

by Jamie Yarmoff

# Building

## The Architecture Institute at Duke TIP

**M**y interest in green energy and sustainability began at a young age, with simple things. For example, my dad encouraged me to unplug appliances that I wasn't using in order to conserve energy. When I was 12, we had solar panels installed on our roof, and a few years later, we added a geothermal heat pump. Throughout high school, at every opportunity, I focused on green technologies in research papers and projects.

For my last summer before college, I knew I wanted to continue to pursue this interest. In an online search for summer programs, I found the Institute of Architecture: Living Green/Building Green offered by Duke University's Talent Identification Program (Duke TIP), and I knew I'd found the right program for me. I sent off my application, excited about the opportunity to think about "green" from an architectural perspective. I learned of my acceptance a few weeks later and looked ahead to June.

### Model Homes

Once on campus, I settled into my dorm and quickly made some new friends. When classes started the next day, I liked our instructor immediately. A professional architect who had studied around the world, Chuck Krekelberg was the most enthusiastic instructor I have ever had. We began with a discussion about renewable energy. As we shared our ideas, I realized that the 28 of us brought varying levels of knowledge to this program. Luckily, the program was designed to accommodate all of us.

We each arrived in Durham having already completed a brief case study of a green building, an assignment we'd received



The Duke Smart Home incorporates a new student developed green technology each year.

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a couple of weeks before the start of the program. My assigned building was High Tech High Chula Vista in California, which I found particularly fascinating because it was planned as it would have been before the advent of air conditioning. It was positioned to collect the maximum amount of sunlight on its rooftop solar panels, and it incorporated courtyards so that the area's prevailing breezes could cool the buildings. Most of the school was lit by sunlight and ventilated and cooled by use of windows. Landscaping required little water, all of which was provided by reclaimed water from the school. On the second day of class, I presented my research to my classmates, who in turn shared what they had learned about other green buildings around the country. Over the duration of the course, Chuck and his assistants presented several slideshows highlighting other interesting sites from around the world, opening our eyes to sustainable features we could incorporate in the buildings we would conceive later on.

# Green

When we visited the Duke Smart Home, we got to see for ourselves how a sustainable building functions. This dorm is LEED Platinum certified, the highest achievement in green architecture awarded by the United States Green Building Council. The dorm is equipped with solar panels, rainwater collection tanks, a rooftop solar water-heating system, and a green roof. Several lab spaces throughout the dorm provide centralized work areas, but the green technologies incorporated in the building are also experiments themselves. Each year, a new student-developed technology is installed in the building.

During a tour, it was spectacular to see innovations that we had discussed in class put into practice. We stopped every now and then to sketch our favorite elements. Afterward, as we sat outside and sketched the whole building, I thought about how much energy could be saved if more dorms like this were built.

## Creative Process

One of my favorite elements of the course was the journal I used constantly over the two weeks to sketch designs, take notes, jot down ideas, and pose questions. Sometimes, we took journaling time to privately sort out our ideas; other times, we would share our sketches with the class. I am by no means an artist, so I found the sketching to be quite a challenge. However, the only pressure I ever felt came from myself; Chuck, his assistants, and my classmates were always receptive and never negatively critical. I still enjoy flipping through the pages of my journal every now and then, revisiting the progress I made in both creativity and attention to detail.

I also loved Google SketchUp, the software we used to design our own buildings. On most evenings, we would spend an hour or so in a computer lab, using SketchUp to create a three-dimensional picture of an environmentally friendly home. We were each assigned a partner with whom we decided on four

green design elements that we would each incorporate into our designs. Sophie and I chose a green roof, a geothermal heat pump, solar panels, and strategically placed windows to maximize thermal capacity. On the last day of class, each student presented his or her picture, and it was amazing to see how each person's design differed from that of his or her partner. Although Sophie and I had agreed on the four major features, our computerized sketches were very different. With every model presented, we could all see that green design presents not only constraints, but also opportunities for creativity.

Those two weeks at Duke changed my life. I have often thought about how I can create a career from my interest in green living, and this program showed me an option I hadn't considered. Seeing this interest I've had for so long from the perspective of architecture helped me understand one way that several renewable technologies can work together. I'm not sure that architecture is the field for me, but I am inspired to find and explore other careers that will allow me to combine these technologies toward a larger purpose.

TIP's Architecture Institute gave me knowledge I know I'll be able to apply to research projects in college. It also made me more aware of my impact on the environment and strengthened my desire to protect it, in whatever career I choose. **i**



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