from 2006 to 2007 (8 graduates in 2005, 7 in 2006, and 14 in 2007). Of those who are graduating, approximately the same number transfer to a baccalaureate program within the UH system: 4 in 2005 and 2006 and 3 in 2007. 100% of our students are going on to either a 4-year degree or finding employment (Perkins core indicator 3P1) which is up 33% from 2006 and up 50% from 2005. In addition, 100% of our students have been successful in retaining their jobs (3P2).

We are successful in attracting non-traditional female students (4P1; 57% of our students in 2005, 50% in 2006, and 55% in 2007) and we are improving our completion rate for non-
traditional students (4P2; from a low of 40% in 2006 to 67% in 2007). We are also improving our overall rate of completion (2P1; from a low of 50% in 2006 to 60% in 2007). Available jobs at both the State and County levels have decreased dramatically: a 97% drop of new and replacement positions from 2006 to 2007 in the State and a 95% drop in the County. Our program cost per SSH is $501.48.

II. Update or Create Your Action Plan including Budget Request with Justification, if needed.

The Forest TEAM Program plans to do the following:

- Continue to expand recruiting through brochure mailings to all public and private high schools statewide. Continue to participate in career fairs at local high schools in the Career Pathways career fairs held in Hilo each year. Continue to visit classes of high school teachers in agriculture and natural resources. Offer a summer Explorations class to high school students. Continue to promote the Junior Forest TEAM club at locations around Hawaii Island.
- Extend work with the Natural Resources Career Pathways program, targeting teachers on the Big Island schools who are participating in the program
- Send applied TEAM distance education classes to the West Hawai`i campus
- Work with the Advisory Board to continue to meet the needs of employers
- Continue to work with federal and state agencies in service learning and internships
- Build full-size greenhouse for shared use with Agriculture and Hawaiian Life Styles programs
- Continue 20% course review
- Implement the assessment of PLO 1
- Develop an assessment rubric for PLO 2
- Continue to identify assessment strategies for course SLOs
- Continue with curriculum development in response to student and program needs
- Continue to update the software on the Forest TEAM computers
- Update the Forest TEAM website
- Improve our field-based learning program with updated tools and methods to ensure that our graduates are competitive in the shrinking employment scenario
- Continue professional development for faculty
- Complete articulation agreements with UHH, UHM, and OSU

Resource Implications (physical, human, financial)
- New and back-up inventory for classroom and office equipment: Elmo, computer projector, laptop, bulbs, DVD/VCR players, TV monitors, overhead projector, Polycom
- Technical support staff for course delivery
- Funding and resources for professional development
- Funding for distance learning course delivery

Materials and supplies for greenhouse and shadehouse
### Annual Report of Program Data for Tropical Forest Ecosystem Management & Agroforestry

**HAW CC Program Major(s): TEAM**

#### Demand Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Fall of Year</th>
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<tbody>
<tr>
<td>1 New &amp; Replacement Positions (State)</td>
<td>27, 27, 1</td>
</tr>
<tr>
<td>2 New &amp; Replacement Positions (County)</td>
<td>18, 18, 1</td>
</tr>
<tr>
<td>3 Number of Majors</td>
<td>32, 34, 31</td>
</tr>
<tr>
<td>4 SSH Program Majors in Program Classes</td>
<td>48, 57, 63</td>
</tr>
<tr>
<td>5 SSH Non-Majors in Program Classes</td>
<td>11, 4, 0</td>
</tr>
<tr>
<td>6 SSH in All Program Classes</td>
<td>59, 61, 63</td>
</tr>
<tr>
<td>7 FTE Enrollment in Program Classes</td>
<td>3.93, 4.07, 4.20</td>
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<tr>
<td>8 Number of Sections Taught</td>
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#### Efficiency Indicators

