

Instructionally Related Activities Funds Request Fall 2019

▼ Submitter

Submitter Name

Clare Steele

Submitter Email

clare.steele@csuci.edu

▼ 1. Basic Details

Activity Title

ESRM 371 Coastal Monitoring with Remotely Piloted Systems in Maui, HI

Activity/Event Date

1/6/20

Date Funding Needed By

10/1/19

Previously Funded?

- ☒ No
☐ Yes

Additional Proposers

Kiki Patsch, Sean Anderson

Academic Program(s)/Center Name(s)

ESRM

Estimated total Course Fee revenue

\$4200

Amount Requested from IRA

\$30430

Estimated Number of Students Participating

6

▼ 2. Brief Activity Description

Describe the activity and its relationships to the educational objectives of the students' program or major

Brief Activity Description

Students will enroll in ESRM 371 - Coastal Monitoring with Remotely Piloted Systems for the Spring Semester 2020. Enrolled students will participate in all aspects of this remotely-piloted systems research study, exploring coastal and marine natural resource issues in Maui, HI. This course is open to students from across campus with an FAA license (Part 107) and as such are pilots qualified in the operation of Small Unmanned Aircraft Systems. While students can obtain this independently, students enrolled in ESRM 370 take this exam/certification as part of that course and so would be prepared to enroll in ESRM 371. ESRM is traditionally the most abundant major in ESRM 370, but (as it is open to all majors with no pre-requisites) we also have Anthropology, Biology, and Business majors in the course this semester, representative of every semester we have taught this course. We have never taught ESRM 371 before, but envision enrollments to parallel ESRM 370.

Students will use remote sensing equipment to gather extensive data to address important environmental issues in this locality. Recent brushfires in West Maui have caused serious impacts to vegetated areas. Subsequent rainfall and erosion of sediments may be impacting areas further down in the watershed including coastal marine habitats. Coastal erosion of beaches, and sedimentation on nearshore shallow reefs can also be monitored with unmanned aerial systems. Students will assist local community partners by providing aerial surveys and mapping products of affected areas to better inform natural resource management.

In the waters adjacent to Maui, students will work with partner organization the Keiki Kohola Foundation, to assist with research examining abundance, distribution, body condition and behavior of humpback whales. Every winter, humpback whales from across the North Pacific travel thousands of miles to the waters around Maui, Hawaii. Adults breed, females give birth and young humpback whale calves spend their first crucial few months in this region. As this endangered species recovers from the threat of extinction, this research contributes directly towards the effective local management, ensuring the health, well-being and survival of future generations of humpback whales.

In addition to participating in this valuable research study, the trip provides students with the opportunity to immerse themselves in the unparalleled natural environment and the culture of the Hawaiian Islands. Rainforest hikes in remote island regions are combined with snorkeling and other activities so that students can appreciate the challenges that arise in this unique location. They see first-hand the conflicts that develop in the management of areas where high levels of human recreational activity and fragile marine habitat overlap. Associated outreach activities and featured local speakers that meet with our students round out the trip to allow students to fully consider and appreciate the human footprint in regions such as this.

To be effective, conservation-based work such as this needs to be communicated to the public at large. Consequently, the broader goals of this project provide a perfect vehicle for the involvement of students and faculty from the range of disciplines across our campus. Students from across campus will be eligible for this course. In previous years, students taking the prerequisite ESRM 370, have predominantly been ESRM and Biology majors, but other majors to have recently taken the course include Business and Anthropology.

On completion of the trip, students will present their findings at the end-of-year Sage Research Forum. Additionally, they will be fully involved in the dissemination of their results, as we provide data and mapping products to local state, federal and NGO partners.

▼ 3. Learning Outcomes and Relation of IRA to Course Offerings

All IRAs must be integrally related to the formal instructional offerings of the University and must be associated with scheduled credit courses.

