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Front cover photo by Tom Cogill:
*Markus Weisner, student, fireman,
Truman and Mitchell Scholarships winner*



Markus Weisner, engineering student, fireman, Truman and Mitchell Scholar

Engineering Students Live School's Mission

■ Nacia Miller

MARKUS WEISNER DOES NOT APPEAR TO BE A STUDENT who has a lot of time for nonacademic pursuits.

This 24-year-old engineering student, now in his sixth year at the Engineering School, has had a remarkably busy and varied student experience thus far. While maintaining an outstanding record of academic achievement, he has studied abroad at the Universität Konstanz, conducted research in Germany for Daimler Chrysler, and received both the Harry S. Truman and George J. Mitchell scholarships.

But Weisner's U.Va. experience has been about more than learning a profession. "Even in my first year, I was looking around for something to get

involved in, something that would engage me in the larger community," he said.

Professor Deborah Johnson, chair of the Department of Science, Technology and Society, said this worldview typifies U.Va. Engineering School students and reflects the kind of education they receive here. "Our students are interested in the social context of engineering. They're receptive to the idea that engineering isn't just about artifacts and material things—it's about the interplay of objects with social behavior and practices, with social relationships and institutions."

Like many U.Va. students, Weisner started by volunteering at Madison House, where he



Emily Babbitt (right)

“I LEARNED that it’s not possible to come up with a technological innovation in Virginia and simply bring it to Mexico or anywhere else.”

tutored math and science and also worked with the Adaptive Ski Program. By 2001, however, he found himself looking for something that would engage him on a number of levels—professional, societal and emotional. His search ended when he joined the Charlottesville Volunteer Fire Company. “Firefighting is such a unique form of public service,” he says. “There’s the physical aspect, which I enjoy, but it’s so much more than that. I get involved with people at a stressful time in their lives and have a chance to make a difference.”

According to Professor Johnson, the most successful engineers are those who both understand the world and use their engineering expertise to help change it. For Weisner, this means not only learning to be a good firefighter, but also finding ways to make firefighting better.

For example, his working with “irons”—a firefighter’s primary entry tools—gave him firsthand insight into the frustrations of using inefficiently designed equipment. His solution? Design something better.

Through his STS 315 course, Weisner helped engineer a design improvement to the existing irons, and then started a company called Fire Hardware LLC. “We’ve now applied for a grant from the National Collegiate Inventors and Innovators Alliance,” he says, “and if we get it we plan to further develop our design.”

For some engineering students, the desire to reach out to the larger community has led to a cross-cultural experience. Third-year Sophie Johnson spent last summer in Juarez, Mexico, with five other students, including Emily Babbitt and Anna Sofranko, under the auspices of the U.Va. chapter of Engineering Students Without Borders. This program places students in impoverished regions of the world to work on socially, environmentally, and economically sustainable projects. The U.Va. chapter tackled a project in South Africa; and one in Nicaragua, focused on constructing new facilities for the Veracruz community bakery, has been approved for this year.

In Juarez, Johnson’s work focused on alleviating some of the problems caused by the lack of a sanitation infrastructure. “We worked on the idea of using dehydrating toilets as a way to prevent water contamination in the area, giving people a practical way to deal with waste. We researched manufacturing possibilities and built a bathroom with a dehydrating toilet for one local family.”

Anna Sofranko (right) teaching school



... To achieve international prominence as a student-focused school of engineering and applied science that educates men and women to be leaders in technology and society and that contributes to the well-being of our citizens through the creation and transfer of knowledge.

—*School of Engineering Mission Statement*

The project's technical challenges are not the ones Johnson tends to talk about. When asked, she's more likely to speak of the need for cultural respect and understanding. "I learned that it's not possible to come up with a technological innovation in Virginia and simply bring it to Mexico or anywhere else," she says. "Solutions have to be developed with the people in the community. It takes a lot of time, and training and communications are so important."

Professor Johnson concurs. "At the most profound level, technologies are systems of people and things, directed at accomplishing particular tasks. In order for a system to work, all the components—including the people involved—have to function effectively together. At SEAS, we provide the kind of education that students will need both to make things and to bring people together.

That includes training in teamwork, ethics and communication."

Closer to home, third-year systems engineering student Dan Laufer, working through his fraternity, Phi Gamma Delta, found communication to be a critical skill when he chaired the Run Across Virginia. This fundraising event, which involves the running of a football between Charlottesville and Blacksburg before the Virginia Tech–U.Va. game, required the participation of students, businesses, media, police, and even Gov. Mark Warner's office. Over the past two years, the Run had raised a total of \$66,000 for the Jimmy V Foundation, which supports cancer research. Some people might not see the Run as an engineering project, but for Laufer the connection is obvious. "I chose systems engineering because it prepares us to do many things," he says. "We're taught to take a

Sophie Johnson (left) and Emily Babbitt





Dan Laufer (center)

macro view, and to break down a complicated system into its individual components. This was exactly what we had to do with the Run.”

The effort to develop SEAS students’ communications skills begins early. For example, in STS 101, which introduces the profession and its role in society, each student has to make a presentation on an aspect of engineering. Last semester, Professor Joanne McGrath Cohoon challenged her class to present their projects to students at Charlottesville’s Jouett Middle School—an audience of 11- to 13-year-olds.


“This extra-credit assignment meant they had to thoughtfully reframe their presentations for a unique, nontechnical audience—something they will often have to do in their professional lives,” says McGrath Cohoon.

The project was a great success. McGrath Cohoon reports that her students learned valuable lessons about communicating and representing their profession, and that the middle school students learned about occupational fields they were unlikely

to have heard of prior to the visit. She adds: “Both groups learned that being an engineer means more than just having a toolbox of technical skills.”

This fall, Markus Weisner will be heading to Trinity College in Dublin on the Mitchell Scholarship, where he will study for a Master of Science degree in fire safety engineering. As for his future, he hasn’t decided whether to go into public life, stay in firefighting, or pursue some interesting combination of the two.

Dan Laufer is also thinking about running for public office, while Sophie Johnson hopes to focus on environmental work.

Whether their futures take them around the corner or around the world, these and other SEAS students will embark on their professional lives prepared to take on a wide range of challenges, both social and technological. Thanks to the broadly focused educational experience they’ve had at the University of Virginia, they’re destined to be leaders in any field they choose. 

... To offer to the local community, the Commonwealth of Virginia, and the nation the various kinds of public service and intellectual and cultural activities which are consonant with the purposes of the University.

—University of Virginia Statement of Purpose and Goals