



<http://www.csuci.edu/ira/index.htm>

Application
Instructionally Related Activities Funds Request
2012-2013 Academic Year
DEADLINE: Fall and Academic Year 3/31/12
Spring 2013 deadline is 10/31/12

Applications must first be sent to the appropriate program chair. Chairs will then recommend and route them to the Dean's Office for review and authorization. The Dean's Office will then forward them to the IRA Committee for consideration.

Activity Title: Internships at the European Organization for Nuclear Research (CERN)

Project Sponsor/Staff (Name/Phone): **Dr. Geoff Dougherty (X 8990)**

Activity/Event Date(s): **Funding to support CI students to intern at the European Organization for Nuclear Research (CERN) on the ATLAS experiment of the Large Hadron Collider (LHC)**

Date Funding Needed By: **March 2013**

***Please Note that for Fall Requests the earliest that you will be notified of funding availability will be early June 2012 and for Spring Requests early January 2013.*

Please check if any of the following apply to your IRA:

- | | |
|---|---|
| <input type="checkbox"/> Equipment Purchase | <input type="checkbox"/> Field Trip |
| <input type="checkbox"/> Event | <input checked="" type="checkbox"/> Participant data collection for public dissemination, i.e. interviews/surveys that result is a journal/poster session/newsletter |
| <input type="checkbox"/> IT Requirements | <input type="checkbox"/> Risk Management Consultation |
| <input checked="" type="checkbox"/> International Travel | <input type="checkbox"/> Late Submission |
| <input type="checkbox"/> Space/OPC Requirements | |
| <input type="checkbox"/> Infrastructure/Remodel | |
| <input type="checkbox"/> Other _____ | |

Previously Funded: YES **No** Yes, Request # _____

*If previously funded, please attach copy of IRA Report

Does your proposal require IRB (Institutional Review Board) approval: Yes **No**

Assessment submitted for previously Funded Activity: YES NO **N/A**

Academic Program or Center Name and Budget Code: **Applied Physics 785**

Date of Submission: **23rd October 2012**

Amount Requested: **\$22,530**

(Should match item 2. E. on page 4)

Estimated Number of Students Participating: **6**

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Conditions and Considerations

Equipment Purchase-If requesting large equipment, Project Sponsor must show proof of correspondence with OPC Administration. In addition, all other purchases must follow Procurement Guidelines.

Events-For a large event, consultation with the events coordinator is recommended.

Participant Data Collection for Public Dissemination-If Project Sponsor proposes to conduct research with human participants then it may be subject to IRB (Institutional Review Board for the Protection of Human Subjects) review. It is the Project Sponsor's responsibility to inquire with the IRB **prior** to IRA application submission to determine if the project is exempt from IRB review so that funding is not delayed. Please indicate on the cover page if your project is exempt from IRB review.

Field Trip-If approved, Identified Risks of Participation and Release Agreement must be submitted for each student to the Program Office (Public Folders-HR Forms).

IT Requirements-Requires proof of correspondence and approval from IT Administration

International Travel-Requires International Travel application be submitted to Center for International Affairs.

Risk Management Consultation-Requires proof of correspondence with Risk Management.

Space/OPC Requirements, Infrastructure/Remodel-Requires proof of correspondence with OPC Administration .

Late Submission - Requires explanation for emergency funding.

Fiscal Management: Project Sponsor's program will be responsible for all costs incurred over and above what is funded through the IRA award and will be responsible for seeing that any revenue that is intended to offset the amount of the IRA award is transferred accordingly.

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Requirements and Signatures

Please provide the following in your application:

1. **Brief Activity Description.** Describe the activity and its relationship to the educational objectives of the students' program or major.

Channel Islands has recently joined and started collaborations with 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 study and work at the ATLAS experiment 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. They will learn unique, cutting-edge skills in physics that cannot be provided by any institution in the USA.

