

ECE Studies Beyond the 'Burg

From single courses to certificate programs to degree programs Virginia Tech ECE offers a variety of graduate study options for students and practicing engineers — across the state and around the world.

National Capital Region

Live Instruction and Distance Learning

Several hundred graduate students - most part-time - study at the Falls Church facility. Both master's and doctoral degree programs are offered, and students are advised by on-site faculty members as well as those from the Blacksburg campus. Admissions to degree programs are via the standard graduate school procedures.

Naval Surface Weapons Center at Dahlgren

Live Instruction and Distance Learning

Both master's and doctoral programs are available to scientists and engineers at this government research center. NSWC is now an approved site to meet the residency requirement for the Ph.D. degree.

VT-MENA

Virginia Tech Middle East and North Africa Program

Live Instruction and Distance Learning

VT-MENA is a new degree program offering Ph.D. degrees. Students are located in Alexandria, Egypt and sponsored by the Arab Institute. Students are taught by both Virginia Tech and Arab Institute faculty members. Students satisfy the same requirements as Blacksburg Ph.D. students, including one year of residency at the Blacksburg campus.

CGEP

Commonwealth Graduate Engineering Program

Distance Learning

Through a consortium of engineering programs and 15 delivery sites in Virginia, CGEP offers degrees across engineering disciplines. Students may take single courses or pursue standard degrees. Students may take up to 12 hours through CGEP at which point, they must meet admissions standards and transfer to a degree program.

Lockheed-Martin, Vienna

Students in Lockheed-Martin's leadership training program have the opportunity to take on-site and local university classes to an M.S. degree in three years. Lockheed instructors certified by Tech teach 9 credits of coursework and the remaining 21 credit hours are taken either through Tech distance learning or at a campus site.

Lockheed-Martin, Manassas

Live Instruction

A special program at Lockheed Manassas offers two software engineering courses on-site. Students must be admitted to the graduate program and satisfy all normal degree requirements to complete an M.S. or Ph.D. degree.

VTMIT

Master of Information Technology

Distance Learning

A distance-learning graduate certificate program is offered to students anywhere in the world through cooperation between ECE, computer science, and the business college. Students may concentrate in a particular area after completing fundamental courses. Some of the eight ECE courses offered in the program are standard courses that meet ECE degree requirements, while others are for the MIT program only. Admission is handled by the VTMIT program office.

