

Global Learning Initiative: Research Experiences for Students in Forest Community Genetics in Europe

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Pilot Program: Study Abroad/Research Internships in Biological Sciences.

Goal: To develop of curricular strategies to incorporate the global learning recommendation for student learning outcomes into the design of courses for degrees in the Biological Sciences. Biology students will have opportunities to study French in preparation for field or laboratory studies in France or its departments, territories and collectives. This program will serve as a model for similar exchange courses in other countries. Below we detail: (i) the proposal's departmental context; (ii) proposed grant activities; (iii) the issues from the Global Learning Recommendations to incorporate; (iv) commitment by the chair of Biological Sciences

I. Departmental Context

In the spring of 2011, the Department of Biological Sciences will propose establish a study abroad program to incorporate the themes of Global Engagement, Environmental Sustainability and Diversity into the Biological Sciences curriculum.

This new opportunity for students seeking Biological Sciences degrees will enhance the career prospects of its students by allowing them to participate in research, educational and cultural activities within one of the host countries identified. This experience will allow students to (1) use a foreign language to articulate knowledge, skills, and perspectives that are meaningful to their professional discipline (Global Engagement), (2) gain research experiences in studies of ecological community organization and the effects of climate change within the host country (Environmental Sustainability), and (3) gain appreciation for differences in culture and language within their host country in their everyday lives (Diversity). These student gains will incorporate Global Engagement, Environmental Sustainability and Diversity into the Biological Sciences curriculum. Participating students should acquire a total of 16 credits in a primary foreign language (through 202 in French, German, Spanish, Chinese or language).

II. Grant Activities

The European Commission has recently launched a Support Action 'FoResTTraC', (<http://www.foresttrac.eu>) aimed at preparing a roadmap for a future research program in the field of "Evolutionary responses of forests to environmental change". The proposed research program will later be implemented through a transatlantic cooperation between European and North American research groups on a competitive call basis. The main goal of FoResTTraC is to provide the European Commission and other National Research Agencies and the European research community at large with a strategic research agenda. To this end partners of FoResTTraC have already identified several topics that would require further research within future collaborative research projects including "**The genetics of foundation species as drivers of ecological processes**". In the scope of FoResTTraC a thematic workshop has been organized to take place on the NAU Campus in February 2011, in which a group of 8-10 international experts (representing France, Germany, Netherlands, and Spain) have been invited. The objectives of the workshops are to consolidate state of the art research outcomes in the field, and to identify key research priorities and challenges for the coming 10 years. During the summer of 2011, the participating faculty will travel to Bordeaux, France to discuss curricular strategies

with Professor Richard Michalet, l'Université du Bordeaux, to incorporate research, educational and cultural activities for upper division undergraduate students to work within European FoRestTTrac participating laboratories. An accessory goal will be to promote student exchange initially between NAU and , l'Université du Bordeaux, and later between NAU and other European FoRestTTrac universities.

The participating faculty will develop a joint BIO/MODL course in scientific French that can serve as a model for other similar courses in German, Spanish and possibly Chinese. The faculty will collaborate with the Center for International Education to establish these study-abroad program and/or internship. The final product will be a strategy document outlining the options for incorporating FoRestTTrac goals and activities into the research backgrounds of NAU students, as well as incorporating Forest Community Genetics approaches developed at NAU to visiting foreign students. The faculty will also outline necessary degree modifications new courses to be developed, and a workflow with CIE for executing the study-abroad goals.

III. Proposed Global Engagement and Environmental Sustainability Issues to Incorporate

Following the Global Learning Recommendations, we will explore ways to incorporate the following issues into the French and other language curricula either on the Mountain Campus or abroad:

Global Engagement:

- The relationship among culture, language, community and environment.
- The interconnectedness between and among political, cultural, personal and economic decisions and the natural world.
- How economic, social, and technological practices and traditions impact climate and the environment.
- How historical, political, religious and economic forces have shaped the current world system and the source of global inequalities that influence conservation and efforts to address them.
- The roles, possibilities and implications of diverse technologies on culture, ecosystems and the political economy.

Environmental Sustainability:

- The connection between responsible engagement with the environment and global citizenship.
- The vocabulary and concepts around environmental sustainability, particularly relating to climate change
- The role of human interactions with the environment and its relation to the root causes of many global problems.

IV. Chair's commitment

This proposal is endorsed by the Biological Sciences chair. A curricular strategy plan will receive all appropriate administrative support.



Maribeth Watwood,
Chair, Biological Sciences