

# Degrees & Majors



## **A Straight Road to the Stars**

By Kathryn Brackett

Imagine discovering a long mysterious road built by an ancient culture. Would you wonder about the significance? Why it was built? This is exactly what Dr. Elena Mendez, Associate Professor of Physics, is studying. For the past three years, she has been conducting research at Guayabo, an archeological site in Costa Rica.

"I think the direction of the road is important," she says. "Sometimes people in a culture will line up buildings or roads in their settlement with an object that's far off in the distance. This road points in the direction of a volcano. It might also point toward something significant occurring in the sky."

Her interest in the project began a few years ago with a visit from Anthony Aveni, an expert of archaeoastronomy and Mayan culture. After his talk at Converse, Dr. Mendez wondered if the early cultures of her native country showed an interest in the sky similar to that of the Mayans. She visited Costa Rica and found a map of the site. It was then that she learned of the straight road in the settlement and discovered it was once home to a chiefdom that flourished between 800 and 1500 AD.

Her initial research involved taking precise measurements of the road. By using a Global Positioning System (GPS) satellite receiver, Dr. Mendez was able to measure the height of the volcano and to determine exact positions of various places along the road in order to confirm its direction. Using software that determined and graphed positions of stars, she figured out which ones set behind the volcano and wondered whether these same stars might play a role in determining planting and harvesting periods.

A lover of astronomy, Dr. Mendez believes that early Costa Ricans might have used the sky to orient their settlements.

"I'm looking for interesting astronomical events that may have been important to the people who built the Guayabo settlement," she explains. But it seems as if she's found more than she's expected. In the midst of her studies, she's also learned about huge stone spheres, some close to a meter in diameter. Somewhat akin to Stonehenge, these stones may line up with something particular in the sky. Dr. Mendez has determined that these spheres point in the direction that the sun rises on Zenith Passage Day, a day in Costa Rica when the sun passes straight above. This happens only twice a year.



“I think the spheres indicate an interest in the sky that most people aren’t aware early Costa Ricans had,” Dr. Mendez says.

Her husband John Riley, a physicist at USC-Spartanburg, recently joined in her research. They have received financial assistance from Converse and from USC-Spartanburg and plan to make a proposal to National Geographic in the near future.