ANNUAL REPORT OF PROGRAM DATA 2023

July 1, 2022 through June 30, 2023

Tropical Ecosystem and Agroforestry Management

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1. Program or Unit Mission

Students learn to actively manage Hawai‘i’s native forest ecosystems, grow native plants, establish agroforestry operations, use Global Positioning Systems (GPS), and Geographic Information Systems (GIS). Internships give students on-the-job training with potential employers. The target student populations are high school graduates and non-traditional students looking for a second career.

2. Program Student Learning Outcomes or Unit/Service Outcomes

During this reporting period, GEO 170 was assessed was related to TEAM program learning outcomes 1, 4, 5 and 6. The results are the following:

TEAM PLO 1 Apply basic ecosystem concepts to natural resource management using GEO 170 CLO 4 Which is “Know the dominant plant species found in different forest communities and be able to recognize them at various age classes.” 33.33% Exceeded and 66.67% met this expectation.

TEAM PLO 4 Apply effective interpersonal and communication skills related to GEO 170 CLO 5 “Be able to make vegetation maps”. 33.33% exceeded, 33.33% met and 33.33% partially met this expectation.

TEAM PLO 5 Recognize, collect, and interpret field data assessed by GEO 170 CLO 1 - Learn and understand about forest parameters such as area, slope, structure, light penetration and species composition; and PLO 2 - Be able to use basic field surveying equipment such as a hand held compass, transect tape, clinometer, densitometer, theodolite and total station. Overall, 58.66% exceeded and 41.33% met this expectation.

TEAM PLO 6 Apply effective management practices to commercial or conservation efforts which relates to GEO 170 CLO 3 “Understand how to set up transects and plots for forest surveys and monitoring.” 33.33% exceeded and 67.67% met assessment expectations.

The overall results of this assessment indicate that the TEAM Program learning outcomes are mostly being met in the Field course GEO 170 CLOs 1, 5 and 6. Efforts to continue providing hands on application of field techniques will continue to be a large part of the curriculum.

More work is needed to make sure that PLO 4 is strengthened in the specific area of map creating either on paper or in digital format. More time will be allocated to this activity and time for mini project presentations allowed before the final vegetation map is submitted.

3. Analysis of the Program/Unit

The Classification of Instructional Programs (CIP) covers the categories of Conservation Scientists, Foresters and Forest Conservation Technicians and Workers. In these categories, there has been a high demand across the state for new and replacement positions with numbers ranging from 169 in 2019/20 and 107 in 202/22 and 22/23. The lower value during the last two years reflecting the cut back in conservation projects during the pandemic years. In the county, new and replacement positions have ranged from 25 to 28 positions in the last 5 years which indicates the importance of conservation and forestry jobs on Hawaii island. (Annual Review of Program Data (hawaii.edu)

The number of TEAM majors dropped dramatically from a high of 22 in 2019 to 5 in 2021 due to the pause in the programs field course offerings. Those students who were half way completed with the program were taught via directed studies courses so that they could graduate. In 2022 the declared majors increased to 11 and in Fall 2023 went up to 17 according to STAR Student Report. More than 50% of the TEAM majors are native Hawaiian which has been consistent since the program began in 2002. Enrollment in core classes went from zero in AY 20/21 to 10 in AY 22/23 which shows that the program is coming back in popularity.

The last Comprehensive Review for the TEAM Program was completed in 2020 and covered the academic semesters of Fall 2017 through Spring 2020. By the end of that reporting period, the drastic effects of the coronavirus had already closed down face to face classes and it was apparent the program would have to pause field courses. Thus, one of the primary goals of this review was to focus on addressing the issues of increasing program class size and improving student retention and successful completion of the program. One of the major program changes that developed from this situation was to transition to a cohort model schedule. In this model, students move through a 4-semester cycle where the core program courses are offered every other year. Other action plans from the 2020 Comprehensive review included removing major restrictions for several of the TEAM courses and proposing GE (GEO 170) and SF designations (AG 175 & 245) so that Liberal Art students could take them as electives.

In addition to these curricular changes, funding was obtained in Fall 2022 from an NSF ATE grant to develop a “Geospatial Remote Sensing” certificate of competence from two existing TEAM courses and two new courses in the AEC program. The TEAM courses are GEO 270 (Geographic Information Systems) and AG 291 (Forest Ecosystem Management) which have been modified to include more remote sensing curriculum with the other courses focusing on FAA UAS (drone) operations and remote sensing data analysis. Combined, this greatly increases the skill set of the TEAM graduate and will hopefully attract more high school students who are interested in using this type of technology in forestry and conservation.

