

## **1. NSF-PIRE: Partnership for International Research and Education:(2006-2010)**

**Lead: Penn State, NCA&T -Subcontractor, International Partner:**  
University of the Witwatersrand (Wits), Johannesburg: South Africa

**Program Name: AfricaArray: Opportunities for NCAT students to participate in field courses and research projects in Africa.**

What is AfricaArray? AfricaArray (AA; [www.africaarray.psu.edu](http://www.africaarray.psu.edu)) multi-faceted initiative to promote coupled educational and research programs for 1) building human and instrumental capacity in Africa and the U.S. for the geosciences, 2) addressing fundamental geoscience questions of academic, economic and societal importance, and 3) enhancing diversity in the geosciences, both in Africa and the U.S. AfricaArray activities in the U.S. for undergraduate students are being offered jointly by NC A&T and Penn State. There are two specific programs that undergraduate students can participate in.

1) Geophysics field course in South Africa: The annual AfricaArray geophysics field course is designed to provide physics, math, engineering and geoscience students from historically black colleges and universities with exposure to geophysics field methods, modeling techniques, and career opportunities. Students taking this course will become familiar with field and modeling methods commonly used in hydrocarbon, mineral and water exploration, as well as in basic Earth Science research. [Six NC A&T students have participated in the field course in 2006 and 2007. Nine more expected in the next three years.](#)

The course is eight weeks long. Students spend the first two weeks at Penn State for orientation. Students then travel to South Africa where they spend a week at the University of the Witwatersrand (Wits), Johannesburg, working with students from Wits to design a field project, 10 days at a remote bush camp collecting and interpreting geophysical data (gravity, magnetic, seismic, radar, electromagnetic) for the field project, and another week back at Wits to interpret and analyze the data. While in the field, students have an opportunity to visit a platinum mine, and while in Johannesburg students have opportunities for cultural experiences and sightseeing. Students return to Penn State for the final two weeks of the course where they complete a project report and make a formal project presentation.

The course is part of the Summer Research Opportunities Program (SROP) at Penn State, and is sponsored by the National Science Foundation and Penn State. Students admitted to the course will have all expenses (travel, food, lodging) paid for and will also receive a stipend.

2) The program supports a research associate to teach and develop the geophysics research and education at NCA&T and a broadband seismic station is established in the Physics Department at NCA&T.

2) Opportunities for participating in African research projects: There are a number of research projects that undergraduate students can participate in during the summer months. For 2008-2010, the projects will involve traveling to Uganda and Tanzania and installing seismic stations. The seismic stations record earthquakes from the East African rift valleys. Besides traveling to these countries to help with field work, the projects provide opportunities for students to spend time at Penn State doing research with the seismic data to investigate Earth structure beneath the rift valleys.

Students who are interested in AfricaArray and would like more information should email Dr. Andy Nyblade ([andy@geosc.psu.edu](mailto:andy@geosc.psu.edu)), Department of Geosciences, Penn State University or Dr. Solomon Bililign ([bililign@ncat.edu](mailto:bililign@ncat.edu)), Department of Physics, North Carolina A&T State University.



NCA&T Students in the Field work in South Africa.