Instructionally Related Activities Funds Request Spring 2017

IRA Funds Request for Internships at the European Organization for Nuclear Research (CERN)

View IRA Funds Requests

Instructionally Related Activities Funds Request Summary

Project Sponsor	Geoff Dougherty
Activity Title	Internships at the European Organization for Nuclear Research (CERN)
Activity/Event Date	June-August, 2017 (10 weeks)
Date Funding Needed By	February, 2017
Previously Funded?	Yes
Semester/Year	Summer/ 2016
Proposal #	764
Report submitted for previously Funded Activity?	Yes
Report submitted for previously Funded Activity	irareportformCERN2016.docx
Additional Report #1	—
Additional Report #2	—
Additional Report #3	—
Additional Proposers	—
Academic Program(s) / Center Name(s)	Mathematics and Applied Physics
Estimated total Course Fee revenue	n/a
Amount Requested from IRA	$11,930
Estimated Number of Students Participating	2
Conditions and Considerations	International Travel
Brief Activity Description	Channel Islands joined the CSU-wide Nuclear and Particle Physics Consortium (NUPAC) (http://zimmer.csufresno.edu/~yogao/ATLAS/CSU%20ATLAS%20Consortium.html) in 2013. The Consortium offers students the opportunity to work and study on the ATLAS particle detector experiments of the LHC (Large Hadron Collider) at CERN for 10 weeks during the summer. CERN is the birth place of two Nobel Prizes and the World Wide Web. The 10 billion dollar LHC started collision in 2009. The ATLAS collaboration consists of ~3000 physicists from 38 countries, among them, ~500 US physicists from ~40 prestigious universities (Harvard, Yale, MIT, Columbia, UC-Berkeley, etc.). This offers our students outstanding opportunities to work at CERN and collaborate with top physicists, engineers and computer scientists. We have been sending several students each year, following a competitive process and coursework in physics. Last year, only one CI student (Taylor Dinkins) was selected, and in addition to his work there he attended the famous CERN Summer Student Lecture Series. He joined other CSU students and was assigned to a research team and a local advisor at CERN. He worked on a project entitled "Event Displays - Atlas Data to iSpy" involving the conversion of Atlas detector collision data. This year's students would continue such collaborative work. LHC is one of the most exciting collaborative scientific projects in human history. This experience at CERN would prepare the students for professional success in an increasingly competitive, global, and multi-cultural society. ATLAS is committed to involving students, who will be inspired to study and appreciate science, and then go into many fields using their skills – including science, education, industry, finance, and public policy. The students' experience at CERN and LHC is clearly connected to the mission of CI, and would afford them a once-in-a-lifetime opportunity. Their work at CERN has been inspirational for man other CI students.
Learning Outcomes and Relation to IRA to Course Offerings	The students will take two special physics course (in nuclear physics and ROOT programming) developed by NUPAC (at no additional cost to them), to prepare themselves for the internship at CERN. They will do this while registered at CI for Phys 497-1(3 units) Directed Studies (Particle Physics for CERN), Fall 2016 Phys 497-2 (3 units) Directed Studies (Programming in ROOT), Spring 2017 (Phys 497-1 will prepare the students to understand the theory and hardware used at CERN for fundamental particle detection Phys 497-1 will prepare the students to program in ROOT, as used in the ATLAS experiments at CERN) They will present and write up their results at CERN in mid-August, and on their return to CI, will present their experiences to their peers and the community through Phys 499 Senior Colloquium (1 unit). The internship itself will count for a further 3 units (as PHYS 492 Internship). (Total units/student: 3+3+1+3 =10 units).
Description of Assessment	Each of the courses to be taken by the students will be assessed by homework assignments, a mid-semester test and a final test. The internship (PHYS 492) will be continuously assessed by rating the students' effectiveness and contributions to the ATLAS team, and by

Process	assessing a final presentation of their research work at an ATLAS meeting. (Information on past student projects can be found at http://zimmer.csufresno.edu/~yogao/CSU-ATLAS/CSUF-ATLAS-Research.html). On their return to CI the students will give a joint presentation of their work at the mathematics/physics seminar (as part of Phys 499, which is assessed) open to all CI students (at least 50 would be expected), faculty and guests, as well as other venues (for example President's Circle). This way the impact of the campus and local STEM community will be quite significant. Their results will also be presented at local research conferences. In the past, CI students attending the internship published collaborative papers with CERN scientists, which is very prestigious!
Activity Budget	iratravelbudgetformay1617filled.xlsx
CIA Budget	—
CIA Proposal	—
Course Syllabus	—
CIA Certification	I certify that students attending this trip are not previous or repeat attendees of a prior International UNIV 392 Trip
Other Sources of Funding	Lottery funds (towards the cost of students' meals) - $3000 SRSC - Student Research steering Council (towards the cost of local educational travel for students) - $1000
Target Audience/Student Marketing	This opportunity is directed towards STEM students with a background in Physics, Computer Science and Math. Ideally they would have Junior status when they go for the internship, but the application process is also open to Seniors and grad students. All of these students have been advised of this opportunity by email and poster.
Bring Benefit to Campus	The students present their experience during the Phys 499 Senior Colloquium (which is assessed) and seminars to undergraduate students.
Sustainability	n/a
Program Chair/Director	ivona.grzegorczyk
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	—
Name	—
Date/Time	—
Validation	—
Comments	—

Dean Review

Recommendation	—
Name	—
Date/Time	—
Validation	—
Comments	—

IRA Committee Decision

Decision	—
Comments	—

Current Tasks

Task	Time Assigned	Assigned To
Review from ivona.grzegorczyk, Program Chair/Director	9/25/2016 4:48:06 PM	Ivona Grzegorczyk
Edit Request	9/25/2016 4:48:06 PM	Geoff Dougherty

Completed Tasks

Task	Time Assigned	Time Completed	Completed By
Fill out Request	9/25/2016 3:57:22 PM	9/25/2016 4:48:06 PM	Geoff Dougherty

Actions

- View IRA Funds Request