VTMIT-India

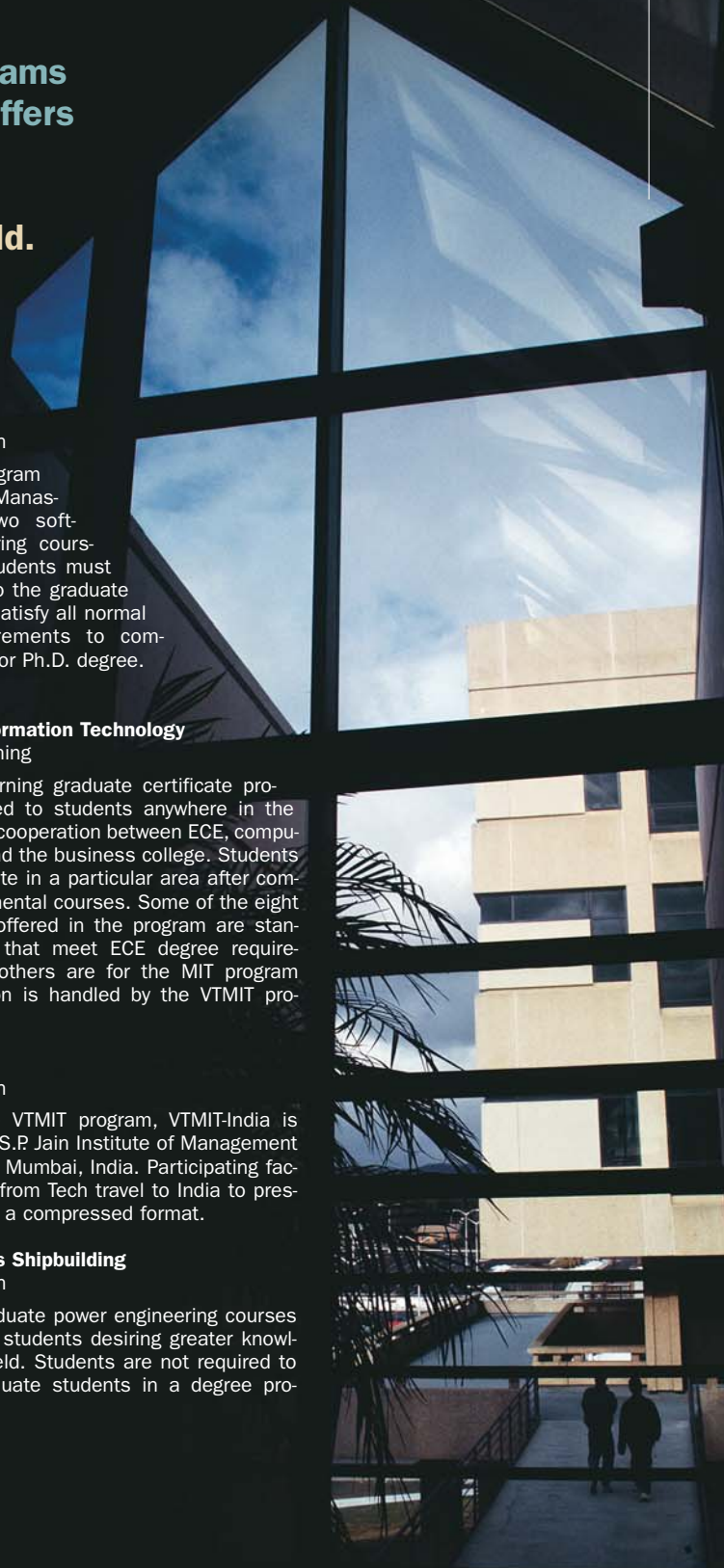
Live Instruction

Similar to the VTMIT program, VTMIT-India is offered at the S.P.Jain Institute of Management & Research in Mumbai, India. Participating faculty members from Tech travel to India to present courses in a compressed format.

Newport News Shipbuilding

Live Instruction

Non-credit graduate power engineering courses are offered to students desiring greater knowledge in the field. Students are not required to enroll as graduate students in a degree program.



Part-time PhD YOU CAN'T BEAT PERFECT

Minh Nguyen earned his Ph.D. last fall after an experience that challenges many common assumptions. He completed his coursework and dissertation on communications traffic analysis and interference cancellation for avionic systems in just three years — as a part-time graduate student holding down a full-time engineering job.

Nguyen entered the Ph.D. program at the Northern Virginia campus in September 2002 and worked with Amir Zaghoul as his advisor. When he started the program, he was a senior communications systems engineer with MITRE Corp. He had thoroughly researched his options and decided that he could pursue a Ph.D. and continue fully contributing at work.

“I was one of the youngest in my division and many colleagues had doctorates,” Nguyen remembers. “MITRE is very research oriented and encourages employees to pursue advanced degrees.” Nguyen had earned both his B.S. and MS degrees from Tech at the Blacksburg campus and wanted to study here for his doctorate as well.

The hardest part, he says, was the decision to pursue the degree, then to go part time. “Once we engineers start working in our professional field, it’s difficult to quit for four or more years for a program that does not have a definitive end,” he says. “We think that if we focus on school, we must quit our jobs.”

Nguyen tried to weigh the economic cost and the benefits of getting a Ph.D. “Was the degree only for personal satisfaction, or would it help me thrive in my career? I had no answer to that.” The option of keeping his job and going to school part time was intriguing. “I talked to 10 people, however, who all said the same thing: that doing a part-time Ph.D. is impossible.”

In the end, he chose the job and the degree. “I could not quit a great job for a commitment that was not well defined. I continued to work at MITRE as a salaried, full-time engineer and performed advanced technology research that I really enjoyed.”

He entered the program with a big advantage for Ph.D. research. He was already up-to-speed on a research topic that was related to his job. “The idea

actually spun off from an internal R&D project that I had been working on. Dr. Zaghoul helped me narrow the focus for an appropriate dissertation. This gave me a jump start,” he says. He also found that working in the more applied corporate environment and the theoretical academic environment cross fertilized both efforts. “My industrial work motivated my academic objectives, and what I learned in school helped with my career.”

Because his academic research was related to his work at MITRE, he was fully funded to write papers and journal articles, and present his work at conferences. His work also resulted in two joint MITRE-Virginia Tech patents, which are pending. “This is a real plus for Ph.D. students.”

