

Instructionally Related Activities Funds Request Spring 2018

▼ Submitter

Submitter Name

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Submitter Email

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▼ 1. Basic Details

Activity Title

Exploring Swarm Robotics To Mars and Beyond (COMP490)

Activity/Event Date

04/17/2018 – 04/20/2018

Date Funding Needed By

February 2018

Previously Funded?

- No
 Yes

▼ Previously Funded Proposal

Semester/Year

Spring 2017

Proposal # (if known)

871

Report submitted for previously Funded Activity?

- No
 Yes

Please upload a copy of the report

[NASA_IRA_Report_2016.docx](#)

Additional Report #1

[IRA_NASA_2016_Participants.docx](#)

Additional Report #2

Additional Report #3

Additional Proposers

Academic Program(s)/Center Name(s)

Computer Science and Information Technology

Estimated total Course Fee revenue

n/a

Amount Requested from IRA

\$33,806.00

Estimated Number of Students Participating

24

2. Brief Activity Description

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

Brief Activity Description

The proposed instructionally related activity is a one week field trip to NASA's Kennedy Space Center in Cape Canaveral, Florida. This year CI was selected as one of twenty minority serving institutions to participate in a national competition called the NASA Swarmathon Physical Competition. The following description of the competition is taken from www.nasaswarmathon.com.

Twenty-Three Minority Serving Institutions were selected through a competitive application process to participate in the 2018 NASA Swarmathon Physical competition. Teams will develop their own search algorithms and test them at their own university using the 3 Swarmie robots. Prior to the competition, teams will upload their code to contest organizers who will then load each team's code on to 3 Swarmies at the Kennedy Space Center to see how the search algorithm performs. Teams will be ranked by the number of resources their search algorithm is able to locate in a specified period. The event will be held in April 2018 and broadcast live via an online video stream. Teams are welcome to attend in person and observe their code in action, but travel to the event is not required.

As stated above students are optionally invited to attend the competition at NASA's Kennedy Space Center in Florida and observe their robots in action. In addition to attending the 3-day competition, we will spend the final day touring Kennedy Space Center. Some possible options include:

- Space Shuttle Atlantis
- Shuttle Launch Experience
- Special Viewing for Rocket Launches
- Meet an Astronaut
- Numerous Shows and Exhibits
- KSC Bus Tour

Next Spring I will offer a course COMP490: Software Engineering Team Experience which will focus on the use of swarm robotics in space exploration. This course will be open to all students at CI with no prerequisites. The intent is to run the course like a business where students can select different ways to contribute to the overall team mission based on their own backgrounds and strengths. There is tremendous interest in this course. Last semester the enrollment easily reached the cap of 24 students.

Ultimately to be successful this student team will need to work many more hours than the three units of credit for COMP490, and they should be rewarded with the opportunity to witness the fruits of their labor at the physical competition.

A few things to note:

- 1) The trip is planned for April 16-21 which is the 12th week of the semester. This means that the trip should not fall on midterms or finals weeks.
- 2) The trip is totally optional for the class, so students may choose not to attend if they are concerned about other classes without any repercussions for my class.
- 3) I plan to provide each student with a letter of support prior to the start of the Spring semester requesting the other professors excuse their absence for this wonderful opportunity. Hopefully by addressing the issue on the first day of class will allow more flexibility for impacted classes and professors.

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

As mentioned in the activity description, the field trip will be directly tied to COMP490: Software Engineering Team Experience which is a special topics course offered by the Computer Science and Information Technology program that is open to all students at CI.

This class will not only focus on the future of the space program (robotic exploration of other planets) but will also focus on the history of the space program and its importance to society. Being able to tour NASA headquarters, see a space shuttle up close, and meet an astronaut provide a way to make this history real to many of these students who did not live through the glory days of the American space program.

While the main learning outcome of this field trip will be an appreciation of the history of the American Space Program, other outcomes include many of the positive outcome associated with project based learning:

- Learning to work in a community
- Learning to take responsibility for their learning
- Learning to work with a diverse group with varying strengths and skills
- Learning critical thinking skills

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

I plan to have each student write a pair of essays related to this experience. The first essay will document student expectations, and the final essay will be a reflective essay about the experience. I also plan to use a survey tool to quantify student outcomes before and after the experience.

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

[Isaacs-NASA-ira-travel-budget-form-2018.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

Currently there are no other forms of support for this activity.

8. Promoting Participation

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

This course is open to all CI students, but I honestly expect the primary interest to come from CS, IT, Math, and Physics. I will market this event through fliers around campus and my website.

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

Note about previous semester: Our students actively participated in public relations efforts including radio and television interviews.

<http://kclu.org/post/south-coast-students-create-computer-code-could-send-nasa-robots-mars#stream/0>
<http://www.keyt.com/news/education/csu-channel-islands-students-shoot-for-the-stars/451342294>

Additionally, Swarmathon students have presented posters at SAGE and the Student Research Fall Showcase.

9. Sustainability

If appropriate, indicate how the content or delivery of the project promotes sustainability at CI.

Sustainability

The need to explore Mars is partially driven by our lack of sustainability here on Earth. The point of this competition is to forage for scarce resources and use them to create fuel for a return journey to Earth. In a way students will gain an appreciation for a situation where each and every resource has great importance to their overall outcome.

10. Approval and Acknowledgement

Program Chair/Director

Soltys, Michael

Comments

Strong curricular ties to this activity; student feedback from last year is highly positive.

 Marion Adler _____ Oct 13 2017 _____