

# **International: Sustainable Water Management Research Experience in Bolivia: Influence of a Dynamic World on Technological and Societal Solutions**

**Undergraduate and Graduate Students,  
Apply to the Summer Sustainable Development Research Experience in Bolivia**

## **Summary of Program**

There is a growing recognition that increased stresses (e.g., land use and climate change) on the world's water affect quality, quantity and availability. This century has brought an additional complexity, termed the *dynamic world*, where the many stressors on water availability and quality are increasing exponentially from population growth and other issues such as advances in technology, geography, globalization, systems complexity, and human behavior. Water management institutions are fundamental to human societies, and when combined with dynamic global challenges require we train scientists and engineers who can integrate cultural, institutional, and international dimensions of water resources with sophisticated technologies and solutions. This project will support 3 undergraduates, 4 graduate students, and 2 senior researchers to perform research in Bolivia. The intellectual collaboration with the foreign team is made possible because of the unique research location, interdisciplinary projects requiring international perspectives and integration of technology with societal issues, cooperation with two Bolivian universities and one nongovernmental organization, and a setting that provides opportunities to research concepts of sustainability in a real world context.

## **Intellectual Merit**

This grant will help to transform education and research initiatives related to sustainable water management that take place at a system interconnection of engineering, anthropology, global perspective, and a dynamic world. The integrated community of U.S. student researchers will include PhD and undergraduate students from engineering and anthropology. They will partner with an engineer from a community-based nongovernmental organization and faculty and students focused on appropriate technology and ecological engineering from the Universidad Tecnológica Boliviana (La Paz) and UniValle University (Cochabamba). Graduate students will integrate their research with participation in a new 16-credit Graduate Certificate in Water, Health, and Sustainability. Undergraduates will return to campus to continue research via the USF Honors College or other undergraduate research initiatives. Undergraduates will also participate the following year in a 6-credit International Capstone Design course, 3 of the credits taking place back in Bolivia, with an established partnership we have with the Universidad Privada del Valle (Cochabamba). International Capstone Design teams U.S. students, faculty, and practitioners with Bolivian students, faculty, and practitioners. Cochabamba is a distinct location to study governance issues associated with water because the city is famous for protests known as the "Cochabamba Water Wars" that occurred in 2000.

## **Broader Impact**

Our proposal seeks to recruit a diverse cohort of students into international science and engineering research. These students will gain perspectives that are crucial and not well represented in current approaches, strategies, designs, and actions. Our proposed scholarship program aligns strategically with national groups like the National Academy of Engineering (in *Educating the Engineer of 2020*) that have documented the rapid social, political, economic, and environmental changes occurring in the world and associated implications for engineering education, research, and practice. The proposed program will prepare students to be globally competitive by promoting knowledge transfer between students and faculty that have different global and discipline perspectives while integrating the best and most appropriate knowledge, methodologies, techniques, and practices from both the developed and developing worlds. We will also continue to integrate results and perspectives gained from this program into educational materials (textbook, learning modules) that can be disseminated in our classrooms and across the Nation.

**When does the Research take Place?** Typically during months of June and July (note your travel plans need to be flexible, we may change dates depending on the final school schedule of our Bolivian partners)

**Language Immersion:** Students are encouraged to arrive in La Paz 1-2 weeks early to take a language immersion course and live with host families of our Bolivian university team members.

**Expenses:** The program (through a grant from the National Science Foundation) provides a small stipend, airfare to Bolivia, and in-country costs associated with lodging, meals, in-country transportation, and research supplies.

**How to Submit an Application:** Submit an electronic pdf application with all materials as one file (with the file name "*BoliviaResearch\_YOURFIRST&LASTNAME.pdf*" to Dr. James R. Mihelcic (Civil & Environmental Engineering, University of South Florida, Tampa, FL, 33617; [jm41@eng.usf.edu](mailto:jm41@eng.usf.edu)).

**Application Deadline:** The application deadline is January 30<sup>th</sup> before the summer of the program. Decisions will be made by mid February.

**Description of program:** Since 2007, we have conducted research in the small rural communities of Palos Blancos, Sapecho, and San Antonio (located NE of La Paz near the Rio Beni River where the Andes begin to meet the Amazon) on topics related to: water supply and treatment, how communities select improvements in sanitation technology, impact of green space on urban hydrology, perceptions of users of greenspace, the impact that land use has on water supply, issues of willingness to pay and public health, and how water storage tank materials impact water quality. We expanded our program to the cities of Cochabamba and Santa Cruz in summer, 2010.

Demonstrated interest in sustainable development is identified by your participation in undergraduate/graduate minors and certificate programs related to sustainability, electives, an undergraduate or graduate research, and dual-degree programs that integrate factors of social, economic, and/or environmental importance). This program pairs 6 U.S. undergraduate and graduate students who have a demonstrated interest in issues of sustainable development with 6 ecological engineering students and faculty from the Universidad Tecnológica Boliviana (La Paz), and staff from a non-governmental organization.





**Eligibility:**

Students are typically enrolled at the University of South Florida though we have included students from other U.S. universities in the past

Undergraduates must be majoring in engineering and anthropology.

Graduate students must be majoring in engineering and anthropology (we will consider M.S. students with a complimentary skill-set; however, please note that doctoral students are preferred)

**Your Application must include:**

1. Your name, degree(s), and expected completion date(s).
2. An unofficial copy of your most recent transcript.
3. Statement of purpose that addresses how this research experience will fit into your education (through international or sustainability minors/certificates/dual majors and/or honor's college research). Graduate students must include a detailed description of how the research will be worked into their thesis/dissertation research.
4. Describe your ability to read, write, and converse in Spanish (be specific) and work in a team setting located in the developing world.
5. Names and contact information for two academic references (undergraduates do not need the written references submitted; however, graduate students must provide a letter of support from the primary graduate advisor that indicates permission for you to conduct research in Bolivia this summer and also supports how the research is to be integrated into the thesis/dissertation).
6. Description of other professional experiences that may help you successfully complete an international sustainable development research project.



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*For more information please contact the Project Director,  
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