ACCORDING TO
THE DEAN
The capital campaign has ended, but the transformation of the school has just begun. New buildings are going up, new eminent faculty are joining us, more students are receiving scholarship support, and our programs of research and education are stronger than ever. And the generosity of donors and friends shows no sign of abating. It’s truly an exciting time to be an engineer at Virginia.

Richard W. Miksad

SEAS LIFTS OFF
In 1995, the planning committee for the Engineering School Capital Campaign set a goal of $37 million. In retrospect they clearly underestimated the loyalty that the school inspires in its alumni and friends—as well as their generosity. At the stroke of midnight on December 31, 2000, the campaign books closed with a total of $75.4 million, more than double the original target.

Thanks to the campaign, we were able to endow 35 scholarships, supporting more than 70 students, create five new chaired professorships, and build new facilities for the departments of Biomedical Engineering, Materials Science, and Chemical Engineering.

This was just part of the pattern, however, in a year that exceeded expectations. Our researchers had unprecedented success in securing funding from private and public organizations. We received over $11 million in MURI awards from the Department of Defense for work in electrical engineering, materials science, and computer science. And our selection by the National Science Foundation to create an ambitious, $5 million Center for Nanoscopic Materials Design will impact the school for years to come.

We also benefitted from the energy and enthusiasm of new leaders. We have new chairs for biomedical engineering, chemistry, mechanical and aerospace engineering, and technology, culture, and communication. In addition, we successfully launched an undergraduate degree program in computer engineering, thanks to the cooperative efforts of faculty from electrical engineering and computer science, and our first cohort of graduates from our highly popular Executive Master’s Degree Program in Systems Engineering received their diplomas in May.

Our students also demonstrated, quite literally, their stellar abilities this year. In April NASA tested a 214-pound payload containing an infrared sensing package that was designed and assembled by students at U.Va. and James Madison University. The sensor will be used for atmospheric research projects. The payload was carried up 31 miles to the very edge of the atmosphere aboard a rocket launched from the NASA Wallops Flight Facility on the Eastern Shore of Virginia. The project has been supported by nearly $600,000 in grants from Litton PRC, the Virginia Space Grant Consortium, NASA Wallops Flight Facility, NASA Langley, and Orbital Sciences Corporation.

In the last analysis, this year of accomplishment has only raised our expectations. We can’t wait for next year!

around the web
Virginia Engineering Foundation
www.seas.virginia.edu/vef

The University of Virginia Center for Nanoscopic Materials Design
www.mrsec.virginia.edu/

Orion Rocket Launch
newweb.mae.virginia.edu/research/uvirse/
Scottie Ginn has worked for one company since finishing graduate school—IBM—and she’s very clear about the reasons she’s never moved on. “IBM has a culture of excellence,” she says. “We are not happy unless we’re the best, so it’s a very exciting place from a technical point of view.” As the vice president and business line executive for pervasive computing at IBM Microelectronics, Ginn helps other companies build computing power into a variety of everyday devices with the potential to communicate with each other. The goal is nothing short of creating networks that reflect the way individuals live.

At the same time, Ginn values the company’s emphasis on such human values as truth-telling and on providing employees with the opportunities to develop professionally and personally. “IBM takes its people seriously,” she says. “It’s very good at providing them with opportunities for growth.”

She feels tremendous loyalty to U.Va. for similar reasons. “U.Va. is one of the best educational institutions in the country,” she says. “You gain a deep understanding of the fundamental concepts of engineering while learning how to communicate effectively with others.” At the same time, Ginn lauds the Honor System and the tone it creates on Grounds. “Integrity is an everyday part of life at the University,” she observes.

As a member of the Dean’s Advisory Council in the Engineering School, Ginn remains committed to the University. She’s working to ensure that current generations of students have the same high-quality experience she enjoyed.

Scottie Ginn

Scottie Ginn (SEAS ’80) follows her own path. As an Echols Scholar, she had her run of the College of Arts and Sciences, but after a stint working in a semiconductor fabrication plant in Silicon Valley in the late 1970s, she became passionate about engineering. “It really struck a chord with me,” she says. “It took one conversation with people in the Engineering School, and I was on my way.”

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Electrical and computer engineer Travis Blalock is an expert translator, bridging the communication gap between the natural, analog world and the computational, digital world. Using integrated sensing and signal processing, the former principal project scientist for Hewlett-Packard Laboratories designs mixed-signal CMOS integrated circuits for many applications, recently applying his expertise to developing a new type of ultrasound machine.