1. Please list all classes that directly relate to the proposed activity.

2. For each class listed, describe in detail how exactly the IRA activity will be integrated with the class's activities, how often/ on what expected date(s), and to what extent

Learning Outcomes and Relation of IRA to Course Offerings

Students who participate in the course will:

- Develop skills in vehicle maneuvering, control systems, safe operations, and effective planning and budgeting.
- Focus on data collection activities using unmanned aerial or aquatic systems.
- Design experiments to test scientific hypotheses, collate data, conduct statistical analyses and evaluate research outcomes.
- Gain first-hand experience in problem solving
- Identify topic appropriate research materials, synthesize information from a variety of sources and gain experience in effective communication of results in a variety of media.
- Develop communication skills and the ability to work as an effective team member in a diverse cultural setting
- Use analytic and data collection equipment in situ.
- Work as part of federally permitted research team, and contribute to ongoing efforts for the conservation of a federally listed, endangered species.

Related courses:

Fundamentals Of Remotely Piloted Systems (ESRM 370): Explores the basics of Unmanned Aerial Vehicles and Remotely Operated Vehicles from a range of perspectives including aero-/hydrodynamics, data collection, legal, cultural, basic programming, and public safety. Students will be exposed to control systems, various vehicle designs, and routine equipment maintenance.

Coastal and Marine Management (ESRM 462): Current issues in marine management, aquarium trade, eco-certification, overexploitation of whales and population recovery, habitat use.

Marine Biology (Biology 312): Ecology of marine mammals, management of marine resources and marine field techniques.

Two lectures, one lab.

Research Design and Data Analysis (Math 430): The study provides real world illustration of the underlying principles of experimental design.

▼ 4. Activity Assessment

Describe the assessment process and measures that the program will use to determine if it has attained its educational goals.

Please note that a report will be due at the end of the semester.

Description of Assessment Process

Students enrolled in ESRM 371 Spring 2020 will analyze data collected on land use, coastal and nearshore habitats, humpback whale behavior, body condition and distribution. All students will be required to collaborate on the production of posters and presentations for the SAGE research forum here on campus and part of the student's overall grade will be assigned based on these presentations and posters.

Students will be provided with a marking rubric, emphasizing the statement of clear questions and associated hypotheses, the explanation of key components of their methods, results and full analysis and interpretation. We will seek additional opportunities for the dissemination of the data at professional conferences.

▼ 5. Activity Budget

Please enclose a complete detailed budget of the entire activity. Indicate specific items that you are requesting IRA to fund.

You should use either the Regular Activity budget (for events on campus) or -- if your event involves any travel-- you MUST use the IRA Travel Budget Form.

You can download both of the IRA Excel Budget sheets at <http://www.csuci.edu/ira/application.htm>.

Activity Budget

[ira-travel-budget_Winter 20_Maui_pretrip.xlsx](#)

▼ 6. International Trips

If your event is an international trip submitted through the Center for International Affairs, you must include copies of:

1. Complete Center for International Affairs/ UNIV 392 proposal
2. The program budget as submitted to the Center for International Affairs (to ensure congruency between the two budgets)
3. as well as a copy of the course syllabus

Center for International Affairs Budget

Copy of Center for International Affairs Proposal

Course Syllabus

Certification

☐ I certify that students attending this trip are not previous or repeat attendees of a prior International UNIV 392 Trip

▼ 7. Sources of Activity Support

Please list the other sources of funding (including course fees), and exact expected amounts of additional support for the activity. Please indicate if there are no other sources of funding

Other Sources of Funding

Course fees are estimated at \$700.

The Keiki Kohola Project, a Maui-based non-profit 501 (c) 3 organization, will provide access to its research vessel, logistic support, in-field training and most of the field equipment required by the students. This represents an in-kind donation of around \$3000 per student, based on current eco-tourism trips such as Earth Watch / similar programs offered for profit by other universities, which charge for participation in this type of project. Monitoring equipment provided by Keiki Kohola Project includes cameras, computer equipment, acoustic recording and water quality monitoring equipment.

▼ 8. Promoting Participation

What is your intended audience and how do you intend to market this to your students?

This activity will be offered to all qualified students across the campus. Completion of ESRM 370 and FAA Part 107 is a prerequisite. Flyers will be posted to inform students of application dates and details, and all applicants will be encouraged to attend a set of informational meetings in Fall 2019 prior to submitting their applications.

If this is an event that is off campus, how do you plan to bring back the benefit of this event to campus?