<table>
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<tr>
<th>Indicator</th>
<th>Fall of Year</th>
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<tr>
<td>10 Average Class Size</td>
<td>8.33, 9.00, 9.00</td>
</tr>
<tr>
<td>11 Fill Rate</td>
<td>38.46, 49.09, 60.00</td>
</tr>
<tr>
<td>12 FTE BOR Appointed Faculty</td>
<td>0.00, 0.00, 0.00</td>
</tr>
<tr>
<td>13 Majors / FTE BOR Appointed Faculty</td>
<td>0.00, 0.00, 0.00</td>
</tr>
<tr>
<td>14 Majors / Analytic FTE Faculty</td>
<td>68.09, 72.34, 65.96</td>
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<tr>
<td>14a Majors / Analytic FTE Faculty @ 12 cr.</td>
<td>54.47, 57.87, 52.77</td>
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<tr>
<td>15 Program Budget Allocation ('07 @ 12cr.)</td>
<td>$49,556.00, $52,789.10, $31,593.50</td>
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<tr>
<td>16 Cost per SSH ('07 @ 12cr.)</td>
<td>$369.82, $388.16, $501.48</td>
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<tr>
<td>17 Number of Low-Enrolled (&lt;10) Sections</td>
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#### Effectiveness Indicators

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<tr>
<th>Indicator</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<tr>
<td>19 Persistence (Fall to Spring)</td>
<td>81.25</td>
<td>76.47</td>
<td>70.97</td>
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<tr>
<td></td>
<td>Number of Degrees Earned *</td>
<td>8</td>
<td>7</td>
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<tr>
<td>20b</td>
<td>Number of Certificates Earned *</td>
<td>0</td>
<td>0</td>
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<tr>
<td>21</td>
<td>Number Transferring (to UHM, UHH, UHWO)</td>
<td>4</td>
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**Perkins - Campus Actual **

<table>
<thead>
<tr>
<th></th>
<th>1P1 Academic Achievement</th>
<th>100</th>
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<tr>
<td>22</td>
<td>1P2 Vocational Achievement</td>
<td>100</td>
<td>83.33</td>
<td>90</td>
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<tr>
<td>23</td>
<td>2P1 Completion</td>
<td>75</td>
<td>50</td>
<td>60</td>
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<tr>
<td>24</td>
<td>3P1 Placement Employment/Education</td>
<td>50</td>
<td>66.67</td>
<td>100</td>
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<tr>
<td>25</td>
<td>3P2 Retention Employment</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>26</td>
<td>4P1 Non Traditional Participation</td>
<td>57.14</td>
<td>50</td>
<td>55</td>
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<tr>
<td>27</td>
<td>4P2 Non Traditional Completion</td>
<td>80</td>
<td>40</td>
<td>66.67</td>
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**Perkins - State Standards **

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<tr>
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<th>1P1 Academic Achievement</th>
<th>81.81</th>
<th>81.92</th>
<th>81.87</th>
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<tr>
<td>22</td>
<td>1P2 Vocational Achievement</td>
<td>90.00</td>
<td>90.00</td>
<td>90.42</td>
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<tr>
<td>23</td>
<td>2P1 Completion</td>
<td>36.00</td>
<td>37.33</td>
<td>38.17</td>
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<tr>
<td>24</td>
<td>3P1 Placement Employment/Education</td>
<td>71.00</td>
<td>71.72</td>
<td>71.07</td>
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<tr>
<td>25</td>
<td>3P2 Retention Employment</td>
<td>90.00</td>
<td>92.00</td>
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<tr>
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<td>4P1 Non Traditional Participation</td>
<td>14.81</td>
<td>14.60</td>
<td>14.60</td>
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<tr>
<td>27</td>
<td>4P2 Non Traditional Completion</td>
<td>12.86</td>
<td>12.73</td>
<td>12.19</td>
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|   | Faculty FTE Workload | @ 12 cr. | 0.59 | 0.59 | 0.59 |

**Overall Program Health**

*All degrees and certificates are counted based on fiscal year.

** Perkins data are for CTE programs only. From report on 2006-2007 Perkins activity year