CI students will work on ATLAS physics and computing projects, doing real-time data analysis, upgrading code for detectors and improving hardware, and running modeling and simulation studies. Each student will be attached to a small group of CERN scientists running specific particle projects on the basis of their skills. They will learn to work in a team, but also contribute independent solutions. They will work full time with the group for the entire time (10 weeks) that they are in Switzerland. A description of typical projects appears at <http://zimmer.csufresno.edu/~yogao/ATLAS/Past-Projects.html>. These projects will provide students with top scientific research experiences and opportunities to learn about various applications of modern technologies. In addition, every student will attend the CERN Summer Student Lecture series given by top physicists.

LHC is one of the most exciting scientific projects in human history. Work and study experience at CERN would prepare them 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, which will also inspire other CI students.

2. **Relation to 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. Please list all classes that relate to the program proposed.

The students will take two special courses, developed by NUPAC, to prepare themselves for the internship at CERN – a course on the basics of nuclear physics, and a course on programming techniques. They are currently taking the first of these courses as PHYS 497 Directed Studies (3 units), and will take the second course in Spring 2013 (PHYS 497, 3 units). These courses are delivered in collaboration with CSU Fresno Physics Department.

On their return to CI the students will take the PHYS 494 Independent Research course (3 units). In this course they will analyze their CERN experiences, summarize their projects and write scientific reports on the results from the summer internship. They will present their results in several seminars to the university community and at regional conferences, including the Annual Meeting of the California Section of the American Physical Society (November, 2013).

Related courses: PHYS 497, PHYS 494, PHYS 499, MATH 499, MATH 599.

3. **Activity Assessment.** Describe the assessment process and measures that the program will use to determine if it has attained its educational goals. **Please note a report will be due at the end of the semester.**

Each of the PHYS 497 courses will be assessed by homework assignments, a mid-semester test and a final test.

The internship at CERN 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.

On their return to CI the students will prepare their scientific report and present at seminars, both of which will be assessed in their Independent Research course.

4. **Activity Budget.** Please enclose a complete detailed budget of the entire Activity **bold** specific items of requested IRA funding. (Page 4)

Done.

5. **Sources of Activity Support.** Please list the other sources of funding, and additional support for the activity.

Since this is a very expensive internship, we applied for additional funding to help cover the remaining 1/3 of costs that would need to be paid by students even after IRA funding is awarded. At this point, we have received \$6000 from Lottery funds from the AVP of Arts and Sciences to offset the group's contributions to the remaining cost.

7. **Acknowledgment.** Project Sponsor and Program Chair acknowledge that they have reviewed and accepted the Conditions and Considerations detailed on page 2.

Signatures and Dates

Geoff Dougherty

10/23/2012

Date

Ivona Grzegorzczuk

10/23/12

Date

Karen Carey

10/31/12

Date

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ACTIVITY BUDGET FOR 2012-2013

1. Operating Expense Budget

A. Supplies	\$0.00	_____
B. Vendor Printing	\$0.00	_____
C. In-State Travel	\$0.00	_____
D. Out-of-State Travel	\$10,500	_____
E. Equipment Rental	\$0.00	_____
F. Equipment Purchase	\$0.00	_____
G. Contracts/Independent Contractors	\$0.00	_____
H. Honorarium	\$0.00	_____
I. OPC Chargeback	\$0.00	_____
J. Copier Chargeback	\$0.00	_____

K. Other (Please Specify)

Lodging \$16,000; Food \$10,750;
insurance \$420; ground transport
\$700

TOTAL Expenses

\$38,370

2. Revenue

A. Course Fees

B. Ticket Sales

C. Out of Pocket Student Fees
(exclusive of course fees)

D. Additional Sources of
funding
(Please specify
And indicate source)

\$0.00

TBA

\$6000 (received from Lottery funds to
offset the student group
contributions

Total Revenue

\$6,000

E. **Total Requested from IRA**

\$22,530