His biggest challenge in pursuing both activities simultaneously was “heavy-duty multi-tasking. I had to balance my workloads between work, school, and family — and each one could be considered a full-time commitment.” His advice for others considering a similar path: “Eliminate the word ‘procrastination’ from your dictionary! If you have a research idea in the middle of the night, get up and work on it immediately. Give it further thought or you might lose important ideas forever. There are many things to distract a part-time Ph.D. student and you must maintain focus.”

After Nguyen completed his degree, his program at MITRE slowed down due to limitation of government funding, so Nguyen decided to pursue new opportunities. He is now at Argon ST, Inc., applying his communications system architecture signal processing, and interference cancellation expertise to sensor applications and satellite systems. “My academic and research achievements from Virginia Tech helped give me the opportunities at MITRE, and now at Argon ST, working with highly competent colleagues on interesting and cutting-edge research programs.”

“My Ph.D. program was perfect: great school, great EE program, great research, wonderful advisor, while at the same time holding a fantastic job. You can’t beat perfect.”



Courtesy of Minh Nguyen



Northern Virginia
Center, Falls Church

VT-MENA

The College of Engineering is now making it easier for graduate students in the Middle East and Northern Africa to obtain a Virginia Tech degree. Through the VT-MENA program being hosted by the Arab Academy for Science and Technology in Alexandria, Egypt, Tech is offering students the opportunity to receive master's degrees and Ph.D.s in electrical engineering, computer engineering, and computer science. The program, which has support from USAID, makes pursuing an advanced degree easier for women and working students living with families.

In its first year, 18 students are participating. The graduate engineering program is treated as an "extended campus," much like Virginia Tech's Northern Virginia campus. Classes are taught face-to-face in Egypt by visiting Tech faculty and adjunct faculty hired by Tech or through videoconference communication with faculty at Virginia Tech.

"I'm impressed with the students — they are eager to learn and participate so actively that it can be hard to cover all my material in class," said Allen MacKenzie, who taught in Egypt in the fall. Both MacKenzie and Lynn Abbott, who taught in spring 2006, agree that Egyptians aren't as tied to the clock as North Americans and may show up for class 5-10 minutes late — a habit the Tech professors are trying to change as the students prepare for their year in Blacksburg.

Both were surprised at the students' ability to speak and understand American English — even slang. "I think it's because of the U.S. movies and television shows they see," Abbott said. "Shows are aired over their television with no overdubbing, nothing removed. They learn our language and culture — at least one view of it." Abbott reported that people stopped him on the street to try out their English and welcome him to Egypt.

—Su Clauson-Wicker



The VT-MENA building in Cairo, Egypt.

Promoting Undergraduate International Experiences

As academia recognizes that global perspective is crucial in today's workplace, Virginia Tech is stepping up its emphasis on international experience at the undergraduate level. The College of Engineering's strategic plan for the next six years calls for creating new international study and work experiences to grow the study abroad participation to at least 260 graduate and undergraduate students a year.

"Right now our goal is to have at least 15 percent of all undergraduate students getting some international experience before they graduate," said Sedki Riad, director of international programs for the College of Engineering. "All undergraduate programs will have at least one pre-approved study abroad option that enables students to study abroad for at least one semester or summer without delayed graduation. At some future date, we'd like to see all our undergraduate students having international experience before graduation."

At present, Tech has partnered with Darmstadt University of Technology in Germany for summer school and engineering research internships. At Darmstadt, students participate in German language and cultural studies courses, which include seminars, excursions, and visits to major industrial companies. Because Virginia Tech is a partner institution, Tech engineering students receive first-priority admission to the small, selective program.

Another formalized Virginia Tech partnership is an intensive four-week, summer study in robotics at the Arab Academy of Science and Technology in Egypt (the site of Tech's graduate VT-MENA program). Students learn about both the fundamentals of robotic systems through developing a small robot and Egyptian culture at the Alexandria, Egypt campus.

The college is working on generating more formal programs while utilizing existing programs developed by other institutions and corporations around the globe, Riad says. "Our students are somewhat limited by their ability to speak another language. We have work and study programs for them in Europe, Australia, and all around the world, but some are more formalized than others," he said. "I'm working on finding experiences especially geared for Virginia Tech's academic specialties."

ECE major Christopher Lake and 12 other Virginia Tech engineering students have been placed in paid international internships through IAESTE (International Association for the Exchange of Students for Technical Experience), an organization dedicated to developing global skills in tomorrow's technical leaders through international work and study experiences. Lake worked for STIWA in Attnang-Puchheim, Oberostereich, testing motors and designing an operating system for a handheld device. —Su Clauson-Wicker