One of our key TEAM faculty members, Pamela Scheffler, was on sabbatical leave during this reporting period. Fortunately, the TEAM and AG and HLS programs have been supported by the

USDA Alaska Native Native Hawaiian (ANNH) grant that provided funding for a part-time TEAM APT and a student worker in addition to student internships, tuition waivers, travel and educational supplies.

Summary of extracurricular funding during AY 22/23.
USFS - Work study for TEAM students to participate with Na Palina Forest Restoration - 18K
USDA - 3 grants during this time period for approximately 100K each over a 2-year cycle with funds for student internship stipends, tuition waivers, scholarships, travel and professional development.
NSF - Geospatial Remote Sensing Hawaii - to develop a remote sensing certificate with courses shared between AEC and TEAM programs. Includes funds for remote sensing equipment, subject matter expert, lecturers, APT and student worker. Requires infrastructure matching by camps 640K

4. Action Plan

The TEAM program was able to weather the trials of the pandemic and resulting paused field courses by teaching directed studies that allowed for 4 of our program majors to graduate. When recommendations to stop out the program were proposed to save costs in 2021, scores of letters in protest poured in from former students, community members and government agencies. This support from the community after 20 years of training forest and conservation technicians helped to save the program and provided motivation to make the program better.

As mentioned in section 3, shifting to a cohort model has enabled our core program courses to run with a sufficient number of students with several non-majors taking the courses to fulfill GE or SF requirements. In the fall of 2022 when the first field class was offered, there were 10 students in AG 175 and 11 in AG175L and in Spring 2023 there were 8 students in AG 245/L and 7 students in GEO 170/L. These numbers are comparable with those of pre-pandemic values and suggest that measures taken have been effective.

As also proposed in our comprehensive and annual review action plans recruitment took place at Highschool and community events. Program booths were taken to HS career fairs in Keaʻau, Hilo, and Honokaʻa and set up on the HawCC campus for Earth Day and Hawaiʻi CC Day events. New fliers were made along with one for the proposed Geospatial Remote Sensing Certificate which was very popular with many high school students. Recruitment efforts were also extended to social media, when the TEAM opened an Instagram account in fall 2021. The TEAM club was revived in Fall 2022 and now has approximately 10 members. Although membership is lower that it was in 2019, the club participated with a number of extracurricular conservation activities and organized. Four club members were also able to take a 10-day trip to Southeast Alaska to participate with a salmon habitat research project.

Changes to the program action plan will include the promotion of the newly approved Geospatial Remote Sensing Certificate that will include 3 TEAM courses. The TEAM program was modified to include ENGR 107 Unmanned Aerial Systems which along with AG 291 and GEO 270 will provide extensive training in remote sensing data collection and analysis.

5. Resource Implications

Special Resource Requests not included in operating "B" budget *

Detail any special resource requests not funded by your regular operating budget, including reallocation of existing resources (physical, human, financial) to support action or Perkins plans.
**Note that CTE programs seeking future funding via UHCC System Perkins proposals must reference their ARPD Section 4. Action Plan and this ARPD Section 5. Resource Implications to be eligible for funding.]*

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

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

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

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

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- ✓ **1. Item Description:** CPU upgrade for Computer lab
- ✓ **Justification:** Higher speed computers are need to run the aerial imagery needed for the GRS remote sensing related courses.

- ✓ **Priority Criteria**
  Address aging infrastructure.
  Leverage resources, investments with returns, or scaling opportunities

- ✓ **2. Item Description – Security Cameras**
- ✓ **Justification – Needed to prevent theft and vandalism**
- ✓ **Priority Criteria** (must meet at least one of the following):
  Address and/or mitigate issues of liability, including ensuring the health, safety and security of our Kauhale.

- ✓ **3. Item Description – Electrical outlet**
- ✓ **Justification – Needed to operate electrical tools in the greenhouse and agroforestry area**
- ✓ **Priority Criteria** (must meet at least one of the following):
  Leverage resources, investments with returns, or scaling opportunities

CATEGORY	Category-Specific Information Needed			
Equipment CPU Upgrade	Estimated Date Needed Jan 2025	Quantity / Number of Units; Cost per Unit 17 / $1,300 each	Total Cost (with S&H, tax) $24,500.00	On Inventory List (Y/N); Decal # N/A Reason replacing – update/ increase speed
Facilities Modification Security Cameras Greenhouse Electricity outlet	Estimated Date Needed ASAP May 5, 2024	Total Cost $1,000.00 $500.00	Monthly/Yearly Recurring Costs $100.00 annually $100.00 annually	Utilities Required Internet connection with security Electrical connection
Personnel Resource	Estimated Date Needed	FTE; Position Type; Position Title	Estimated Salary	Was an Existing Position Abolished? (Y/N); Position #