Out of Illinois and into Africa
Study Abroad program takes engineering students out of their element

By Diana Yates

Life — and career — lessons can take many forms. For seven UI undergraduates, a hands-on engineering collaboration with peers in South Africa — with weekend excursions to some of the most exotic locales on the planet — offered just about all of them.

The four-week program is the brainchild of agricultural and biological engineering professor Alan Hansen, who was born in Zimbabwe and taught at the University of Natal (now KwaZulu-Natal), in Pietermaritzburg, South Africa, before coming to Illinois in 1999. Hansen wanted students to have a chance to tackle fundamental engineering problems and get a taste of international travel and collaboration on his native continent. So he and a former colleague at KwaZulu-Natal started the collaborative program in 2004.

This year, the Illinois students worked on three engineering projects with engineering students at KwaZulu-Natal. The projects began before the UI students arrived in mid-July, and continued after they left for home. But the four weeks in South Africa taught the Illinois students many lessons that went well beyond the classroom.

Lesson one: Communicate.

Try designing and installing a new irrigation system with collaborators who are still learning to speak (South African) English. Need a shovel? It would help to know that your teammates call it a spade, said agricultural and biological engineering student Julie Honegger, a 20-year-old junior from Glen Carbon, Ill.

“English wasn’t Helen and Erence’s first language,” Honegger said about her South African teammates, two of six KwaZulu-Natal students in the program. Honegger and her Illinois teammates also didn’t speak isiZulu, Afrikaans or any of the other local languages, “so we did a lot of drawing of pictures and gesturing and moving around the field. And when we asked for shovels, they had no idea what we were talking about.”

Another Illinois student, 18-year-old Angela Chen, faced a doubly difficult communication challenge. “I’m from Taiwan,” said Chen, a molecular and cellular biology major who is now 19 and a sophomore.

“English is not my mother language. It’s already really hard for me to communicate with people here in Illinois. And it’s even harder when I try to communicate in English with people (for whom) English is not their mother language either — and they have an accent. Chen was up to the task, however. “In one and a half weeks I could try to speak with a South African accent,” she said. “Not perfect, but I did try to imitate them to help them understand my English.”

Lesson two: Be useful.

Chen and her teammates had the task of designing and building an evaporative cooling system to keep farm produce cool.

“This is actually a huge issue in developing countries where you get so much spoilage of produce because it is subjected to relatively high temperatures and it deteriorates very quickly,” Hansen said.

A full-scale refrigeration system would be too expensive for a local farming community, he said. But an evaporative system, which cools the air by passing it through a controlled cascade of flowing water, offers a more affordable alternative.

Each of the projects strived to meet a local need, Hansen said. Once completed, the irrigation system would function as a demonstration unit for students at KwaZulu-Natal. The cooling system, which included a portable 3,375-cubic-foot storage chamber, could serve a community market. And a third project, a geranium harvester, offered a streamlined machine that — the students hoped — would do the backbreaking work of a manual harvest in a fraction of the time. (Geranium oil is used to treat a variety of health problems.)

Lesson three: Plan ahead.

The irrigation system and the geranium harvester both suffered from delays. The South African students had sized and ordered some items, but most of the materials arrived just as the Illinois students were preparing to leave. And when the team ordered more materials from local suppliers, they soon realized that their needs were not a top priority for the vendors.

“It is amazing that we got the exact same sense of indifference from our suppliers here and in South Africa because we were making small orders,” wrote 22-year-old agricultural and biological engineering senior Thomas Kennedy, of Springfield, Ill., in a paper about the trip. “From this, we realized that continually contacting our suppliers to check the status of orders is a must.”

Both the irrigation system team and the geranium harvester team were able to get some things done despite the delays. Kennedy’s team added some design features to the geranium harvester and fabricated a metal frame. Honegger and her teammates dug trenches in the irrigation field and began to install pipes and fittings before the Illinois students had to leave.

“One of the big things I learned is that you have to do things ahead of schedule because nothing’s going to go according to plan,” Honegger said.

The team on the cooling system had a bit better luck and was able to build many of the components needed to complete the unit.

Lesson four: Face your fears.

A major highlight of the trip for the Illinois participants was the weekend excursions they took — to a world-class surfing beach in Durban; to the
Lesson five: Adapt.

You feel scared, but when you do something you're afraid to do, you just feel good about it afterwards. Facing fears is always a cool thing." Honegger said. "I thought it was an animal and I couldn't sleep. But of course, there's nothing you can do. I mean you're just there in the wilderness, in a tent." Honegger found one stormy night in the bush particularly unnerving. The guides had told the campers about a monster living in the wilderness with leopards and elephants and lions and hyenas just totally freaked me out."

Two armed guides led the students and their professor on a four-mile trek to the primitive camp. "We camped right there in the bush," Hansen said. "No fences—just tents. And you could hear lions at night roaring. You could hear hyenas. We had elephants grazing right by the edge of the camp."

Lesson six: Take it in.

When the students were first trekking to their primitive campsite in the bush, the guides told them to put away their watches, telephones and other electronic or time-telling devices. "They said, 'You don't need to know what time it is out here. You eat when you're hungry. You sleep when you're tired and you walk when you want to walk,'" Honegger said. "And we did and we had no idea what time it was."

Honegger savored the experience of living without clocks, going to sleep and getting up with the sun. "I loved being there among the stars and the moon. It was a completely different experience," she said.

"We just walked through the river. It was so different. It was fun because it's not a very civilized place, and that's why I felt I was so close to nature. I've never had this experience before." Chen is now obsessed with Africa, so much so that she signed up for a medical mission trip to Ghana over the winter break. (Read about that trip on page 10)

"After I got off the plane, landing in the United States, I told myself I'm going to do another one," she said. "This is part of why I like to do this, of course," Hansen said. "Africa is a very different environment, a very rich environment. Each student will take away something different from that experience, but they all take away something that will in a way change them or enrich their lives."

Wheee! Julie Honegger, a self-described "scaredy cat," zip lined in the Karkloof indigenous forest out in the wild, and still dreams about the animals she saw.

"The best part of the trip was that we walked in the African bush, sometimes with our bare feet," she said. "We just walked through the river. It was so different. It was fun because it's not a very civilized place, and that's why I felt I was so close to nature. I've never had this experience before."