

## Instructionally Related Activities Funds Request Fall 2017

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### IRA Funds Request for Air Quality Monitoring

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#### Instructionally Related Activities Funds Request Summary

Project Sponsor	Gregory Wood
Activity Title	Air Quality Monitoring
Activity/Event Date	8/2017
Date Funding Needed By	8/2017
Previously Funded?	Yes
Semester/Year	Spring/2017
Proposal #	811
Report submitted for previously Funded Activity?	No
Report submitted for previously Funded Activity	—
Additional Report #1	—
Additional Report #2	—
Additional Report #3	—
Additional Proposers	—
Academic Program(s) / Center Name(s)	UNIV
Estimated total Course Fee revenue	n/a
Amount Requested from IRA	1220
Estimated Number of Students Participating	5
Conditions and Considerations	Field Trip
Brief Activity Description	The purpose of the activity is to expand our portable toolkit of air quality sensors. We are running the class right now, in Spring 2017, funded via IRA proposal 811, and although several sensors (oxygen, dust, ozone) are great, we need better (a bit more expensive) sensor for carbon dioxide and we would like to add natural gas sensors to detect any leaks such as the recent leak in Porter Ranch. We need two copies of each: one to move around the CI campus, and a second to install at the Santa Rosa Islands Research Station (SRIRS) to compare with. These are very small, low cost sensors which integrate with a Raspberry Pi cellphone sized computer – which we already have here on campus and at the station. Students will evaluate a variety of oxygen, carbon dioxide, dust, and other gas sensors (these use low power and vary in size from a large coin to the size of a cell phone). Students and the PI will carry the bundle to classes and around campus recording levels in classrooms (primarily – other places are possible – beside parking lots, etc). Readings will be reported back to Facilities Services who can adjust air flow as needed. The sensors would be re-used in UNIV 492 in future years and potentially expanded. As our campus grows around us, this Fall 2017 data would provide a baseline for future. Is this global or local to CI? By placing a copy of the sensors in a "clean" environment, we can tell. Students will travel to the Santa Rosa Island Research Station (SRIRS) during the Fall 2017 semester to install a copy of all sensors and integrate to the existing system the author installed with students last Fall. The trip will last three days, spending two nights in the station house.
Learning Outcomes and Relation to IRA to Course Offerings	1. Course is UNIV 492 – Sustainability in Campus Infrastructure 2. Students will learn how to design electronic circuits around the sensors we select for the course. Ideally, I would like students to research and select sensors, but due to limited time, the PI will have the sensors ready to go on day one of the course. Students will then edit and expand the code which reads the sensors and records the results. We will move the portable sensors around campus to check air quality and, near the end of the course, travel to the island, take reading at selected points on the island, and leave a copy of all sensors running, remotely transmitting data to us here at CI.
Description of Assessment Process	The proposed projects will be assessed by the functionality of the sensor arrays on the island and on campus by the PI. Student understanding of the work will be assessed by written and oral presentations of the students detailing how the sensors work and what their capabilities are. This includes the economics of building and running such devices.
Activity Budget	<a href="#">iratravelbudgetformay1617_GGW_air_quality.xlsx</a>
CIA Budget	—
CIA Proposal	—
Course Syllabus	—
CIA Certification	—
Other Sources of Funding	Students will contribute a small amount to the cost of the trip to the island, about \$45, and the Physics program will lend some materials needed to test and integrate the sensors, such as meters, power supplies, breadboards, function generators, and consumables such as wire and solder. The PI is providing the Raspberry Pi on campus as well as helping with any cost overages on sensors such as from shipping and handling and anything else, as such unexpected expenses naturally arise, needed to facilitate the project.
Target Audience/Student Marketing	Abroad range of junior/senior level students will be recruited for this course via: email and word of mouth by contact with clubs such as the Green Generation Club, the Physics Club, CI Computer Girls Club, faculty, and program chairs.
Bring Benefit to Campus	Students present at Sage at the end of the academic year disseminating the findings. The only off-campus portion of the activity is the Island part, and we plan to use the readings from the island to compare with the readings here on campus to determine if any air quality changes are local to campus development, or more regional or global.
Sustainability	(1) this course promotes the understanding of sustainability in students and (2) readings of air quality on campus at CI can be reported to our Facility Services. This feedback can help bring cleaner air into our buildings.
Program Chair/Director	elizabeth.hartung
Dean	james.meriwether
Acknowledgement	I acknowledge that I have reviewed and accepted the Conditions and Considerations herein. Please check off boxes as appropriate.

#### Program Chair/Director Review

Recommendation	I recommend approval of the IRA Funds Request described on this page
Name	Elizabeth Hartung

Date/Time	3/5/2017 11:21:17 AM
Validation	myCI-signin-G7-1863
Comments	This proposal extends the work already begun by the faculty member and not yet reported because it is in progress. He may need to increase the food budget since the group will spend two nights and three days on the Island.

Dean Review

Recommendation	I recommend approval of the IRA Funds Request described on this page
Name	James Meriwether
Date/Time	3/7/2017 8:06:13 PM
Validation	myCI-signin-MM-1921
Comments	—

IRA Committee Decision

Decision	—
Comments	—

Current Tasks

Task	Time Assigned	Assigned To
IRA Committee Decision	3/7/2017 8:06:13 PM	<a href="#">David Daniels</a>

Completed Tasks

Task	Time Assigned	Time Completed	Completed By
Review from james.meriwether, Dean	3/5/2017 11:21:17 AM	3/7/2017 8:06:13 PM	<a href="#">James Meriwether</a>
Review from elizabeth.hartung, Program Chair/Director	3/3/2017 7:15:39 PM	3/5/2017 11:21:17 AM	<a href="#">Elizabeth Hartung</a>
Fill out Request	3/3/2017 6:48:37 PM	3/3/2017 7:15:39 PM	<a href="#">Gregory Wood</a>

Actions

- [IRA Committee Decision](#)
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