Instructionally Related Activities Funds Request Spring 2020

Submitter

Submitter Name

Geoffrey Dougherty

Submitter Email

Geoff.Dougherty@csuci.edu

1. Basic Details

Activity Title

Internships at the European Organization for Nuclear Research (CERN)

Activity/Event Date

June 1 –July 27, 2020

Date Funding Needed By

February, 2020

Previously Funded?

- ○ No
- ● Yes

Previously Funded Proposal

Semester/Year

Summer, 2019

Proposal # (if known)

1091

Report submitted for previously Funded Activity?

- ○ No
- ● Yes

Please upload a copy of the report

ira-report-form-CERN-2019.docx

Additional Report #1

Attendees CERN 2019 (IRA #1091).docx

Additional Report #2

Student_Evaluation_of_IRA 2019 1 and 2.docx

Additional Report #3

Student evaluation of IRA 2019 3.pdf

Additional Proposers

Academic Program/Center/Organization Name

Chemistry and Applied Physics

Estimated total Course Fee revenue

30 units

Amount Requested from IRA

$17,180.00

Estimated Number of Students Participating

3

2. Brief Activity Description

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

Brief Activity Description

Channel Islands is part of the CSU-wide Nuclear and Particle Physics Consortium (NUPAC) (http://zimmer.csufresno.edu/~yogao/ATLAS/CSU%20ATLAS%20Consortium.html), which offers students the opportunity to work and study on the ATLAS particle detector experiments of the LHC (Large Hadron Collider) at CERN for 8 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.

For the past 7 years (since 2013), we have sent 1-3 students annually following coursework in physics and a competitive process, where they compete for places with all other CSU applicants. This year we have 4 students registered from CI, and expect 2-3 students to be selected and travel to CERN. We are asking for support for 3 students (at $4710 each), but if fewer than 3 students are accepted then our total funding would be modified downwards by $4710 for each of the putative 3 students not accepted.

The students work on a 8-week internship on ATLAS computing projects and attend the famous CERN Summer Student Lecture Series. They join other CSU students and are assigned to a research team and local adviser at CERN. They work on improving algorithms and developing tools to monitor the sub-detectors, and analyze ATLAS data. This year's students would continue this collaborative work.

LHC is one of the most exciting collaborative scientific projects in human history. This experience at CERN prepares 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 gives them a once-in-a-lifetime opportunity, which also inspires other CI students.

Please provide a list of administrative support work needed to fulfill the goals of the proposal. Indicate the estimated time of year and amount of time needed for each work item to the best of your ability:

Administrative Time

N/A

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

1. Phys 497 Directed Study – 3 units (Fall 2020)
Phys 497 Directed Study – 3 units (Spring 2021)
Phys 492 Internship – 3 units (Fall 2021)
Phys 499 Senior Colloquium – 1 unit (Fall 2021)

2. The students will take two special on-line physics courses (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 2017 and Phys 497-2 (3 units) Directed Studies (Programming in ROOT), Spring 2018.

(Phys 497-1 will prepare the students to understand the theory and hardware used at CERN for fundamental particle detection and Phys 497-2 will prepare the students to program in ROOT, as used in the ATLAS experiments at CERN).

The internship itself will count for 3 units (as PHYS 492 Internship).

They will present and write up their results at CERN in mid-August, and on their return to CI they will present their experiences to their peers and the community through Phys 499 Senior Colloquium (1 unit).

(Total units/student: 3+3+1+3 =10 units)

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

Each of the PHYS 497 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 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 an undergraduate 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 on the campus and local STEM community will be 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!

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-form-CERN-fy19-20.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

The internship and associated courses will generate 10 units of course fees per student.

We will apply for Lottery funds ($6000) and SRAC support ($2000).

The students will be expected to contribute about $1600 each (see budget form), unless we are successful at getting funds from Lottery and/or SRAC.

It is possible that one or more of our students could be offered an NSF International Research Experience for Students (IRES) stipend ($5,500 -http://zimmer.csufresno.edu/~yogao/ATLAS/Documents/IRES-Poster.pdf).

8. Promoting Participation

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

The internships are open to all STEM students, in particular students majoring in Computer Science, Applied Physics and Mathematics. Flyers were posted in Spring 2019. All upper division students of CS, Physics and Math were emailed with details of the program and invited to contact Dr. Dougherty for further details. As a result 4 students signed up for the initial course offering (Phys 497). We anticipate that 2-3 of these students will eventually secure a place at CERN.

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

The students' experience at CERN is a unique collaborative opportunity to work alongside students and scientists from various countries, which is inspirational to all CI students. It will give them the experience and confidence to compete successfully in today's job market. The students will share their experiences to their peers and the community through Phys 499 Senior Colloquium, and at an undergraduate seminar in Fall 2020 open to all students.

The Ventura Star published an article titled "Students from CSU Channel Islands spend summer in Switzerland on research project at CERN" on our 2019 interns, which was published in September 2019

(https://www.vcstar.com/story/news/2019/09/20/csuci-students-spend-summer-research-project-cern-switzerland/2302744001

9. Approval and Acknowledgement

Program Chair/Director

Gillespie, Blake

Dean

Wyels, Cynthia (Arts & Sciences)

Program Chairs and Deans may inform proposer of any staffing capacity needs or limitations (optional comments below):

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.
- [x] **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

- [x] I acknowledge that I have reviewed and accepted the Conditions and Considerations herein. Please check off boxes as appropriate. Please note that late applications will not be reviewed by the committee.

Chair 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

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