For the benefit of the campus community, during Spring 2020, students will prepare posters on their research topics and these will be displayed to the general student body during a celebratory event in concert with Costa Rica and New Orleans service learning participants to be held in the student's union, or similar central location. All trip participants will be required to attend, and share their experiences with other students. Underwater and surface videos will be displayed and acoustic recordings of whale song will be available for other students to listen to. Additionally, students participating in the trip will identify current conservation issues that are impacting terrestrial and marine communities in Maui. They will compile accurate information and options for active support, and will provide this to other students during this event.

Participation in this activity primarily impacts student attitudes towards sustainability. Spending time in a potentially pristine

region, such as Hawaii, provides students with an opportunity to develop their own attitudes to this issue, through direct experience and reflection on the impact that anthropogenic activities can have, both on the larger marine environment and on marine megafauna.

Students who have completed the course will be more informed on these issues and hopefully persuaded by their own experiences to better embrace the ideologies and principles of sustainability. Furthermore, with the incorporation of the educational outreach event on campus, this impact will disseminate across the campus, to contribute to the general level of environmental awareness of our student body.

▼ 9. Approval and Acknowledgement

Program Chair/Director

Anderson, Sean S

Dean

Wyels, Cynthia (Arts & Sciences)

Conditions and Considerations

- ☐ **Artist/Performer/Speaker Fees & Honoraria:** On the Activity Budget, please indicate whether the vendor's price was set by you/CI Representative, or is a fee that was set by the vendor.
- ☐ **Large Event:** For a large event, consultation with the campus Event Coordinator's office at (805)437-8548 is required.
- ☒ **Field Trip:** Sponsor must comply with all policies found at:
<http://www.csuci.edu/rm/programs/academic-field-trip-guidelines-and-forms.htm>. If approved, Identified Risks of Participation and Release Agreement must be submitted for each student to the Program Office (Public Folders-HR Forms).
- ☐ **Involves Human Subject Data Collection for Public Dissemination -Requires IRB Approval :** If Project Sponsor proposes to conduct research with human participants, the proposal may be subject to Institutional Review Board for the Protection of Human Subjects (IRB) review. All research that involves any type of interaction with human subjects - from simple surveys to complex biomedical procedures - must be reviewed and approved by the IRB prior to starting the research. Data for "Public Dissemination" indicates interviews/surveys that result in a journal/poster session/newsletter, etc.
- ☐ **IT Requirements:** If your activity has IT requirements, coordination with and approval from IT Administration is required.
- ☐ **International Travel:** Requires International Travel application be submitted to Center for International Affairs. Include copy of CIA budget and course syllabus in your IRA application. Must utilize the University's Foreign Travel Insurance Program (FTIP) and follow all International Travel Guidelines listed at: <http://www.csuci.edu/rm/insurance/foreign-travel.htm>
- ☐ **Risk Management Consultation:** Events that involve or engage students directly with a performer or artist (i.e. in a workshop or other than as a passive audience member) will require consultation with Risk Management. Requires proof of correspondence with Risk Management.
- ☐ **Space/Facilities Services Requirements:** Consultation and coordination with Facilities Services is required.

Acknowledgement

- ☒ I acknowledge that I have reviewed and accepted the Conditions and Considerations herein. I acknowledge that the activity sponsor will be responsible for managing purchases, travel arrangements, and all transactions related to approved activities. Please check off boxes as appropriate.

▼ Chair Review

Recommendation

- ☒ I recommend approval of the IRA Funds Request described on this page

 DO NOT recommend approval of the IRA Funds Request described on this page

Comments

Change to part 8 about who can take this: successful completion of the 107 FAA pilots license is a requirement (something >98% of our students who have taken ESRM 370 have completed). Any student from campus who has a 107 is eligible, but practically this would mean students who have taken our ESRM 370 (a course with no prerequisites and open to all).

 Sean Anderson Mar 21 2019

▼ Dean Review

Recommendation

- ☒ I recommend approval of the IRA Funds Request described on this page
- ☐ I DO NOT recommend approval of the IRA Funds Request described on this page

Comments

 Cynthia Wyels Apr 4 2019