Current ultrasound machines take analog information in the form of sound waves and analyze them digitally to produce a two-dimensional image at right angles to the patient’s skin surface. Collaborating with Bill Walker and John Hossack of the Department of Biomedical Engineering, Blalock is working toward an ultrasound device capable of producing a two-dimensional image from any angle and, ultimately, a three-dimensional image that could greatly enhance the use of ultrasound for diagnosis of cancer, stroke, and heart disease.

One of the limitations they face is space. High-quality ultrasound machines have a row of 128 transducers, which send and receive sound waves millions of times a minute. This analog information is sent along a 128-wire cable to a computer, where it is converted to digital information and processed to produce an image.

Blalock, Walker, and Hossack reason that an ultrasound machine with a two-dimensional array, say of 128 by 128 transducers, could produce an image on virtually any plane desired. Their goal: square the number of transducers while reducing the size of the machine.

Blalock’s solution is to take advantage of modern high-density integrated circuit technology to bring the signal processing to the transducer and combine sensing and signal processing on a single chip. “This approach will provide higher resolution, better signal-to-noise ratio, and greater imaging flexibility,” Blalock says.

With support from Carilion Biomedical Institute, Walker, Hossack, and Blalock hope to have a low-cost, first-generation handheld prototype ready by next year. “The work Bill, John, and I are doing together demonstrates one of the real strengths of research at U.Va., interdisciplinary collaboration at the intersection of engineering and medicine.”

The family of the late John W. Matthews, an IBM researcher who held a postdoctoral position at a school, has pledged $500,000 in his memory to support construction of a 1,000-square-foot lab in Wilsdorf Hall. Matthews’s son is rock musician Dave Matthews.
There’s no denying that the practice of engineering has gone global. When you work for a company like IBM, General Motors, Sony, or Motorola, your colleagues and customers span the globe. That’s why the Engineering School is increasingly encouraging undergraduate and graduate students to take a semester abroad. No longer the province of the liberal arts major, a semester abroad is as critical to their careers as an internship or co-op experience.

“Our students, especially our younger ones, appreciate the importance of gaining international exposure, and we’re committed to making it available for them,” says David Morris, director of SEAS International Programs and professor of civil engineering.

During the last six months, Stankovic and his colleagues from U.Va. and such computer science powerhouses as Carnegie Mellon University and the University of Illinois have attracted $8.6 million in funding, including awards from DARPA and the NSF as well as a Department of Defense MURI award. Approximately $2 million will be used for research at U.Va.

The DARPA award, for instance, is to develop protocols that will enable large numbers of nodes containing sensors, actuators, and computers to interact dynamically and autonomously on a smart battlefield. “You need to find a new way of thinking about protocols to meet the demands of this project,” Stankovic observes. “And that’s what we intend to do.”

Four years ago, the Engineering School joined a group called the Innovative Multicultural Curricula Consortium, a select group of European Community and U.S. universities interested in increasing the exchange of students in engineering and applied science. As a result of this effort, the University has formal exchange programs with universities in England, France, Belgium, Italy, Germany, and Spain. Students pay their U.Va. tuition and fees and register free at the host institution.

The school is also working with the American universities in the consortium to offer an introductory trip to western Europe for students at the end of their first year. The tour would consist of visits to partner universities and high-tech industries as well as cultural sites. “The idea is to prepare more students to take a semester abroad, most likely during the spring semester of their third year,” Morris says.
Executive Master's Program Takes Off

It's the classic win-win situation. High-tech companies in Northern Virginia want a way to retain their best people and build their skills. Bright young employees with five to seven years on the job want the knowledge to take them to the next career step. The solution: U.Va.'s Executive Master's Degree Program in Systems Engineering.

“We’ve designed this program with two goals in mind,” says Jerry Learmonth, the executive director of the Executive Master’s Degree Program. “We wanted to make it possible for working professionals to enroll in the program without interrupting their careers. And we wanted to make sure they receive the very best educational experience possible.” The two-year program is offered at the Xerox Document University in Northern Virginia. Students meet on Fridays and Saturdays every other week during the school year and receive their diplomas 20 months after stepping into the classroom for the first time. Tuition covers books, software, lodging, and meals.

At the same time, the course draws exclusively on tenured and tenure-track faculty from the Engineering School, the Darden School of Business Administration, and the McIntire School of Commerce and features a unique blend of management, e-business, systems engineering, and decision analytics. “This is the only off-grounds degree-granting program that the Engineering School offers,” Learmonth notes, “and we wanted to be very sure that it represents the best of what we can provide.”

The first cohort received their master's of engineering degrees in May, and interest in future classes is at an all-time high.

www.executivemasters.com

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