

ESTABLISHING A RESEARCH AND STUDY ABROAD PROGRAM IN GENEVA, SWITZERLAND IN AFFILIATION WITH THE EUROPEAN LABORATORY FOR PARTICLE PHYSICS AND OTHER INTERNATIONAL ORGANIZATIONS

Objective

To create a research and study abroad program that would avail U.S. undergraduate students access to the world-leading research facilities at the European Organization for Nuclear Research (CERN), the World Health Organization, various operations of the United Nations and other international organizations based in Geneva, Switzerland.

Need

As globalization increases, the size, scope and duration of international research projects require that more and more of the world's frontier research establishments be located outside of the U.S. (e.g., ITER in France; LHC in Switzerland). As a result, new modalities are required to continue to provide opportunities to U.S. undergraduates to participate in cutting edge research. Many students choose their careers based on research experiences they have as undergraduates, thus making our proposed initiative central to the very future of U.S. technological leadership in key areas.

An added benefit would be to enhance the intercultural skills of the U.S. scientific community, which has become of noted importance in the training of many international scholars on our campuses. It is important for our most promising science students to be placed in a center that could offer both scientific training and an opportunity for broader cultural experiences

Project Description

The proposal is based on the very unique opportunities currently provided in Geneva. The Large Hadron Collider is now operational at CERN, and there is expected to be a related reduction of activity at U.S. particle physics facilities, a field commonly regarded as the most basic of all sciences. In addition, there is an ever-increasing focus by the U.S. higher education community on international organizations dealing with world health pandemics, arms control and human rights, a nexus also centered in Geneva.

But perhaps most important, the students would have the rare opportunity to participate in cutting-edge research at CERN and other international organizations -- exposing them to the people, tools and activities surrounding the LHC and other complex international programs. The aim would be for these students to contribute directly to the research program of the LHC and to learn by so doing. The program differs from traditional study abroad programs, where curriculum plans are created for educational purposes alone.

This initiative builds on a NSF-funded REU program at CERN that has been highly successful in introducing young students to the excitement of LHC research and, in many cases, drawing them into high energy physics in subsequent post-graduate studies. Although the program typically

receives more than 200 outstanding applications each year, it can only provide opportunity to 15 students for two months each summer. This amount of involvement is far below the needs of the 94 participating U.S. institutes and well below the demand of the students themselves. Creating year round research and study abroad opportunities would address this unmet demand and increase the pipeline of future physicists. In a similar fashion, broadening the program to include other Geneva-based organizations would help to achieve a broader national goal of increasing the number of U.S. students studying abroad.

The planning phase of the program is overseen by an Advisory Council comprising representatives of the international physics and study abroad communities, as well as a major international consulting firm. The project is currently managed by the University of Michigan, which will recruit several additional universities into an operational consortium as the initiative progresses to insure broad national representation in the establishment and oversight of the ultimate program.

Student Selection

The students would be selected for participation in the program through an application process that seeks a highly qualified, diverse group of students from across the country. Although the focus for a CERN-based program would be primarily on students majoring in physics, other related fields, such as mathematics or computing, would be included. Students from related areas that could benefit from performing research at CERN might also include those studying collaboration science, journalism, or even social or political science.

For an expanded program that includes participation with the other international centers in Geneva, students from an even broader spectrum of fields, including health sciences, medicine, economics, and international policy studies would participate.

Students would participate over the course of a summer, an academic semester, or a year -- most likely during their Junior or Senior year -- and would receive sufficient credit to complete their academic requirements within the normal period of their college program. Students could only be recruited from those institutes that accept the transfer of credit, so broad consensus will be sought on the transfer agreements. To facilitate this, the program would become allied with a Geneva area university, providing an avenue for students to take credit-bearing courses, if needed, which would be accepted at their home institutes (e.g., language courses).

Facilities

Students would be housed in a dormitory/classroom facility located in the greater Geneva community, to provide them with proper supervision and security, to provide a structure for repatriating to their U.S. institutes course credit for their participation in cutting-edge data collection and analysis efforts at these facilities, and for any approved courses they take during their research and field study abroad period.

Budget

We are currently seeking to secure \$235,000 to plan the research and study abroad program. The ultimate cost of the project -- both start-up and annual operating costs will be determined through the planning process.

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